BUDGET JUSTIFICATION FOR ECOHEALTH ALLIANCE

EcoHealth Alliance requests a total of \$4,899,297.20 over all-years of the proposed project to support personnel, travel, equipment, consortium agreements, and applicable indirect costs.

A. Key Personnel

<u>William B. Karesh, D.V.M., Principal Investigator</u> (2 calendar months for all years) 3 calendar months for OY2). Dr. Karesh will be responsible for the overall coordination of this project. He will provide overall project oversight, study design development and refinement, data analysis, publication support, and annual stakeholder meeting participation. We request \$48,535 in Y1 with a 5% cost of living increase each subsequent year.

<u>Jonathan Epstein, Ph.D., Co-Investigator</u> (1.0 calendar month in all years). Dr. Epstein will be a technical advisor to the project, advising on data interpretation, targeted animal sampling based on data as they come in over the course of the project, and laboratory techniques. He will also assist with writing and dissemination. We request \$14,597 in Y1 with a 5% cost of living increase each subsequent year.

Noam Ross, Ph.D., Senior Research Scientist, Modeler (1 calendar month in all years). Dr. Ross will be a technical advisor to the project, advising on data organization, analysis, and writing with a focus on statistical analytics. We request \$8,138 in Y1 with a 5% cost of living increase each subsequent year.

Emily Hagan, M.P.H., Behavioral Risk Scientist (3.0 calendar months in all years). Ms. Hagan will provide medical anthropology expertise for the questionnaires and analysis, supervise and conduct the IRB processes and trainings on the human subject work for local partners, and assist with data organization and analysis. We request \$16,937 in Y1 with a 5% cost of living increase each subsequent year.

<u>Catherine Machalaba, M.P.H. Policy Advisor</u> (3.5 calendar months in all years), Ms. Machalaba will be a technical advisor to the project, advising on study design and risk reduction. She will conduct a risk reduction workshop in OY2 and will help develop revised biosurveillance and reporting strategies with and for Liberian partners. We request \$25,050 in Y1 with a 5% cost of living increase each subsequent year.

Whitney Bagge, Ph.D., Modeler (7 calendar months Y1-OY1, 7.5 calendar months in OY2). Dr. Bagge will provide day-to-day project development and strategic management, including through regular in-person meetings and weekly phone and other direct communications with partners. She will also supervise field sampling, data analysis, and data and information dissemination through workshops, conferences, and papers, for which we request \$50,225 in Y1 with a 5% cost of living increase each subsequent year.

B. Other Personnel

Amanda Andre, LMSW, Operations Assistant (5.5 calendar months in all years). 4 calendar months for OY2. Ms. Andre will be the administrative lead handling project management responsibilities related to budgeting, expenses, managing of subcontracts, and meeting scheduling and logistics. She will coordinate all meetings and travel and ensure compliance with funding and contractual requirements. We request \$27,373 in Y1 with a 5% cost of living increase each subsequent year.

Fringe Benefits

Fringe benefits are calculated as 36.8% of base salary p.a. with \$70,234 requested in Y1 calculated from the base salary for all Personnel. In Y2 – OY2, we budget for a 5% per year cost of living allowance increase in all salaries.

C. Equipment

No funds are requested for equipment.

D. Travel

Domestic Travel

Domestic travel is requested for one trip per year for three program staff to travel from New York City to Washington, DC to meet with Co-Investigator Carlin and key personnel at Georgetown University. Transportation is estimated at \$400 per trip along with the government GSA per diem rates for each city. Additional domestic travel support will facilitate four EcoHealth Alliance staff presenting at two domestic conferences annually. In total, we are requesting \$13,795 in each year of our proposed work.

International Travel

Foreign travel is requested for partner meetings, in-country trainings, and field research. Seven EHA employees will attend annual meetings. Two EHA staff will make additional trips each year for trainings and field research. Flights for each of these trips is estimated at \$3,500 and the federal per diem rates of \$200 for lodging in Monrovia, Liberia and \$70 for field work as well as the \$95 for meals in Monrovia, Liberia and \$46 for field work are requested. Additionally, we are requesting travel for staff to present on project findings at international conferences each year with flights estimated at \$1,500 and hotels and meals at the government GSA per diem rates for Vienna, Austria for International Meeting on Emerging Diseases and Surveillance (IMED). Travel costs are increased 5% each year to account for pricing increases based upon past, actual, annual price increases.

E. Participant/Trainee Support Costs

No funds are requested for participant or trainee support costs.

F. Other Direct Costs

Materials and Supplies

Co-Investigator Epstein & Modeler/Ecologist Bagge will need a new computer, equipped with Microsoft and Adobe software for which we request \$5,178 in Y1.

We request \$6,830, annually for material and supplies, including office and travel supplies necessary for project aims for a total of \$27,320 over five years. Materials estimated in this cost include Cell Phone Communication costs, Dropbox, Adobe, and Stata costs, and basic office supplies.

Publication Costs

To facilitate the dissemination of project findings, \$3,190 per year in only Y2-OY2 is requested for open access publication costs in international peer-reviewed journals.

Consultant Services

For the human behavioral risk part of the project, \$1,449 is requested in Y1, \$1,126 in Y2 & OY1-OY2 and \$1,526 in YR 3 for New England IRB and \$3,500 in Y1 for required Collaborative Institutional Training Initiative training for personnel handling human and non-human animals and samples as per IRB and IACUC requirements. For Dr. Carlin, \$15,000 per year is

requested. Dr Carlin will assist with partner communication, data analysis, and data and information dissemination through workshops, conferences, and papers.

Subawards/Consortium/Contractual Costs

Subcontracts for the National Public Health Institute of Liberia, Society for the Conservation of Nature-Liberia, Liberia Chimpanzee Rescue and Protection, University of Nebraska Medical Center and Georgetown University are outlined in their individual budget justifications.

H. Indirect Costs

We are requesting the EcoHealth Alliance federally approved indirect cost rate of 32% on all applicable direct costs. The USA Department of Defense's Department of the Navy has approved this rate on 17 July 2019. We have applied our indirect cost rate to the first \$25,000 of the subcontracts only in Y1.

BUDGET JUSTIFICATION FOR NATIONAL PUBLIC HEALTH INSTITUDE OF LIBERIA, LIBERIA

The National Public Health Institute of Liberia (NPHIL) requests a total of \$920,968 over all years of the proposed project to support personnel, travel, equipment, other direct costs and indirect costs.

A. Key Personnel

<u>Mosoka Fallah, Ph.D., Co-Investigator</u> (.6 calendar month for Y1-OY2). Dr. Fallah will provide overall project oversight for Liberia-based activities. NPHIL is charged with leading all public health and biomedical research in Liberia, and Dr. Fallah assumes that role for this project, leading all elements on the human subjects research side of the project as well as the laboratory diagnostics elements. Dr. Fallah will ensure NPHIL meets project tasks and milestones, will oversee NPHIL's budget, and will assist with dissemination of findings through publications and conference presentations. We do not request salary at this time as Dr. Fallah will be fully covered by other funding sources during the project period.

<u>Fatorma Bolay, Ph.D., Co-Investigator</u> (1.5 calendar month for Y1-OY2). As head of the Liberia Institute for Biomedical Research (LIBR) at NPHIL, Dr. Bolay will provide direct oversight of all laboratory activity for the project, for which \$2,500 is requested starting in Y1.

<u>John Dogba, Ph.D. Candidate, Co-Investigator</u> (1.5 calendar month for Y1-OY2). Dr. Dogba directs the national reference laboratory at NPHIL and will ensure compliance with biosafety and biosecurity project requirements; as a lecturer at the University of Liberia he will also assist with identification and recruitment of students to work in the laboratory, activities for which \$3,000 is requested starting in Y1.

<u>Bode Shobayo, M.S.C., Co-Investigator</u> (1.5 calendar month for Y1-OY2). As a research scientist within NPHIL's medical and public health research division, Dr. Shobayo will participate in training workshops, processing and testing a subset of samples, and reporting recommendations to Dr. Bolay and Dr. Wiley for process refinements and mitigating challenges with the day-to-day laboratory workflow, for which \$2,075 is requested starting in Y1.

B. Other Personnel

<u>Laboratory Scientists/Technicians</u> (4 calendar months for Y1-OY2). Four laboratory scientists and/or technicians—two from NPHIL and two seconded from the Ministry of Agriculture—will process and test all project samples at LIBR. They will participate in all laboratory workshops, provide all bench activity (under the supervision of key personnel), and advise on inventory needs and any problems implementing the laboratory protocol. We request \$18,667 for all four laboratory technicians starting in Y1.

<u>Hospital Project Coordinators</u> (6 calendar months for Y1-OY2). One coordinator will be appointed to each of two human clinical study sites (Redemption Hospital and Phebe Hospital) operating in Y1-Y3. These coordinators will be chosen from existing staff already participating in other febrile illness studies at the hospitals and will be responsible for participating in human subjects research training, ensuring hospital staff are sensitized to our inclusion criteria (and thus able to identify proper candidates), being available for consultation when patients enroll in the study, collecting consent form and questionnaire data from the patients, and ensuring samples are collected, stored, and transported in timely fashion. Similarly, one coordinator will

be appointed to each of two human clinical study sites (hospitals in Nimba and Lofa counties) in the option years, if funded. In an effort to train and engage Liberian nurses in public health surveillance and in research, at least one and possibly both of these sites will be staffed through Nursing for All, a non-profit that builds capacity in the nursing profession in Liberia and is presently operating at Ganta United Methodist Hospital in Nimba, one of the sites at which we would like to implement the study in OY1-2. We request \$26,250 over the proposed five years of the project.

<u>Hospital Laboratory Technicians</u> (1 calendar month for Y1-OY2). Hospital laboratory technicians will assist with initial processing of patient samples (spinning serum, labeling, and storing) prior to transport to NPHIL. We will similarly provide salary support for technicians at the two option year hospitals if funded. We request \$1,667 p.a. for these activities.

<u>Post-doctoral Researcher</u> (6 calendar months for Y3-OY2). Beginning in Y3, we propose to add a post-doctoral researcher to the laboratory team. Liberia does not have a PhD-granting institution, but a number of Liberians are presently undertaking PhD degree programs outside of the country; by Y3 we plan to bring one Liberian individual who has received a PhD in laboratory pathogen research into the project to work with the laboratory scientists on sample processing, testing, and data analysis, for which we request \$5,000 starting in Y3.

Bachelors and Masters Students. We intend to include approximately three students per semester on the project, to include undergraduate and graduate students from the University of Liberia (Monrovia) and Cuttington University (Bong). Their duties will depend on their degree program but will include assignments at the human clinical sites (nursing, medical, public health, anthropology students); animal field collection sites (biology, animal science, ecology, anthropology); and laboratory (molecular biology, microbiology). We will preferentially choose students interested in developing their theses based on the project. Each student will receive a stipend of \$500 per semester.

<u>Administrator/Program Manager</u> (6 months in Y1-OY2). This individual will act as the administrative lead, handling project management responsibilities related to budgeting, expenses, managing of subcontracts, and meeting scheduling and logistics, activities for which we request \$5,000 p.a.

C. Equipment

The existing freezer in which PREDICT samples are stored at LIBR will remain there when the project ends, and will be available for this project's use, but its capacity is limited. LIBR will therefore require increased storage capacity for the specimens generated by this project (2,250 humans, up to 4,500 specimens; 3,840 animals, up to 14,560 specimens). A -80°C freezer is requested for sample storage and is estimated at \$29,885. Liberia does not have a VAT and our conversations with Liberian partners indicate it is unlikely they will instate one in the near future. Government agencies and non-profits would be exempt from any such tax. If absolutely necessary, we would seek unrestricted funding sources to cover any such costs.

D. Travel

We are requesting travel for one Liberian project participant to attend a regional conference and an international conference in Y3 and OY2 to present on project findings, with flights estimated. For the regional conference flights are estimated at \$750 and hotels and meals at the government GSA per diem rates for Accra, Ghana. For the international conference flights are estimated at \$2,500 and hotels and meals at the government GSA per diem rates for Vienna, Austria.

In Y3 we plan to bring one Liberian individual who has received a PhD in laboratory pathogen research into the project to work with the laboratory scientists on sample processing, testing, and data analysis as a post-doctoral associate. We will fund a one-month trip for this individual to the University of Nebraska Medical Center to train in the laboratory of co-Investigator Dr. Michael Wiley. A flight is estimated at \$3,000 and hotels and meals at the government GSA per diem rates for Omaha. Nebraska.

In total over the course of the project, we are requesting \$20,038 in for International Travel.

E. Participant/Trainee Support Costs

No funds are requested for participant or trainee support costs.

F. Other Direct Costs

Materials and Supplies

We will supply the participating hospitals with all consumables required to collect patient samples, including serum tubes, EDTA tubes, cryovials, vacutainer holder, needles, syringes, nitrile gloves, and nasal swabs, for which we request \$2,504 p.a. For the human clinical study implementation sites, our request also includes funding for a centrifuge to enable processing of serum at the hospital clinical laboratories (\$460 each), an ultracold freezer to store the samples until picked up for transport (\$4695 each) and a tablet for data collection and tracking at each site (\$229 each).

Laboratory Testing

Our laboratory request covers three primary types of molecular testing: next-generation sequencing, real-time PCR, and ELISA-based antibody serology. In Y1, we will test 300 existing PREDICT bat and rodent samples, pooled by three, via NGS Amplised on LIBR's existing MiSeq machine. We will barcode 5% these, a process that most likely will be done outside of Liberia. In Y2-OY2, we will use a Tagman Array Card system (modified for a 96-well plate to run on LIBR's ABI 7000 sequencer) to test human samples for up to 31 pathogens at three samples per plate, and will run nasopharyngeal samples on singleplex PCR to test for key respiratory pathogens. We will run specific real-time PCR to confirm positives; NGS Ampliseg to further sequence viral-positive human samples (expect not more than 10% to fall into this category) and 10% of negative human samples; and specific antibody ELISAs on convalescent samples from humans who tested positive on TAC plus 20 of their neighbors. For animals in Y2-OY2, we have budgeted for specific antibody ELISAs on all animals, averaging 5 tests each, pooled by 5; NGS on 10% of animal samples pooled by three; singleplex PCR for confirmation of NGS positives (expect ~4%); a new ELISA reader, a new ELISA plate shaker; Mastermix, and miscellaneous consumables. We request \$453,414 over the five years of the proposed project. Of this amount, \$152,400 is for next-generation sequencing, \$4,000 is for barcoding, and the remainder supports the PCR and ELISA testing, which are and will continue to be mainstays of the laboratory.

Meetings and Conferences

We request support for an annual meeting each year for 45 people including personnel from all partner institutions (EHA, NPHIL, SCNL, LCRP, UNMC, GU) as well as local stakeholders. Travel costs for United States-based participants to attend the annual meeting are covered in the EcoHealth Alliance budget. We estimate that for the three-day meeting, eight Liberian partners traveling from outside Monrovia will require transportation, meals and accommodation to be covered, and for Y3, when the annual meeting will function as a broader regional technical meeting, we will also fund two attendees from elsewhere in West Africa (likely Guinea) working

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on similar studies. Additionally, the meetings will require a room rental, lunch for all participants, and printing of materials and supplies. Overall costs are estimated at \$10,000 p.a.

We will conduct a series of workshops across the study period, as outlined in the technical proposal and in more detail in Attachment 3. Workshop 1a will cover the overall research study protocol, will occur at the Y1 kickoff meeting, and will include all project participants. Workshop 2a will cover the human study protocol and human subjects research, will occur mid-Y1 and again toward the end of Y3, and will include Tasks 2 and 4 personnel and students. Workshops 3a and 3b will cover biosafety, biosecurity, and laboratory techniques training, will occur twice during Y1 (at the kickoff meeting and again in the middle of the year) and during Y3, and will include all Task 3 personnel. Workshop 4a will cover the animal sampling protocol and animal subjects research, will occur at the kickoff meeting and during Y3, and will include all Task 4 personnel and students. Workshop 5a will cover analysis of laboratory data (including bioinformatics), will occur during Y2 as the laboratories ramp up their sample testing, and will include Task 3 personnel. Workshop 6a will cover risk reduction analysis and opportunities, will occur during OY2, and all personnel including many from ministries not directly involved in the project will be invited to attend. Across the workshops, the number of participants will vary from 10-20 people for whom we will require catering (lunch) for all participants, room rental, and some materials and supplies. Over the five proposed years of the project, \$18,940 is requested to support these workshop trainings.

Two NPHIL personnel will travel to each of the five study communities for two-day, one-night trips to share study findings with community members and discuss risk reduction opportunities in OY1-2. Lodging, meals, and printed materials and supplies are estimated at \$310 per visit.

Freezer Maintenance

Support of \$500 p.a is requested to cover the cost of freezer maintenance (the newly-purchased freezer and LIBR's existing freezer) to ensure they are properly maintained, calibrated and in full working order at all times.

H. Indirect Costs

We are requesting the federally agreed indirect cost of 10% on all direct costs.

BUDGET JUSTIFICATION FOR SOCIETY FOR CONSERVATION OF NATURE, LIBERIA

The Society for Conservation of Nature, Liberia (SCNL) requests a total of \$685,069 over all years of the proposed project to support personnel, travel, equipment, and indirect costs.

A. Key Personnel

<u>Michael Garbo, M.S., Co-Investigator</u> (0.6 calendar months per year for all years). As head of SCNL, Mr. Garbo will be responsible for the oversight of all non-human animal sampling activities including preparation, staffing, implementation, and follow-up. He will further oversee the sample transport activity of both animal and human samples, for which SCNL is responsible. We do not request salary for him, since he will be fully covered by other SCNL funding sources.

B. Other Personnel

Annual support is requested for a field supervisor (\$650/month), social scientist (\$550/month), three field technicians (\$550/month each), and two drivers (\$330/month each) to make up the field research team. This team will be responsible for all aspects of animal field sampling, including planning, ordering supplies, implementation, ensuring all samples are safely and securely transferred to LIBR for testing, and any needed follow-up. This team will also administer a survey to the patients whose community they visit, administer a similar questionnaire to up to twenty additional community members, and with consent collect blood samples from these individuals for serological testing. Support is requested for an accounting assistant (\$720/month) and an administrative assistant (\$1,350/month) to assist with procurement, invoicing, scheduling, and field team logistics.

C. Equipment

A field vehicle for field sampling and sample transport is estimated at \$45,000. Liberia does not currently have a VAT. Our conversations with Liberian partners indicate that it is unlikely that VAT will be instated in the near future. If it were, Government agencies and non-profits such as SCNL would be exempt from VAT.

D. Travel

Domestic Travel

Domestic travel support will cover fuel, vehicle maintenance, lodging and per diems for overnight trips (\$50/day) for eight field team members for four, week-long field sampling trips. In addition to transporting the animal samples that it collects in the field, SCNL will also be responsible for picking up and safely and securely transporting all human samples from the clinical study sites to the Liberian Institute for Biomedical Research via the standing cold chain procedures they follow for the animal samples. Vehicle maintenance is calculated at \$10,942 in Y1 for the two field vehicles, with higher costs estimated for the current vehicle due to its age and the condition of roads to be utilized, with a 2% increase in cost for each subsequent year. Fuel is estimated based on km to be traveled (664 total) weekly for sample transportation costs to both Phebe Hospital and Robertsport, as well as field travel from those locations and within a 50km radius. Vehicles are estimated to have a fuel efficiency of 20km/gallon with fuel currently costing \$3.80/gallon. Cost is calculated at \$45,103 in Y1.

E. Participant/Trainee Support Costs

No funds are requested for participant or trainee support costs.

F. Other Direct Costs

Materials and Supplies

We request \$458 in Y1 for the purchase of two hand-held tablets with cases to be utilized by the field research team for data collection and organization (animal and human). Tablets will be used to conduct surveys off-line in the field, and to upload the data collected upon returning to SCNL offices. We request \$589 for the purchase of a tarp, spade and 40 pitfall traps for rodent sampling. We request \$442 for the purchase of a centrifuge to enable processing of medium-and large-animal blood samples in preparation for serological testing.

Field consumables including gloves, Tyvek suits, vacutainers, syringes and needles, EDTA collection tubes, non-EDTA collection tubes, cryotubes, TRIzol, and swabs are needed to conduct field sampling. The budget for consumables will enable us to test 3,360 animals over the course of the project (Y1: 160; Y2: 1,200; Y3: 800; OY1: 800; OY2: 400) and will cover a total of 12 sampling events (Y1: 4; Y2: 3; Y3: 2; OY1: 2; OY2: 1), with \$37,943 budgeted for Y1.

H. Indirect Costs

We are requesting a de minims rate of 10% on all allowable direct costs.

Months	EHA		Y1	Y2	Y3	OY1	OY2	Total
Y1 Y2 Y3 OY1 OY2 Base	A. Senior/Key Personnel					<u> </u>		10101
2 2 2 2 3 \$ 291,211.20	·	\$	48,535.20	\$ 50,961.96	\$ 53,510.06	\$ 56,185.56	\$ 88,492.26	\$ 297,685.04
	·	\$	17,860.95					
1 1 1 1 1 1 \$ 175,159.66	ü	\$	14,596.64					
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 ,	\$	5,371.56					
1 1 1 1 1 \$ 97,650.00	,	\$	8,137.50					
7 7 7 7 9 21,300130	·	\$	2,994.60					
3.5 3.5 3.5 3.5 \$ 85,884.88	V	\$	25,049.76					
		\$	9,218.31					
3 3 3 3 3 \$ 67,747.18	-	\$	16,936.80					
		\$	6,232.74			\$ 7,215.18		\$ 34,439.83
7 7 7 7 7.5 \$ 86,100.68	, , ,	\$	50,225.40			\$ 58,142.17		\$ 281,887.68
1 7 1 110 4 00,700100		\$	18,482.95					\$ 103,734.67
Fringe Rale> 36.8%	Total Senior/Key Personnel	\$	223,642.40					\$ 1,282,083.29
7 mig - 1 mig	B. Other Personnel	+~			+ =:=,===::=		+,	***************************************
5.5 5.5 5.5 5.5 4 \$ 59,723.41		\$	27,373.23	\$ 28,741.89	\$ 30,178.99	\$ 31,687.93	\$ 24,198.06	\$ 142,180.10
0.0 0.0 0.0 0.0 0.0	, 1	\$	10,073.35			\$ 11,661.16		
23.0 23.0 23.0 23.0 23.0	<u> </u>	\$	37,446.58	t t	·	\$ 43,349.09		\$ 194,502.38
20.0 20.0 20.0 20.0 20.0	Total Other Personnel	1-0	37,440.00	ا الا.10 د,ود پ	ψ →1,∠04.00	ψ 4 3,349.09	ψ ৩৩,±02.90	ψ 134,3UZ.30
	C. Equipment	\$		\$ -	\$ -	· ·	\$ -	\$ -
	Total Equipment	\$				-	\$ -	\$ -
	D. Travel	Φ.		Ψ -	φ -	ψ -	φ -	Φ -
		It.	13,795.00	\$ 13,795.00	\$ 13,795.00	\$ 13,795.00	¢ 10 70E 00	£ 60.075.00
FY'20 -> FY'21 Increase: 3.0%		\$						
FY'20 -> FY'21 Increase: 3.0%	<u> </u>	\$	64,394.50	• • • •		\$ 65,831.50		\$ 327,517.50
		3	78,189.50	\$ 79,626.50	\$ 79,626.50	\$ 79,626.50	\$ 79,423.50	\$ 396,492.50
	E. Participant/Trainee Support Costs	h-		¢.	Φ.	r.	Φ.	*
	1. Tuition/Fees/Health Insurance	\$					\$ -	\$ -
		\$			\$ -		\$ -	\$ -
		\$,	·	•	\$ -
		\$					·	\$ -
		\$			<u>'</u>			\$ -
	Total Participant/Trainee Support Costs	\$	-	\$ -	\$ -	\$ -	\$ -	\$ -
	F. Other Direct Costs	-	12.021.20			* 2.000.00		* 0051400
		\$	12,221.00					
		\$		\$ 3,190.00		\$ 3,190.00		
		\$	18,500.00					\$ 78,500.00
	'	\$				-		\$ -
			472,602.22					\$ 2,222,176.70
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		\$			\$ <i>-</i>			\$ -
		\$		•	*	,	•	\$ -
	1 11 11	\$			\$ -	·	\$ -	\$ -
	Total Other Direct Costs	\$	503,323.22	\$ 504,416.69	\$ 504,509.76	\$ 449,962.40	\$ 390,765.62	\$ 2,352,977.70
	G. Direct Costs and Modified Direct Costs	<u> </u>						
	Direct Costs	_	842,601.70					\$ 4,226,055.87
	Modified Direct Costs	\$	369,999.48	\$ 378,789.93	\$ 392,497.10	\$ 406,889.63	\$ 455,703.04	\$ 2,003,879.17
	H. Indirect Costs	1				_		
IDC Rate> 32.0%	71 1 111	_	118,399.83					
IDC Rate> 32.0%	2. Indirect Cost Type (Subs)	\$	32,000.00	·	<u> </u>		<u>'</u>	\$ 32,000.00
	Total Indirect Costs	\$	150,399.83	\$ 121,212. 7 8	\$ 125,599.07	\$ 130,204.68	\$ 145,824.97	\$ 673,241.33
	I. Total Direct and Indirect Costs	ļ						
	Direct + Indirect	\$	993,001.53	\$ 979,399.40	\$ 997,585.93	\$ 962,036.71	\$ 967,273.63	\$ 4,899,297.20
	J. Fee							
		\$	- :	\$ -	\$ -	\$ -	\$ -	\$ -
	K. Total Costs and Fee			1				
	TOTAL	\$	993,001.53	\$ 979,399.40	\$ 997,585.93	\$ 962,036.71	\$ 967,273.63	\$ 4,899,297.20
	Subcontractor Totals							
	SCNL	\$	158,888.37	\$ 148,890.92	\$ 131,419.99	\$ 131,665.89		
	NPHIL	\$	169,453.66	\$ 223,546.22	\$ 223,810.22	\$ 185,449.23	\$ 118,709.07	\$ 920,968.39
	GU-CGHS	\$	58,528.39	\$ 23,566.36	\$ 40,866.36	\$ 24,434.09	\$ 49,438.65	
	LCRP	\$	85,731.80			\$ 83,393.20		
	EHA TOTAL							
		\$	520,399.31	\$ 500,002.70	\$ 518,096.17	\$ 537,094.31	\$ 601.528.01	\$ 2,677,120.50
		1 -	. = - ,	,				,,

EHA Supplies	Unit/Ar	nnual Price	Y1		Y2		Y3		OY1		OY	'2
Laptop (U)	\$	2,589.00	\$	5,178.00								
Stata (a)	\$	600.00	\$	600.00	\$	600.00	\$	600.00	\$	600.00	\$	600.00
Dropbox (a/pp)	\$	140.00	\$	420.00	\$	420.00	\$	420.00	\$	420.00	\$	420.00
Adobe (a/pp)	\$	177.00	\$	531.00	\$	531.00	\$	531.00	\$	531.00	\$	531.00
Endnote	\$	99.00	\$	99.00	\$	99.00	\$	99.00	\$	99.00	\$	99.00
MS Office	\$	94.00	\$	188.00								
Paperpile (a/pp)	\$	2.99										
Communications (pa)	\$	5,000.00	\$	5,000.00	\$	5,000.00	\$	5,000.00	\$	5,000.00	\$	5,000.00
Zoom (a)	\$	180.00	\$	180.00	\$	180.00	\$	180.00	\$	180.00	\$	180.00
Skype (a)	\$	25.00	\$	25.00	\$	25.00	\$	25.00	\$	25.00	\$	25.00
TOTALS			\$	12,221.00	\$	6,830.00	\$	6,830.00	\$	6,830.00	\$	6,830.00

Consultant Services	Y1		Y2	!	Y3		Y4		Y5	
New England IRB	\$	1,449.00	\$	1,126.00	\$	1,526.00	\$	1,126.00	\$	1,126.00
CITI Trainings	\$	3,500.00								
Ellen Carlin	\$	15,000.00	\$	15,000.00	\$	15,000.00	\$	15,000.00	\$	15,000.00
	\$	18,500.00	\$	15,000.00	\$	15,000.00	\$	15,000.00	\$	15,000.00
			Г							

	_	71 Internation	-l '	72 Travel	_	λ)	_	74	_	772	_	TOTAL
Traveler J. William Greysh (Marricala)	_	in the same (10 an	ï	1 fersés	Т		г		г		Н	10124
Hotel Man Par Cigni	5	1,000,00	5	1,000,00	5	1,000,00	5	1,000,00	5	1 330 (-)	Т	
Meah and indental Exprines Per Dirin	5	522.50	5	522 50	5	527.50	5	527 50	5	522.50		
Flight Extrorate	5	3,500	5	3,500	5	3,500	5	3,500	5	3,500		
Na. Days	⊢	Ŀ	⊢	Ŀ	⊢	6	H	6	⊢	6	⊢	
No. Ir os per Year Fetai	Ι.	5 022,50	Ļ	5,022.50	Ļ	5,022.50	Ļ	5 022,50	Ļ	5 022,50	ς.	25.112.50
TELUI	,	2,022.20	•	2,022.30	•	2,022.20	í	2,022.30	•	3,322.20	,	25.212.30
traveler 2 - Whitney dagge [Montavia]												
Hotel Max Per Clam	5	3,000	5	3,000	5	3,000	5	3,060	5	3,000		
Meals are indepented Expenses Per Dieni	5	1.568	5	1,568	5	1.563	5	1.563	5	1.563	L	
Flight Estimate No Days	15	13,500	5	13,500 6	5	10.500 6	5	13,500	5	10.500	⊢	
No Trayer Year	╁	3	⊢	3	⊢		Н	i	Н	1	\vdash	
Toral	5	15 057 50	١,	15 057 50	١,	19 057 90	١,	15 057 50	١,	15 357 50	5	75 337 50
Traveler 3 Whitney Bagge (Held)												
Hatel Max Per Dicht	5	1,960	5	1,960	5	1,960	5	1,960	5	1,960	L	
Meals and indicental sypenses Per Clemi Hight Estimate	12	1,334	5	1,334	5	1.334	5	1.334	2	1.)}<	⊢	
Yo. Davs	ť	15	ľ	12	۲	15	ľ	15	ř	15	\vdash	
No. To po per Year	t	2	Н	2	Н	1	Н	1	Н	1	\vdash	
Tytui	5	3 234 00	5	3 294 00	5	3 234 (4)	5	3 234 69	5	3 294 (4)	5	16,470-00
Traveler 4 - Ico Pastein (Maricasa)												
Hatel May Per Did m Meals and indicental Expenses Per Did m	5	1,000 523	5	1,000 523	5	1,000 526	5	1,000 526	5	1,000 526		
Flight Estimate	3	3,500	3	3,500	3	3,500	3	3,500	3	3,500	⊢	
Na. Days	ť	E E	ŕ	E	ŕ	6	ŕ	6	ŕ	6	Н	
No Trips per Year		ι		ı		1		1		1		
retal	5	5 022.50	5	5 022.50	5	5 022 50	5	5 022 50	5	5 022 50	5	25.112.50
	F											
Traveler 4 - Emily (Months a) Hotel Man Per Clem	-	1,000	4	1,000	1	1,000	4	1,000	4	1,000	H	
Meals are independed Expenses Per Clem		523	3	527	5	523	5	523	5	523	Н	
Flight Estimate	ť	747	ŕ	- /./	ť	74.5	ŕ	74.7	ŕ	74.0	Н	
No Days		6		6		6		6		6		
No. Ir os per Year	L	l.	L	L .	L	1				1		
feter	5	1,322.50	٤	1,322.50	5	1,322.50	5	1,322.50	۴	1,522.50	S	7.512.50
Traveler 5 Emily (Ficial) Hotel May Per Claim	5	1.900	5	1,900	5	1.9úJ	5	1.9ú0	5	Sau	Н	
Meals and incremental expenses Per Clem	5	1.334	ś	1.334	5	1.334	5	1.334	5	607	\vdash	
- light Estimate	5	7,000	5	7,000	5	7,000	5	7,000	5	3,500	Т	
No Days		LS		LS		LS		15		LS		
No. To as per Year	L	5		S		1		1		:		
Total	5	10 234 00	5	10 204 00	5	10 294 69	5	10 294 09	5	5 147 (9)	5	46,321.00
Travelor 5 - Anianda Andro (Marrowa) Hatel May Per Dicin	l,	1.000	l,	1.000	l.	1.000	Ι,	1.000	l.	1.000		
Meals and indicental Expenses Per Dicht	ľ	522	ľ	522	ľ	525	Ġ	525	Ġ	525		
Flight Estimate	S	3,500	s	3,500	s	3,500	S	3,500	s	3,500	\vdash	
No. Days		Ŀ		Ŀ		6		6		6		
No Trips per Year	L	L .		L .	L	1		- 1	L	1	╙	
reta/	5	5 022,50	5	5 022.50	5	5 022 50	5	5 022 50	5	5 022 50	5	25.112.50
Traveler 7 - Rojani Roys (Montoja a)												
Hotel Man Per Cigni	5	1,000	5	1,000	5	1,000	5	1.000	5	1.000	Н	
Migals and indigental Expenses Per Oligin	5	523	5	523	5	523	5	523	5	523	Т	
Flight Estimate	5	3,500	5	3,500	5	3,500	5	3,500	5	3,500	1	
No Days		6		6		6		6		6		
No. Ir os per Year	Ι.		Ļ		Ļ		Ļ		Ļ		Ļ	
Travelor 8 International Conferences (BHA) I VB	1,	5,022,50 Vicina	r	5,022.50	r	5,022.50	r	5,022.50	r	5,022.50	ŀ	25.112.30
Hotel May Per Claim	5	1.026	5	1.989	5	1.989	5	1.989	5	3,315	\vdash	
Meals and indicental expenses Per Clem		488	5	722	5	732	5	732	5	1.220	Н	
-light Estimate	5	3,000	5	4,500	5	4,500	5	4,500	5	7,500		
No Days	Г	4		4	Г	4	Г	4	Ĺ	-4	Г	
No. People Attending Fethi	L	431400	5	3 221.00	5	7 121 62	5	3 221.62	5	5 12 335 (A)	Ļ	38.512.00
Traveler 9 - Cather he (Monravial)	ľ	4.514.00	ď	7 221 00	ľ	7 221 00	ď	7 221 00	ľ	12 335 (4)	5	35,512,00
Hatel Max Re- D. c. n.	ļ,	1,000	ļ,	1,000	ļ,	1,000	Ι,	1,000	١¸	1,000		
Meals and indicental Exponses Per Dicht	s	522	Ś	522	Š	526	Š	526	Ś	525	Ì	
Flight Estimate	S	3,500	s	3,500	s	3,500	s	3,500	s	3,500		
Na. Days	Г	Ŀ		Ŀ	Г	6	Г	6	Ľ	6	Г	
No Trips per Year	L	L	Ļ	L	Ļ	1	Ļ	1	Ļ	1	ļ.	
rotal	5	5 022,50 1 390,00	5	5 022.50	15	5 022 50	5	5 022 50	5	5 022 50 1 450 00	5	25.112.50
Visa Lees	5		Ė		Ť		Ť				-	
		2,000,00	5		5	2 000 00	5		5	2 000 (*)	F	

		71		72		73		74		75	
Pomeștii, Travel											JATOT
Travejer (- William Karest (NY-DC)			Г		Г		Т		Г		
Hatel Mai Pyr Ciem	15	502	5	502	5	502	5	502	5	502	
Meab and Incidental Exponses Per Dicini	15	239	3	235	5	735	5	715	5	235	
Transpartation Extinuate	ŀ	400	١,	400	5	400	5	400	5	400	
No. Days	ı	3	ı	3	l	3	ı	d d	ı	4	
No. 11 ps per Year	Т	ı	Г	L	Г	ı	Т	L	Г	L	
[clai	3	1,137,00	3	1,137.00	S	1,137.00	S	1,137.00	S	1,137.00	
Traveler 2 - Whitney Bappe (NY-IX.)	_		Г		Г		Г		Γ		
ratel Max Per Grem	ś	502	ś	502	5	502	5	502	5	502	
Meals and Indigental Expenses Per Grem	ś	20%	ś	20%	5	225	5	235	5	225	
Transportation Estimate	5	400	5	400	5	400	5	460	5	400	
No Days	Г	3	Г	3	Г	3	Г	3	Г	3	
No Trips per Year	Г	ı	Г	ı	Г	ı	Г	ı	Г	ı	
Forei	13	1 137 00	3	1 137 00	5	1 137 00	5	1 137 00	5	1 137 00	
Travel (+3) Carberner Machalaba (NY-DC)			ı		l		ı		ı		
- atel Ma• Per Diem	13	502	3	502	5	502	S	502	5	502	
Meals and Indigential Expenses Per Diem	3	23%	3	235	5	225	S	235	5	225	
Transportation Estimate	3	400	3	400	5	400	S	400	5	400	
No. Davs	Γ)))	L))	
No in payer Year	Γ	ι		ι		ı	Γ	ι		L L	
lotal	ś	1,137,00	Ś	1.137,00	5	1.137.00	- 5	1.137,00	-5	1.137.00	
Presenting Sympoth Milg ASTMH (Marylane)	Γ				Г		Γ		Γ		
notel Mar Pyr Crem	5		5		5	1.884	5	1.884	5	1,884	
Meals and Incidental Expenses Per Grein	5	994	5		5	994	5	994	5	994	
Transportation Extinate	5	1.600	3	1.600	5	1,600	5	1,600	5	1,600	
No Days	ı	4	ı	4	ı	4	ı	4	ı	4	
Feople Alterding	L	4	L	4		4	L	4		4	
felai	ş	4,479,00	3	4,478.00	S	4,478.00	S	4,478.00	S	4,478.00	
Prescriing Domestic Mig WDA (Tablee City)	Г		Г		Г		Г		Г		
r otel Max Per Grem	ś	1.80%	ś	1,80%	5	1.80%	5	1.80%	5	1.80%	
Meals and Indigental Expenses Per Glem	ś	1.098	ś	1.098	5	1.098	3	1.098	5	1.098	
Transportation Estimate	Ś	2,000	ś	2,000	5	2,000	5	2,000	5	2,000	
Na Days	Т	5	Г	5	Г	5	Г	5	Г	5	
Fecaple After-ling	Т	4	Г	4	Г	4	Г	4	Г	4	
Tg/mi	5	4.905.00	5	4.935.00	5	4.935.00	5	4.906.00	5	4.936.00	
Conference Registration Fees	1,	1,000,00	3		5	1,000,00	5	1,000,00	5	1,000,00	
YEARLY TOTALS	İŝ	13,795.00	۱ŝ	13,795.00	۱s	13,795.00	١ŝ	13,795.00	۱s	13,795.00	

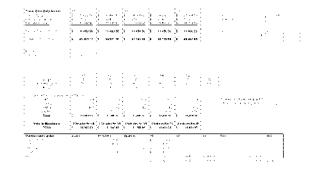
Morrova Other	
300	7.)
95	45

190 single entry, 200 molt olej

Georgetown	21	Y2	Y3	OY1	CAS	Total
V1 Y2 Y3 OY1 OV2 Base A. Seniur/Key Personnel						
1 2 0.6 1.2 0.6 1.2 S 126 191 20 Claire Standley, Assistant Professor (Co Investe 5 10 919.10	3 5 517 74	5 11 256 19	5 5.743 08	5 11.713.94	5 45 044 63
Claire Standley France	9 3 505 39	\$ 1.797.75	\$ 3.647.01	\$ 1,859.97	\$ 3,794.35	\$ 14.584.48
1.2 9.6 3.6 6.5 0.5 5.114.767.30 Spin Sovell, Assistant Professor (Co-l	07 874 11 3 oten sew	5 5 853 12	5 5 970 19	5 5,039 59	5 6,211 37	5 35 630 95
Fringe Rate-> 32% Erin Soriel Fringe	5 3718,48	5 1 896 41	\$ 1934.34	\$ 1,973.02	\$ 2.012.49	5 11 534 71
Talal Senitrikey Personne	5 29 519,84	3 15 055 33		\$ 15,080.24	\$ 20,729.15	5 106 774 78
Y: Y2 Y3 DY1 OY2 Sasc B. Other Personnel						
Research Assistant						
Total Other Personnel	5 -	5 -	s -	s ·	S .	5 ·
C Equipment	i i	1	1	1	1	'
folal Equipment	9 -	\$ ·	š .	š .	S .	9 .
D Travel	T T	1	T .	Ť	Ť	•
1 Domestic Travel						5 .
2 Fore an Fravel	5 7 769.00	3	5 2 2/2 52	ls	S 7,789.60	5 18 8 (0.50
Total travel		\$ ·	\$ 3.272.50	3 .		\$ 18,810,50
E. Participani/Tremes Support Costs		ľ		ľ	T	
1 To conflees death insurance					-	5 .
2 Streets						
3 Total						9 .
4 Sulfeiste noe						5 .
5 Other						5 .
Total Fart county raince Support Costs	. 6	3	s	s	's	· .
F. Other Direct Costs			-	_	r –	
* Materials and Supplies	E 150 20	5 50.20	S 150 43	s .	5 9529	5 446.00
2 Publication Cos.s		/ 00-20	0 100 10	ř		5 .
2 Consultant Services						
4 ALP/Norpular Sarvices			-	<u> </u>		9 .
5 Subakards/Consection/Contraction	I Cosis			 		5 .
6 Egophien, or Facility Renia (User C						5 .
/ Aterations and Renovations	ee,					
# Ding - Talacanyun salons	\$ 200.00	\$ 50.00	\$ 50,00	\$ 50.00	\$ 200.00	\$ 550,00
§ One	* 71.0 .II.	J	4	4 33.53	\$ 70.1·XI	5
Total Other Direct Costs	5 350.20	5 100 20	\$ 200.40	S 50.00	\$ 295.20	5 996 00
G. Direct Costs and Modified Direct Co		3 130 20	3 250.45	3 3363	1 295.39	. 290 55
Direct Coals	9 07 608 94	\$ 15 155 22	\$ 26 290 62	\$ 15,713.24	\$ 31,793.35	\$ 126.581.26
Modified Direct Costs	\$ 31 336 34	3 10 100777	\$ 21: 231. 32	\$ 13,113.2~	\$ 31,194.34	\$ 1211.00 ZH
H Indirect Coata			_			
DC Rule > 56% Indirect Cast Type	5 20 989,56	3 041114	S 14 595 74	S 9,723 65	5 17.645.31	\$ (0.050.80)
EC Rale > 2 Indirect Cast Type	2 30 989.38	3 241114	2 14 322 72	3.72363	2 17.243.31	9 70 232 03
I. Total Direct and Indirect Costs				_		• •
Died + hylice:	7 56 576 36	5 27 556 36	S 1L 526 32	5 24 434 03	5 49,435 65	
J. Fee	1 00 020 38	, 20 aan at	0 *t nat 3a	3 24.55 (9	1	.
S. ree		-				
K. 10tal Costs and Fee		-	-			
R. Total Costs and Fee		5 23 556 36		l		

C											_	
Supplies	- 110	mt/Armma F			٧,		Υ.)		Ç,	r)	121	
Encrypted signaco device (unit)	9	22.00 0.85	5	55 99			ś					
Prins (dezen)		.006	5	10 30	٠	10.20	2	20.40			3	10.28 30.00
1153 Croses (cmt)	5			15.77	,		6	arne			- 5	
Notygogo (In C	5	: 00	5	40.00	ź	25 00					- 5	25/00
Princing (bage)	9	0.25	5		3	25 00	5	100 00			S	40,00
TOTALS	_		ś	150 30	:	EC 20	Ś	150 40			3	95.20
Telecommunications		mt/Armma F			Ye		Υ.)		ar		62	
Sweetammunications Sweetamental	-	23.00	ŝ	25 33	1	25 00	Ś	25-30	3	25 CO	Š	25,00
Cel Pho vilo i acciloriti	5	30 OC	5	50 00	÷	25 ()	,	25 30	÷	25 (0	2	29.33
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Claire Standley: PC Monroy a	ı.	interni	i i	nai iraye	ï				ı		•	TOTAL .
-ctr May Par Diam	-	300 OC	5	200 00	:	200 CC	ś	200 00	ŀ	200.00	_	
Heis Total	5	1,300.00	5	200 33	÷	200.00	3	200 00		1,000 00		
Mes v & Incidents - Per Direct	5	95.00	5	95.33	1	25.66	3	95.30	1	25.60	_	
646 - 8 to conta Per Dies	R	522.00	Ľ.	15.00	3	W til.	٠,	45.00	3	18 121		
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Total	s	512.00	s		1		ś		ī	612 00	3	1,224.00
	_	Intern	alice	nal Trave	ī				_			TOTAL
Unit Alth Morrows	1		1		1		:		ı		•	
ricte Max Per Diem	9	70.00	15	70.00	2	ac cc	's	70.00	2	70.00	•	
Heic Total	s	380 00	s		1		ś		1	580.00		
Mes s & Imments - Per Direct	5	46.00	5	46.00	5	46 00		45.00	5	46 (.0		
6481 Lylul	15	200.00	15		3		3		3	207.00	•	
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Fight list mate	Ť								Ť			
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Be trospersour	1	1	1		1	3	•	10	ı	1		
le:si	9	502.00	15		12		·s		2	612 00	٠,	1.224.00
Vina Fors	5	150.00	Ť		Ť	75 CC			Ť		_	
TOTAL	5	1,161.00	s	-		1,272.50	\$	-	\$	7,769.00	\$	18,810.50

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Sampling regime

			Sampling	; regime							
	Specimen	Year 1	Year 2		Year 3		Year 4		Year 5		Subsocal
Human Monrovia & Phebe	Furnan blood	150	675		675		D		. 0		1500
Heman Montevia & Phebe	Fuman N/P	150	675		679		0		0		1900
Human Nimba & Lofa	Furnan blood	a			U		600		150		750
Haman Nimba & Cola	Human N/P	0	0		0		600		150		750
Community samples for serology	Furnan blond		63	(3 comm)	42	12 comm)	47	(2 comm)	21	(1 comm)	198
	Human individuals subtotal	150	675		675		600		150		2250
	Human specialers supported	300	1350		1350		1250	•	300		4500
	Bat, redent blood	300	. 0		U		0		. 0		300
Existing PREDICT samples (no sampling costjust lab)	Bat, rodent ora / Nº	300	. 0		0	1	0	•			3cn
	Bat, redent letal	300	. 0		U		D		, D		200
	All species blood	940	0		0		0		0		(40
Animal prefim [Y1]	All voeces riral/NP	940	a		U		D		D		640
	All species fecal	540	U		U		0		U		6/10
	Al voeces		1200		800		800	•	400		3700
Animal targeted community sampling (YZ-5)	All scedies oral/NP	υ	1200		008		400		400		2800
	All species fecal	. ,	1200		cus	1	400	•	400		2800
	Animal individuals suptate!	540	1200	(3 comm)	800	(2 ramm)	800	(2 comm)	400	(1 contrn)	3840
	Animal specimens sobtotal	2560	4800		3200		2400		1600		14990
Annual subtoral specimens		2860	5150		4550		3600		1900		19050
			Lab regime	& budget					_		
	1		Jan 10g				, ,		т —		

Rough
Workflow

٧	Item (green animal, blue human)	Unit cost (\$)	Units/Year 1	5	Units/Year 2	\$	Units/Year 3	\$	Units/Year 4	\$	Units/Year 5	\$		
	NGS Amplised on PREOICT samples	300	100	30000	0	0	0	0	G C	C	0	0	20,000	
	Bercoding (5% Y), pats and rodents)	250	16	4000	U	0	0	0	C	c	IJ	U	4,000	
	TAC (AFI) on human blood samples	65	0	С	675	43875	675	43875	600	39000	150	9750	136,500	
	Single-plex real-time PCR on N/P samples	15	Ü	0	30375	4556 25	3037.5	4556.25	2790	6834 375	6/5	1012.5	16,959	
	Specific real-time PCR on positives (expect 10%)	15	0	c	607.5	911 25	607.5	911.25	60	50	135	202.5	2.115	
	NGS Amplised on all viral-positive human samples						l							
	[\$ 10%] and 10% of negative human samples	300	0	c	90	27000	90	27000	50	24000	20	5000	54,000	
	Specific antibody EUSAs on follow-up human													
	samples (positive humans plus 20 neighbors)	16	υ	С	6675	33375	647.5	32375	190	5000	155	7750	78,500	
	Specific antibody EUSAs (animal) (all animals,		l .						I .					
	average 5 tests each)	10	940	6400	1200	12000	CUS	8cm	800	8000	400	4000	38,400	
	NGS (animal) (10% of animals)	300	21.33	6400	40	12000	26.67	5000	25.67	8000	13.33	4000	25,400	
	Single-plex PCR for confirmation of NGS positives													
	(expect 10%)	15	2.13	3.2	4	6	2.67	4	2.67	4	1.33	2	19	
	New EUSA reader	3000	1	3000	а	::	D	a	D	D	υ	υ	3,000	
	Plate shaker	1000	1	1000	9	3	n	9	D	D	n	0	1,000	
	Mastermix	552	2	1104	2	1164	2	1104	2	1104	2	1104	5.520	
	Misc consumables	1	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	15,000	
		TOTAL	S	54,997	S	137,827.50	5	128.825 50	s	95.032 38	S	36,821.00	\$ 453.414	

\$ 128,825.50 \$ 36,821.00 \$ 54,907 \$ 137,627.50 5 95,032.38

				LCRP	97		Y2	Y3	DYL	OY2	Total
Y3	OY1	GY2	Base	A. Seo or Key Personnel							
E	E	9	\$ 135,000 00	Jim Desmond, Gallinvestigator	\$ 67,500	ÜΟ	\$ 67,500 00	\$ 97,500,00	\$ 67,000,00	\$ 67,500,00	\$ 557,500,00
		Ennçe Hale in			S		S	2	.5	3	S
				"alal Seriot:Key Personne	\$ 07,500	ίω	\$ 67,500 00	\$ 67,500,00	\$ 87,000,00	\$ 67,500,00	\$ 557,500,00
				B. Other Personnel			ſ	-]		
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				Total Other Personnel	s .		5 .	<u>.</u>	S -	S -	s .
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				Total Equipment	5 .		5 -	5 -	`t -	5 -	5 -
				D Travel							
				1. Dorvesko Travel	S .		ş .	ş .	Ş .	S .	s .
				2. Foreign Travel	\$ 8,3121		\$ 8312.00	\$ 8,312.00	\$ 8,312.00	\$ 8,312,00	\$ 41,566.00
				Total Travel	\$ 8,3121	00	\$ 8312.00	\$ 8,312.00	\$ 8,312.00	\$ 8,312,00	\$ 41,560.00
				E. Parlippant France Support Sosts							
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				1. Materiata and Supplies	5 2 126	(9)			_		5 2.126.00
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				3 Consultant Services							s .
				4. ADP-Computer Services							s .
				 Supawares-Consortium/Contractual Costs 							S
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				G. Direct Coats and Modified Direct Coats	1		1	•	1		
				Carect Costa	5 77 338	(4)	5.75,812.00	5 75,812 00	£ 75 £12 CC	5 75 812 00	5.581,186.00
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				F. Indirect Costs							-
		DC Rate>	70.003	Lindecol Cast Type	\$ 7,703	80	3 7 58 1 20	\$ 7,581.20	5 7 981 20	\$ 7,081,20	\$ 35,118.60
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				I. Total Directions indirect Costs	_						
				Direct + Indirect	\$ 85.7113	tu I	\$ 84,003,23	\$ 90.395 20	\$ 92 390.20	\$ 83 500.00	
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ECOHEALTH ALLIANCE DOCUMENTATION TABLE OF CONTENTS

SALARIES	1
TRAVEL	2
OTHER DIRECT COSTS	4

Paygroup: 5D7 Paygroup Name: Ecohealth Alliance Inc Report: Earnings Record Check Dates From: 01/31/2020-1 To: 01/31/202

01/31/2020	Andre, Amanda	000083	Regular	\$ 56,879.44 \$ 59,	723.41
01/31/2020	Bagge, Whitney	100097	Regular	\$ 82,000.08 \$ 86,	100.08
01/31/2020	Epstein, Jonathan	100002	Regular	\$ 166,818.72 \$ 175,	159.66
01/31/2020	Hagan, Emily	100030	Regular	\$ 64,521.12 \$ 67,	747.18
01/31/2020	Karesh, William	100015	Regular	\$ 277,344.00 \$ 291,	211.20
01/31/2020	Machalaba, Catherine	100016	Regular	\$ 81,795.12 \$ 85,	884.88
01/31/2020	Ross, Noam	000068	Regular	\$ 93,000.00 \$ 97,	650.00

PAYMENT INFORMATION

Amanda Andre

460 W 34th St 17th Floor

New York, NY 10001

\$398.00 Mastercard ending (b)(4)

Amtrak Total: \$398.00

New York, NY - Penn Station to Washington, DC - Union Station

Mon. Feb 24, 2020- Mon. Feb 24, 2020

(1) 2h 51m TOTAL TRIP TIME

\$215.00

Included

\$183.00

Mon. Feb 24, 2020

New York, NY (NYP)

Washington, DC (WAS)

Washington, DC (WAS)

VALUE FARE

1 Adult

2151 Acela

9:00 am

11:51 am

1 Business Class Seat

2h 51m

Mon. Feb 24

Mon. Feb 24

2h 49m TOTAL TRIP TIME

Washington, DC - Union Station to New York, NY - Penn Station

Thu. Feb 27, 2020- Thu. Feb 27, 2020

New York, NY (NYP)

VALUE FARE
1 Adult

2160 Acela

10:00 am

12:49 pm

1 Business Class Seat Included

Physical Arms

Thu. Feb 27

Thu. Feb 27

COMPLETE PURCHASE

CANCEL

Thu. Feb 27, 2020

\$486 6:29 PM - 11:58 PM 8h 29m 1stop United EWR RNO 1º 1m SEO round thp 4:25 PM - 9:58 PM 8h 33m \$527 1stop American JEK RNO 49m PHX round trip 6:00 AM - 12:52 PM 9h 52m \$528 1stop America - Operated by Compass Air ines as America - ULK RNO 1º 51m LAX round trip 4:57 PM - 9:58 PM 8h 1m 1stop \$530 American EWR RNO 33m PHX round trip 1:25 PM - 6:38 PM 8h 13m \$577 1stop JIK RNO round trip American 36m PHX 7:45 AM - 12:37 PM 7h 52m \$781 1 stop United LGA-RNO 1º 2m DEN round trip



* INVOICE *

CITI Program, a division of BRANY 1981 Marcus Avenue, Suite 210 Lake Success, NY 11042 888-529-5929 Option 4 (US Toll Free) +1-305-907-3097 (Outside US) admin@citiprogram.org

Contact Information		Date			Number		
EcoHealth Alliance Melinda Rostal 460 W 34th St., 17th Floor		5/3/2018			SO20181284		
New York, NY 10001		P.O. No.		Terms			
				Du	e on receipt		
NOT-FOR-PROFIT REGULAR SUBSCRIPTION (One Year) Unlimited access to CITI Program series including Human Subje Research (HSR), Good Clinical Practice (GCP), Information Priv Security (IPS), Animal Care and Use (ACU), and Responsible Co Research (RCR) including the Conflicts of Interest (COI) course module setup fees will apply for institution-specific modules). PAYMENT OPTIONS: 1 CHECK PAYMENTS: Please make check payable to CITI Pr division of BRANY, and mail to the address listed above. 2 CREDIT CARD PAYMENTS: Please complete the Credit Ca Authorization Form and submit by fax to (844)529-5929. To acce form, click here or copy and paste the link below: https://www.citiprogram.org/citidocuments/ccafpdf.pdf 3 ELECTRONIC FUNDS TRANSFER PAYMENTS: To reque information for EFTs, please email: admin@citiprogram.org and title: EFT Information Requested. Case #373112	racy and onduct of (custom rogram, a and cess the	1	3	5,500.00	3,500.00		
This offer will expire SIX MONTHS from the date listed above		Total			\$3,500.00		

Bag



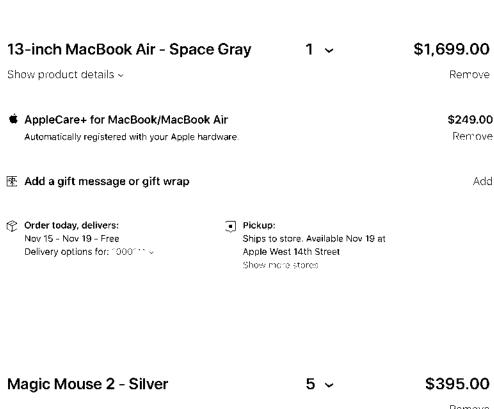
Computer (with AppleCare), mouse and keyboard unit: \$2126 each

Here's what's in your bag.

Get free shipping and free returns on all orders.

М	lagic Keyboard - US English		5 ~	\$495.00 Remove
<u>*</u>	Add a gift message			Add
¢	Order by 5pm, delivers: Today within 2 hours - Fastest Thu, Nov 7 - Free Delivery options for: 1000111	•	Pickup: Today at Apple West 14th Street Show more stores	







Remove

Paygroup: 5D7 Paygroup Name: Ecohealth Alliance Inc Check Dates From: 11/29/2019-1 To: 11/29/2019-1 Report: Earnings Record

11/29/2019	Carlin, Ellen	100091	Regu	lar	5,850.00	\$ 140,400.00
Hourly Rate a	t termination		\$	68.18		
Add 10% over	head, benefits,	et.	\$	75.00		

2020 IRB Fee Schedule New England IRB



Services Rendered	Cost
Initial Review Initial Study Review (includes protocol, study materials and 1 Consent Form) Review of Central Principal Investigator (PI)/Change of PI/Co-PI Non-Scheduled IRB Meeting	\$1,449 \$851 / PI \$1,995
Each Additional Informed Consent Form (ICF) (per ICF / per PI) Canadian Protocol Level Review	\$373 \$1,449
Continuing Review Continuing Review of Study Continuing Review of Central Principal Investigator Ongoing Oversight (non-exempt research not requiring continuing review) Change to Research After Initial Review New / Revised Informed Consent (per consent) Protocol Amendment / Clarification Letter (No Revision to ICF) Protocol Amendment (With Revision to the ICF)	\$1,126 \$875 / PI \$630 / PI \$402 / PI \$440 / PI \$537 / PI
Review of Revised Product Information (i.e. Clinical Investigator Brochure, Package Insert, DSMB reports)	\$255 / Document
Review of Recruitment Services & Supplemental Materials (Per Document) Distribution/Processing Fee	\$303
Translation Services Translation Review Administration Fee Distribution/Processing Fee Translation Vendor Facilitation (when WCG Preferred Vendor is not Used)	\$130 / PI Variable \$318 / Submission \$130 / PI \$100 / PI
Close Out of Research Study Close Out – Study Level Principal Investigator Close Out Other Services and Fees	\$318 \$265 / PI
Site Visit Duplication Request/Retrieval (Per Document) Administrative Fee for Submission not Using Connexus/IRBNet Master Protocol / Complex Design Protocol Review IRB Exemption Review New or Modified Generic or Non-Protocol Related Material (for sites/institutions) Annual Review of Generic or Non-Protocol Related Material	Cost Plus \$1,166 \$212 \$75 / Submission Contact BD \$1,097 \$911
Clinical Trial List Service (Per Study) – Optional Service Clinical Trial List Service Annual Renewal (Per Study)	\$911 \$2,500 \$1,000

TERMS: Net 30 days unless otherwise agreed to in writing. Late payments may be subject to a monthly finance charge of 1.5% of the amount owed from the due date until payment in full. WCG shall be entitled to recover all reasonable attorneys' fees, costs and expenses associated with any efforts to recover payment for overdue invoices. Fees are subject to change without notice.

Effective: January 1, 2020



2823 Carlisle Ave. Racine, WI 53404 p. (800) 342-4222 f. (800) 440-5036

Software Fees

Quotation

Quote #	115815
Terms	NET 30
	Megan Walsh
Contact	walsh@ecohealthalliance.org
	(212) 380-4462
Quote Date	8/19/2019
Expires	8/26/2019

tom.haven@ccbtechnology.com

Sales Rep: Tom Haven p. (800) 342-4222

EcoHealth Alliance Megan Walsh 460 W 34th St FL 17 New York, NY 10001 UNITED STATES (212) 380-4462 walsh@ecohealthalliance.org

EcoHealth Alliance Accounts Payable 460 W 34th St FL 17 New York, NY 10001 UNITED STATES (212) 380-4462 walsh@ecohealthalliance.org

EcoHealth Alliance Megan Walsh 460 W 34th St Fl 17 New York, NY 10001-2317 UNITED STATES (212) 380-4460 walsh@ecohealthalliance.org

Ado	be subscription renewal					Electro	nic Delivery	
Adobe subscription renewal								
l	Adobe Acrobat Pro DC for Teams 12 month subsrenewal		\$177.00	\$4,425.00	2019-	09-18	2020-09-17	
15	Adobe Creative Cloud for Teams 12 month subscrenewal	cription	\$370.00	\$5,550.00	2019-	09-18	2020-09-17	

Sub Total: \$9,975.00

Shipping and Handling: \$0.00 Tax Rate: (0.08875) \$0.00

Total \$9,975.00

Please note:

Return policies vary per manufacturer. (Apple and McAfee both have a no returns policy)

Custom configured items/built-to-order items are non-returnable.

Start dates and end dates for renewals may change based on the manufacturer's guidelines, policies, renewal order date, or date of activation.

Price is subject to change based on potential fluctuation of trade tariff regulation.



Dropbox Inc. 333 Brannan Street San Francisco, CA 94107 United States billing-support@dropbox.com

Invoice for EcoHealth Alliance

то	DATE	INVOICE ID
Megan Walsh walsh@ecohealthalliance.org 10001 United States	February 25, 2019 6:50 AM GMT	SLSWTLNSKN5J

PRODUCT	PRICE	DISCOUNT	AMOUNT
Dropbox Business Advanced Plan (includes 3 licer	nses) + 60 Additional Licer	nses +	
Unlimited API Call Rate Limit + Unlimited Extende	ed Version History (2/25/2	1019 to	
2/25/2020)			
Dropbox Business Advanced Plan (includes 3	\$600.00	30%	\$420.00
licenses)			
60 Additional Licenses	\$12,000.00	30%	\$8,400.00
Unlimited API Call Rate Limit	\$0.00	30%	\$0.00
Unlimited Extended Version History	\$0 .00	30%	\$0.00
Total			\$8,820.00

All amounts shown are in USD.



Clarivate Analytics

Philadelphia, PA 19130 1500 Spring Garden Street, Suite 400 Philadelphia, PA 19130

To: Megan Walsh, Department Head, EcoHealth Alliance

Re: Your EndNote X9 Upgrade License Quote

Sent by e-mail: 10/16/2018

Thank you for your interest in our products. Please accept this letter (via e-mail) as our quote for Endnote X9.

License Type	Total Users	Total Price (excludes state tax, if applicable)
Endnote X9 Upgrade License (US\$99.95 each)	40	US\$3,998.00

Promotional Pricing Valid 11/16/2018

Purchasing Instructions:

If applicable, send Bill Durant your institution's Tax-Exempt Certificate for your state's tax to be excluded from your order

Contact Bill at 215-823-1797 or william.durant@clarivate.com to receive EndNote.

Premium access to EndNote Web – **Free**Training and support - \$0.00 – **Free**Shipping – Digital Download - \$0.00 – **Free**

You may place your order on a purchase order (terms are Net 30), by check/money order drawn on a U.S. bank or Visa/MasterCard/American Express.

Regards,

Bill Durant
Account Manager
(215) 823-1797
William.Durant@clarivate.com



2823 Carlisle Ave. Racine, WI 53404 p. (800) 342-4222 f. (800) 440-5036

Invoice IN88282-1

Order #	88282	
Terms	NET 30	
	Megan Walsh	
Contact	walsh@ecohealthalliance.org	
	(212) 380-4462	
Invoice Date	4/11/2018	
Due Date	5/11/2018	

Sales Rep: Tom Haven tom.haven@ccbtechnology.com p. (800) 342-4222

EcoHealth Alliance
Megan Walsh
460 W 34th St FL 17
New York, NY 10001
UNITED STATES
(212) 380-4462
walsh@ecohealthalliance.org

EcoHealth Alliance
Accounts Payable
460 W 34th St FL 17
New York, NY 10001
UNITED STATES
walsh@ecohealthalliance.org
(212) 380-4462

CCB Technology Accounts Receivable 2823 Carlisle Ave. Racine, WI 53404 (800) 342-4222

(:	10) C	Office 2016 Standard Ed	dition licenses		Per Phone		
_							
	1	Microsoft Corporation	021-10552	10	Microsoft Office 2016 Standard Edition license	\$94.00	\$940.00

Sub Total: \$940.00

Shipping and Handling: \$0.00 Tax Rate: (0.00000) \$0.00

Total \$940.00

Credits/Payments: \$0.00 **Total Due:** \$940.00

Shipping Location

	I		
	EcoHealth Alliance Megan Walsh 460 W 34th St Fl 17 New York, NY 10001-2317 UNITED STATES	10	\$940.00
1	(212) 380-4460 walsh@ecohealthalliance.org	10	\$540.00

Shipping Detail

ppg			
4/10/2018	Microsoft Corporation	021-10552	

Tracking Numbers

4/10/2010	l O-1	DATOTHAL ALLE COLORS OF ALL CARE ME
4/10/2018	Other	VIRTUAL (Unrecognized Number)

Please note:

Return policies vary per manufacturer. (Apple and McAfee both have a no returns policy)

Custom configured items/built-to-order items are non-returnable.

Start dates and end dates for renewals may change based on the manufacturer's guidelines, policies, renewal order date, or date of activation.



AlticeBusiness.com

Monthly Summary	Page 1 of 2
Account Number	52804
Invoice Date	11/01/19
Invoice Number	100207378
Previous Balance	\$3,934.66
Current Charges	\$3,931.54
Total Amount Due	\$3,931.54

Total Amount Due December 1, 2019

To contact Altice Business, please call (866) 611-3434 or (516) 803-6000, or feel free to e-mail us at Care@AlticeUSA.com

Enhanced Caller ID!

Altice Businesses newest enhancement is now included in Altice Business Voice services at no additional cost. Not only do we help take the guesswork out of who?s calling you, but now we can help detect robocalls too.

Visit the Customer Portal

View your invoice, service inventory, pay online, see Call Detail reports and more. Simply go to portal alticebusiness.com. New access is available through the Request Access button. In person payments can no longer be accepted.

ECOHEALTH ALLIANCE

Usage From: 10/01/19 - 10/31/19

Important Messages:

New! Call Recording is now available for Business Hosted Voice services. Contact your Account Executive for details.

New York Sales Tax Breakdown For Our Common Bundles Internet/Voice Bundle

66% of the total charge is attributable to internet access service and 34% is attributable to voice service. For purposes of calculating the NY sales tax, 24.5% of the voice fee is attributable to interstate/international service.

Toll Free Bundle or Audio Conference Bundle

For purposes of calculating the NY sales tax, 76% of the fee is attributable to interstate/international service.

Enterprise Voice Bundle

For purposes of calculating the NY sales tax, 24.5% of the fee is attributable to interstate/international service.



3720 0010 NO RP 03 11032019 NNNNNN 01 001813 0004



ECOHEALTH ALLIANCE	Page 2 of 2
Account Number	52804
Usage From	10/01/19 - 10/31/19

PAYMENTS, CREDITS AND ADJUSTMENTS:

Description	Total
10/22/2019 Payment - Thank You	-3,934.66

SERVICES:

Description	From Date - To Date	Qty	Non-Recurring	Recurring	Total
Managed Router	11/01/2019 - 11/30/2019	1	\$0.00	\$0.00	\$0.00
100Mb/50K Internet/Voice Bundle	11/01/2019 - 11/30/2019	1	\$0.00	\$3,549,00	\$3,549.00
Primary Rate Interface - ISDN	11/01/2019 - 11/30/2019	1	\$0,00	\$0.00	\$0.00
DID Reserve 20 Numbers - 3 yr	11/01/2019 - 11/30/2019	7_	\$0.00	\$60.00	\$60.00
TOTAL SERVICE CHARGES			\$0.00	\$3,609.00	\$3,609.00

TAXES AND SURCHARGES:

Description	Total
911 Surcharge(s) Federal Excise Tax Local Utility Gross Receipt Tax MTA Surcharges State and Local Gross Receipts Taxes Universal Service Fund Surcharge	24.00 1.92 82.76 27.71 112.22 73.93



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- 1. The study presents the results of original research
- 2. Results reported have not been published elsewhere.
- 3. Experiments, statistics, and other analyses are performed to a high technical standard and are described in sufficient detail
- 4. Conclusions are presented in an appropriate fashion and are supported by the data
- 5. The article is presented in an intelligible fashion and is written in standard English
- 6. The research meets all applicable standards for the ethics of experimentation and research integrity.
- 7. The article adheres to appropriate reporting guidelines and community standards for data availability.

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Give Feedback

From: Joe Riccardi To: (h)(6) William B. Karesh; Aleksei Chmura; Amanda Andre; Catherine Machalaba Cc: Re: [Non-DoD Source] Re: FRBAA14-6-2-0436 Clarifications Subject: Date: Friday, May 8, 2020 1:13:05 PM All active links contained in this email were disabled. Please verify the identity of the sender, and confirm the authenticity of all links contained within the message prior to copying and pasting the address to a Web browser. Good Afternoon(b)(6) All salaries for key personnel are increased annually by 5% due to the exceptionally high cost of living increases in New York City where we are headquartered. EcoHealth Alliance bases this calculation on the Consumer Price Index plus an annual merit increase. Cheers Joe On Thu, May 7, 2020 at 3:56 PM Caution (b)(6) > wrote: Good afternoon and I hope all is well. Can you please explain in detail further about the 5% cost of living increase per year. ----Original Message-----From: William B. Karesh@ecohealthalliance.org < Caution-mailto:karesh@ecohealthalliance.org > > Sent: Friday, April 17, 2020 5:10 PM To: (b)(6) Caution(h)(6) Cc: Joseph Riccardi <riccardi@ecohealthalliance.org < Caution-mailto:riccardi@ecohealthalliance.org > >; Aleksei Chmura chmura@ecohealthalliance.org chmura@eco Andre <amanda.andre@ecohealthalliance.org < Caution-mailto;amanda.andre@ecohealthalliance.org > >; Catherine Machalaba <machalaba@ecohealthalliance.org < Caution-mailto:machalaba@ecohealthalliance.org > > Subject: Re: [Non-DoD Source] Re: FRBAA14-6-2-0436 Clarifications All active links contained in this email were disabled. Please verify the identity of the sender, and confirm the authenticity of all links contained within the message prior to copying and pasting the address to a Web browser.

Dear(b)(6)

The field work refers to all project activities outside of Monrovia. We will be working in health care settings in rural areas in Bong County, Liberia and in small communities in the county. Thus we used the "other" category in the US State Department rate guide for activities outside of Monrovia. We used the same approach for are work over the last few years for USAID funded projects in Liberia.

Plan let us know if you would like additional information.

William B. Karesh, D.V.M Executive Vice President for Health and Policy

EcoHealth Alliance 460 West 34th Street - 17th Floor New York, NY 10001 USA

- +1.212.380.4463 (direct)
- +1.212.380.4465 (fax)

Caution-Caution-www.ecohealthalliance.org < Caution-<u>http://Caution-Caution-www.ecohealthalliance.org</u> > < Caution-Caution-<u>mailto:karesh@ecohealthalliance.org</u> < Caution-<u>mailto:karesh@ecohealthalliance.org</u> > >

President, OIE Working Group on Wildlife

Co-chair, IUCN Species Survival Commission - Wildlife Health Specialist Group

EPT Partners Liaison, USAID Emerging Pandemic Threats - PREDICT-2 Program

EcoHealth Alliance develops science-based solutions to prevent pandemics and promote conservation.

	On Apr 17, 2020, at 10:46 AM (b)(6)		
Caution	o)(6)	Caution-Caution	(b)(6)	
Caution(b)(6)	>> wrote:		

Good Morning and I hope all is well.

I do have a question as I am working on this. You stated "Flights for each of these trips is estimated at \$3,500 and the federal per diem rates of \$200 for lodging in Monrovia, Liberia and \$70 for field work as well as the \$95 for meals in Monrovia, Liberia and \$46 for field work are requested". I noticed that you used the Per diem rates for Other, Liberia from the US State Department. Can you tell me what the field work entails?

< Caution-Caution-mailto:chmura@ecohealthalliance.org < Caution-mailto:chmura@ecohealthalliance.org > >>;
Amanda Fuchs <amanda.andre@ecohealthalliance.org < Caution-mailto:amanda.andre@ecohealthalliance.org >
Caution-Caution-mailto:amanda.andre@ecohealthalliance.org <</p>
Caution-mailto:amanda.andre@ecohealthalliance.org > >>;
Catherine Machalaba
<amanda.andre@ecohealthalliance.org > <amonda.andre@ecohealthalliance.org > <amonda.andre@ecohealthallia

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Dea (b)(6)

Please find attached the documentation requested for our FRBAA14-6-2-0436 cost proposal. We have responded to the clarification questions and indicated both the document and page number where the full documentation/justification can be found. For each partner we have provided two files:

- a) PDF document of our updated justification using tracked changes according to the current costs for all items based on the documentation.
 - b) PDF of the documentation that was requested on the clarification sheet.

Also included, an excel spreadsheet that includes our calculations for all costs and all partners corresponding to our updated justifications and documentation. Necessarily and following the documentation now provided, various costs have changed since our initial submission and our budget has been updated accordingly.

Our overall budget request is 4,899,297.20 with the annual amounts as follows:

Y1: \$993,001.53 Y2: \$979,399.40 Y3: \$997,585.93 OY1: \$962,036.71 OY2: \$ 967,273.63

	Please e-mail or call if anything else is needed.
	Cheers,
	Joe
	Joseph Riccardi Manager of Budget and Finance
	EcoHealth Alliance 460 West 34th Street – 17th floor
	New York, NY 10001 1.212.380.4494 (direct)
(t	(mobile)
Caution-J	1.212.380.4465 (fax) Caution-Caution-Caution-www.ecohealthalliance.org < Caution-http://Caution-Caution-Caution-Caution-ohealthalliance.org > < Caution-Caution-www.ecohealthalliance.org > < http://caution-Caution-Caution-www.ecohealthalliance.org > < Caution-Caution-http://www.ecohealthalliance.org/ > < Caution-Caution-http://www.ecohealthalliance.org/ > < Caution-Caution-http://www.ecohealthalliance.org/ > > >
	EcoHealth Alliance develops science-based solutions to prevent pandemics and promote conservation.
Joseph R Manager	iccardi of Budget and Finance
460 Wes	th Alliance t 34th Street – 17th floor rk, NY 10001
	0.4494 (direct)
(b)(6)	(mobile)

1.212.380.4465 (fax)

EcoHealth Alliance develops science-based solutions to prevent pandemics and promote conservation.

From: Joe Riccardi

To: (b)(6)

Cc: William B. Karesh; Aleksei Chmura; Catherine Machalaba; Amanda Fuchs

Subject: [Non-DoD Source] FRBAA14-6-2-0436 Clarifications

 Date:
 Tuesday, March 31, 2020 3:18:56 PM

 Attachments:
 FRBAA14-6-2-0436_Clarifications.xlsx

DTRA Liberia Budget FINAL .xlsx
Budget Justification EHA.pdf
EHA Documentation.pdf
Budget Justification SCNL_.pdf
SCNL Documentation.pdf
Budget Justification NPHIL.pdf
NPHIL Documentation_.pdf
GU-CGIIS Budget Justification.pdf
LCRP Documentation.pdf
GU-CGHS Documentation.pdf

Dear(b)(6)

Please find attached the documentation requested for our FRBAA14-6-2-0436 cost proposal. We have responded to the clarification questions and indicated both the document and page number where the full documentation/justification can be found. For each partner we have provided two files:

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Please e-mail or call if anything else is needed.

Cheers,

Joe

	DTRA Questions	EHA Responses	Documentation
1	Please provide documentation to support the proposed salaries (key and other personnel)	Please see the attached documentation of the salaries of current staff as well as that of the positions created by this grant.	PG.1
2	For domestic travel, please provide documentation (screenshots, links, quotes, etc.) for transportation cost	A detailed breakdown is provided in the FRBAA14-6-2-0436 Detailed Budget and documentation of all items is provided in the LHA Documentation file.	PG.2 3
3	Please provide documentation (quotes, screen shots, links, etc.) for consultant services to support the proposed cost.	A detailed breakdown is provided in the FRBAA14 6.2.0436 Detailed Budget. Hummingbird IRB has been aquired by New England IRBs since original submission, Additionally, Key Personnel Ellen Carlin is no longer employed at EHA but will rather work on this project as a consultant. Please see attached documentation for all consultant costs.	PG. 4-15
4	unit prices. Also, provide documentation (quates, screen shots, links, etc.) to support the	A detailed breakdown is provided in the FRBAA14-6-2-0436 Detailed Budget and documentation of all items is provided in the LHA Documentation file.	PG. 4 15
5	Damestic conference location	A detailed breakdown is provided in the FRBAA14 6.2.0436 Detailed Budget for domestic conferences. There are two domestic conferences included in the budget one the ASTMH in Maryland along with WDA. For price estimates, the 2019 conference was hels in Tablee City. Documentation is provided for flights from New York to the closest airport in Reno, NV.	
6	Departure location that the staff will be leaving from to present on project findings at the International conference in Austria	Staff will be departing from New York City to attend IMED in Austria.	
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	DTRA Questions	LCRP Responses	Documentation Page Number
ı	Please provide documentation to support the proposed salaries (Key and other personnel)	LCRP is being subcontracted as a consultancy for the expertise of the director James Desmond who has years field experince working on EIDs generally, and in Liberia specifically. His previous contract with EHA for work on the PREDICT project is attached as salary support.	Pg. 1
2	For all travel proposed whether domestic and international, please provide departure and arrival locations, number of trips, purpose of each trip, length of each trip, number of travelers, etc.	A detailed breakdown is provided in the FRBAA14-6-2-0436 Detailed Budget. Hotels, meals and incidentals are at the federal per diem levels. Each year there are two international trips: one from Monrovia, Liberia to Nyew York, New York for 7 days to collaborate with EcoHealth Alliance program staff, and one trip to an international conference to present on project findings. For budgeting purposes, this trip is from Monrovia, Liberia to Vienna, Austria to attend IMED for 4 days.	N/A
3	Please provide a breakdown of the proposed materials and supplies, to include quantities and unit prices. Also, provide documentation (quotes, screen shots, links, etc.) to support the proposed cost.	A computer will be purchased for use during this project, price justification provided in the LCRP Occumentation file.	Рg. 2
4	Please provide any current agreements with or submissions to either DCMA or DCAA. Please also explain how the rates in these documents are utilized in the proposal calculations	N/A	N/A
5			

	DTRA Questions	UNMC Responses	Documentation	NOTES
1	Please provide documental on to support the processed salaries (key and other personnel)	Personnel from UNVC will be receiving funding to conduct work from another funding source and we are no longer requesting the proposed salaries. ASM will be another laboratory partner out neither needs funding under this project.	h/A	
ı	(screenshots or links) the departure and arrival locations, number of trips, purpose	Personnel from UNIVC will be receiving funding to conduct work from another funding source and we are no longer requesting the proposed salaries. ASMA will be another laboratory partner our neither needs handing under this project.	h/A	
. 3	for all travel proposed idomestic and internal onally please provide a breakdown of the travel could larger account transportation, larger as over dum, etc.)	Personnel from UNIVC will be receiving funding to conduct work from another funding source and we are not longer requisioning the proposed salaries. ASM will be another laboratory partner out neither needs funding under this project.	N/A	
. 4	Please provide any current agreements with or submissions to either DCVA or DCAA. Please also explain how the stack in these documents are utilized in the proposal calculations.	Personnel from UINVC will be receiving funding to conduct suck from another funding source and we are no longer required githe proposed salaries ASM will be another laboratory partner but neither needs funding under this project:	N/A	
6	•			
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	DTRA Questions	SCNI Responses	Documentation Page Number
1	Please provide documentation to support all the proposed salaries (key and other personnel)	Please see the attached documentation of the salaries of current staff.	PG.1
2	One (1) nurse and two (2) administrative assitants were noted in the budget narrative but not included in budget. If they are needed please update budget to reflect as such	A detailed breakdown is provided in the FRRAA14-6-2-0436 Detailed Budget. For this project, a nurse is not requested for SCNL. There will be a social scientist, a field supervisor, three field technicians, two drivers, a half time administratice assistant and a half time accounting	PG.1
3	For all travel proposed whether (lomestic and international, please provide (screenshots or links) the departure and arrival locations, number of trips, purpose of each trip, length of each trip, number of travelers, etc.	A detailed breakdown is provided in the FRBAA14-6-2-0436 Detailed Budget.	PG.2-18
4	Please provide a breakdown of the proposed materials and equipment, to include quantities and unit prices. Please provide documentation (quotes, screen shots, links, etc.) to support the proposed prices.	A detailed breakdown is provided in the FRRAA14-6-2-0436 Detailed Budget. Equipment costs are for the purchase of a field vehicle with quote from vendor included.	PG.19-24
5	Please provide any current agreements with or submissions to either DCMA or DCAA. Please also explain how the rates in these documents are utilized in the proposal calculations	N/A	
6			

	DTRA Questions	GU-CGH5 Responses	Documentation
1	Please provide documentation to support the proposed salaries	Please see attached letter from Prof Rebecca Katz, Director of the Center for Global Science and Security, confirming the salary rates in the GU-CGHS Documentation file.	Pg. 1
	For all travel proposed (domestic and international), please provide a breakdown of the travel costs (airfare, ground transportation, lodging, per diem, etc.).	A detailed breakdown is provided in the FRBAA14-6-2-0436 Detailed Budget. Hotels, meals and incidentals are at the federal per diem levels. Taxicosts are extimated as \$75 for transportation to and from origin airports, and \$25 per day in-country transportation. Flights are the average price on a Fly America Act allowable flights, with documentation provided in the GU-CGHS Documentation file.	Pg 2 3
3	Please provide documentation to support ODCs (screenshots links, quotes, etc.)	A detailed breakdown is provided in the FRBAA14-6-2-0436 Detailed Budget and documentation of all items is provided in the GU CGHS Documentation file.	Pg 4 10
4	Please provide any current agreements with or submissions to either DCMA or DCMA. Please also explain how the rates in these documents are utilized in the proposal calculations.	Please see attached NICRA, confirming (ederally approved indirect cost rate of 56% for research projects under the proposed period of performance in the GU-CGHS Documentation file	Pg. 11-14
5			
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	DTRA Questions	NPHIL Responses	Documentation
1	Please provide ducumentation to support the proposed salaries (key and other personnel)	Please see the attached documentation of the salaries of current staff.	PG.1
2	Please provide a breakdown of the proposed materials and equipment, to include quantities and unit prices. Please provide documentation (quotes, screen shots, links, etc.) to support the proposed prices.	A detailed breakdown is provided in the FRBAA14-6-2-0436 Detailed Budget.	PG. 1-4
. 3		A detailed hreakdown is provided in the FRRAA14 G 2 G436 Detailed Budget documentation of all items is provided in the NPHIL Documentation file.	P6.5-21
4	Please provide any current agreements with ur submissions to either DCMA or DCAA. Please also explain how the rates in these documents are utilized in the proposal calculations.	V/A	
5	Léxicludes carrital expénditurés libuildinus, incluidual dems of enurgment, afterations and	A detailed breakdown is provided in the FRBAA14-6-2-0436 Detailed Budget. Year 1 has been updated to remove indirect from capital equipment.	
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7			

BUDGET JUSTIFICATION FOR GEORGETOWN UNIVERSITY CENTER FOR GLOBAL HEALTH AND SECURITY, UNITED STATES

The Georgetown University Center for Global Health and Security requests a total of \$196,834 over all years of the proposed project to support personnel, travel, other direct costs, and indirect costs.

A. Key Personnel

Erin Sorrell, Ph.D., Co-Investigator (1.2 calendar months for Y1, .6 calendar months for Y2-OY2). Dr. Sorrell will provide subject matter expertise in support of the execution of the project, specifically related to study design and analysis and dissemination of findings for which \$11,477 is requested in Y1, with a 2% increase each subsequent year. Dr. Sorrell's time will vary over the five years of the project based on involvement in specific tasks.

Claire Standley, Ph.D. Co-Investigator (1.2 calendar months for Y1, Y3, OY2, .6 calendar months for Y1, OY1). Dr. Standley will serve as the GU PI for the award, and will be the lead for all aspects of GU's contribution to the project, notably related to project design and analysis and dissemination of the findings for which \$10,819 is requested in Y1, with a 2% increase each subsequent year. Dr. Standley's time will vary over the five years of the project based on involvement in specific tasks.

Fringe Benefits

Fringe benefits are calculated as 32.4% of base salary p.a. with \$7,224 requested in Y1 for Key Personnel.

B. Other Personnel

No funds are requested for other personnel.

C. Equipment

No funds are requested for equipment.

D. Travel

International Travel

International travel will be used to support Dr. Sorrell to travel from Frankfurt, Germany to Monrovia, Liberia to attend the kick off meeting in Y1 and annual meetings in Y3 and OY2 for six days, and to continue onto the field in Y1 and OY2 for an additional 5 days. Dr. Standley will travel from Washington, DC to Monrovia, Liberia to attend the kick off meeting in Y1 and annual meeting in OY2 for six days, and to continue onto the field in Y1 and OY2 for an additional 5 days. Flights for all trips are priced at \$1,500, along with \$75 each way for airport taxis as well as \$25 per day for in-country transportation. The federal per diem rates for Monrovia and Other are utilized. A total of \$18,811 is requested for international travel over the five proposed project years.

E. Participant/Trainee Support Costs

No funds are requested for participant or trainee support costs.

F. Other Direct Costs

Materials and Supplies

We request \$55 in Y1 to purchase an encrypted storage device and \$30 to purchase 3 USB drives. Over the five years of the project we request \$331 for other office supplies including pens (\$51), notebooks (\$75) and printing (\$205).

Telecommunications

We request \$550 over the five years of the project to support telecommunication costs including a Skype subscription (\$25 p.a), mobile phone charges for project communication, including roaming charges while on international travel in Liberia (\$285 total) and local airtime and data (\$90 total). A cell phone for travel will be purchased in Y1 for \$50.

H. Indirect Costs

We are requesting the federally agreed indirect cost of 55.5% on all direct costs.

GEORGETOWN UNIVERSITY CENTER FOR GLOBAL HEALTH AND SECURITY DOCUMENTATION TABLE OF CONTENTS

SALARIES	1
TRAVEL	2
OTHER DIRECT COSTS	4
SUPPLIES COMMUNICATIONS	4 8
RATE AGREEMENT	11



February 4, 2020

EcoHealth Alliance 460 West 34th St – 17th floor New York, NY 10001

RE: Confirmation of salary rates

To Whom It May Concern:

This letter is to confirm the base salary rates used for the development of the proposal "Reducing the threat from high-risk pathogens causing febrile illness in Liberia", submitted to the Defense Threat Reduction Agency under Broad Agency Announcement HDTRA1-14-24-FRCWMDBAA.

I can confirm the following base annual salary rates for the two Center for Global Health Science and Security personnel for the proposed period of performance of the project:

• Dr. Claire J. Standley: \$108,191.00

• Dr. Erin M. Sorrell: \$114,767.00

We are projecting 10% effort for Dr. Standley in Y1, Y3, and OY2 of the project, and 5% in Y2 and OY1. For Dr. Sorrell, we are projecting 10% effort in Y1 and 5% effort thereafter. We use an assumption of a 2% annual salary increase, effective from the start of our fiscal year (July 1), when generating our proposal budgets. This is our standard practice across all submitted proposals.

If further evidence of salary levels is required, I would be happy to discuss this with you further over the phone or via email. My contact information is provided below.

Sincerely,

Prof. Rebecca Katz, PhD MPH

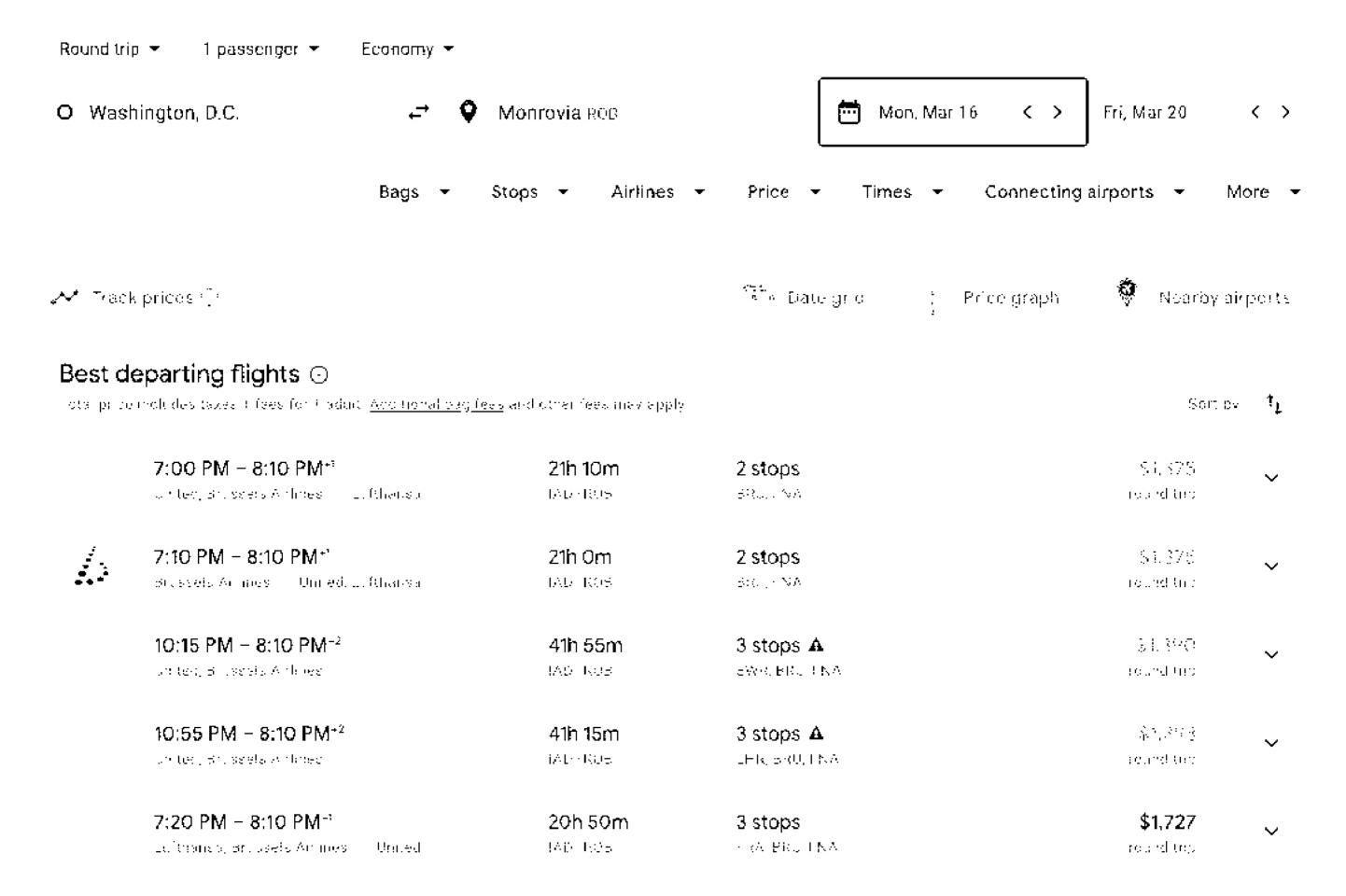
Director

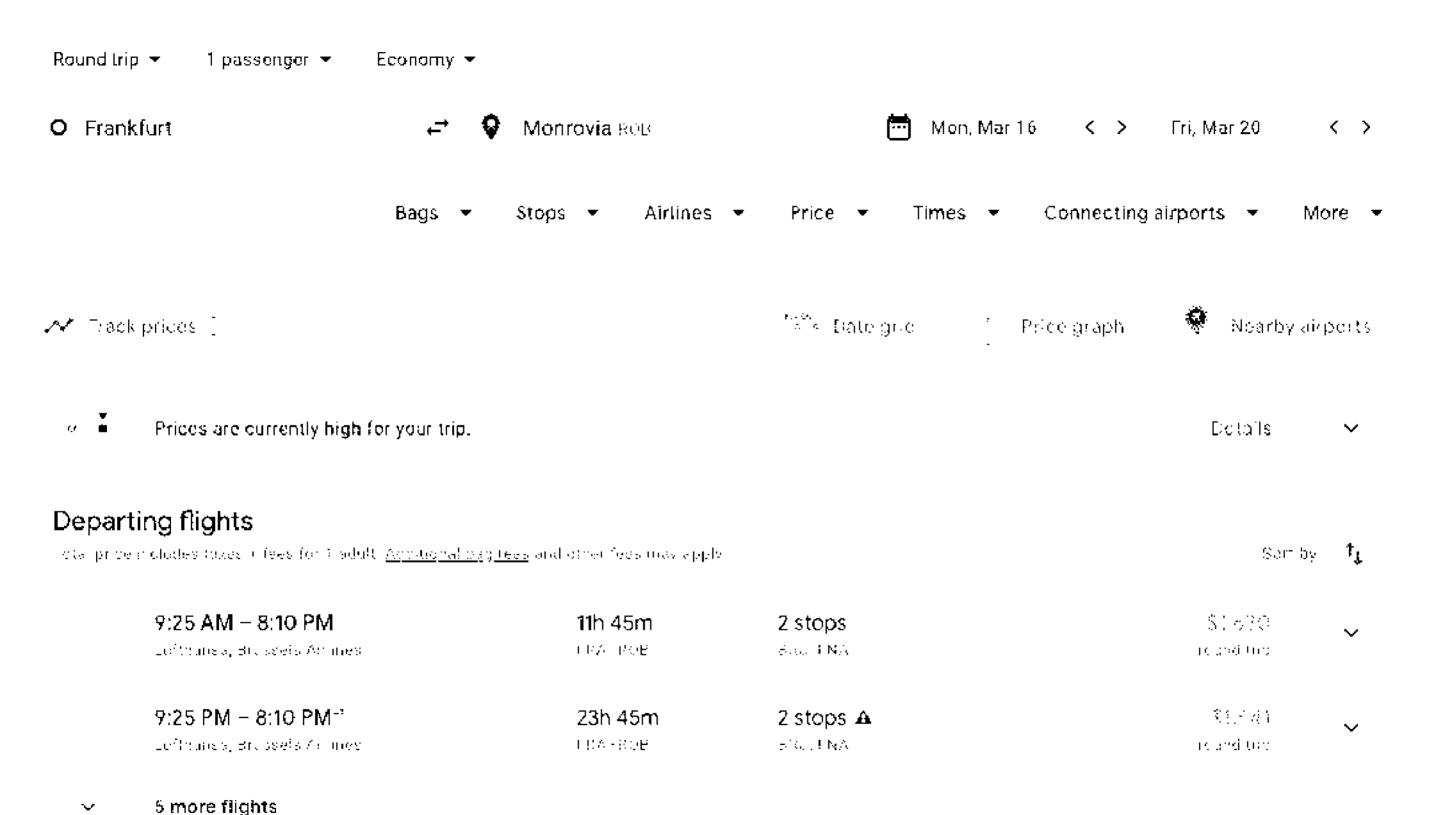
Center for Global Health Science and Security

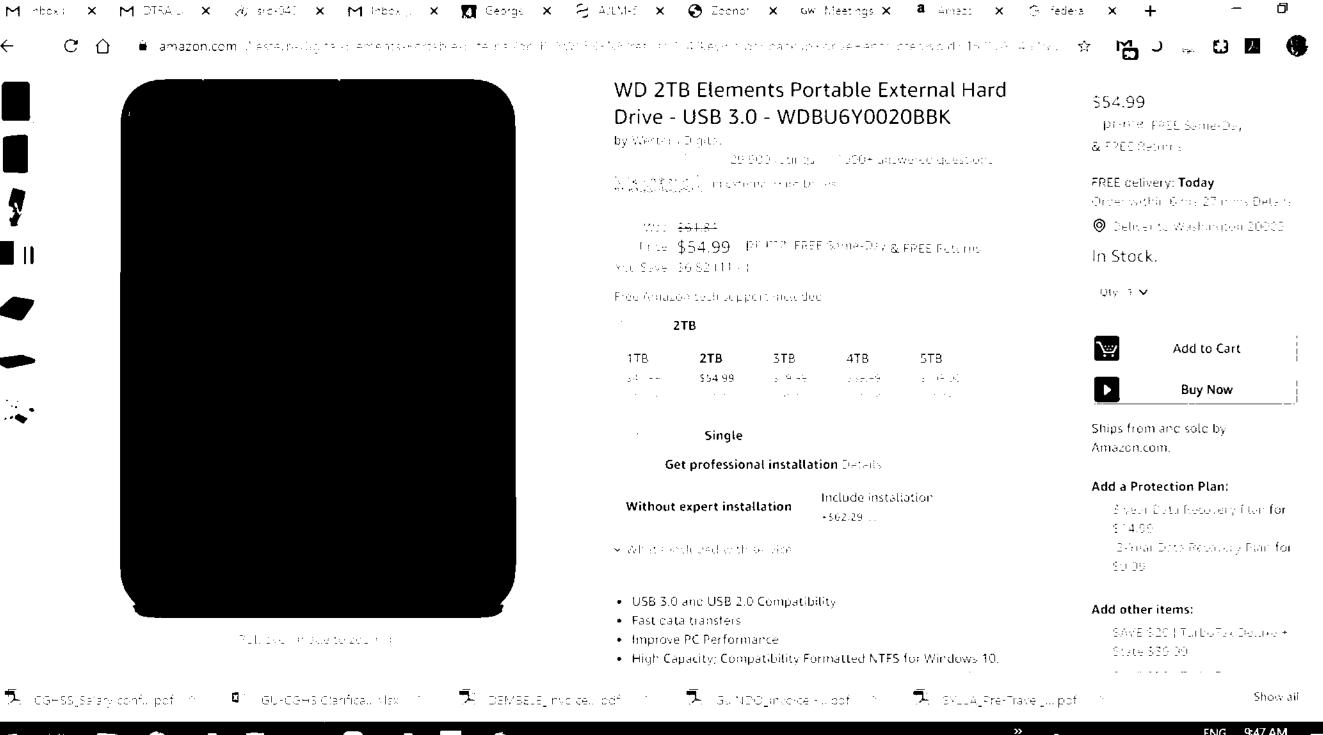
Georgetown University

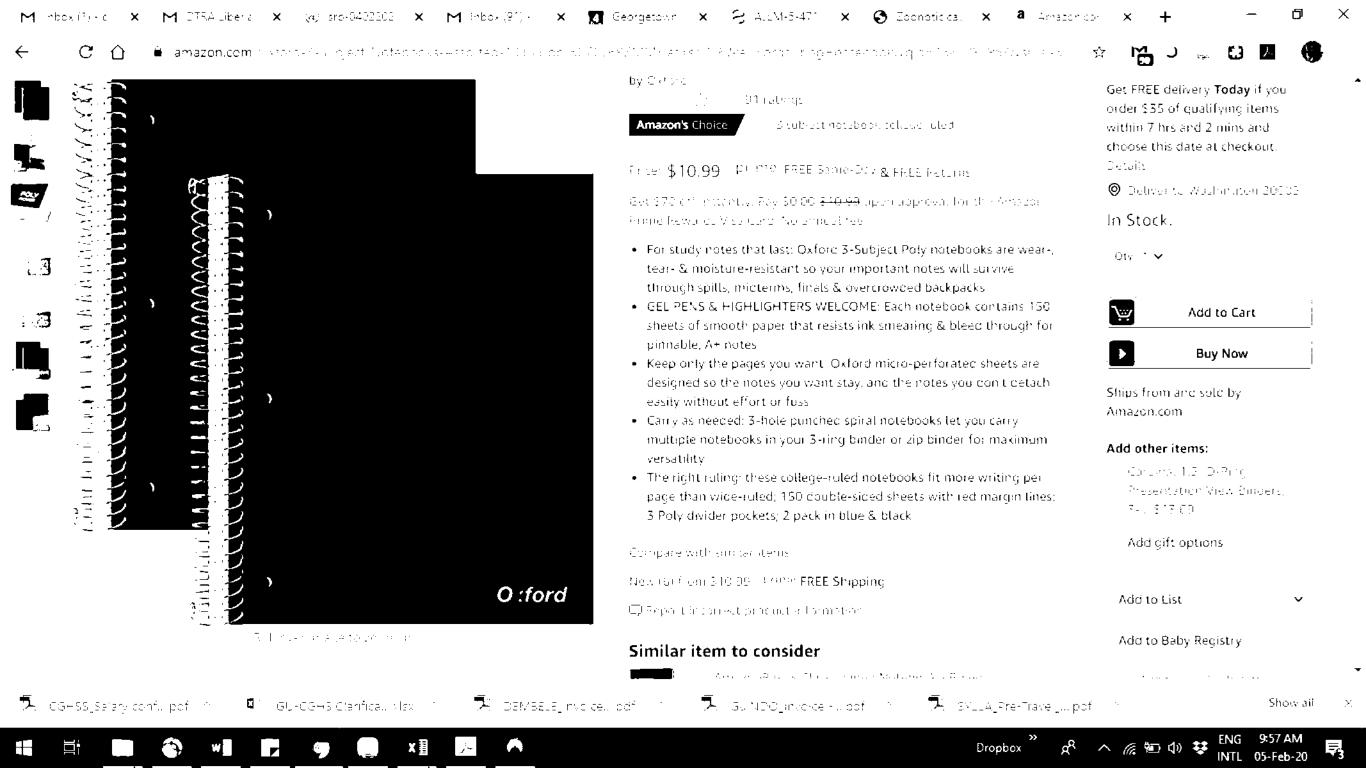
TEL: 202 251 4925

Email: Rebecca.Katz@georgetown.edu













R. I. Kraman at Advances in the

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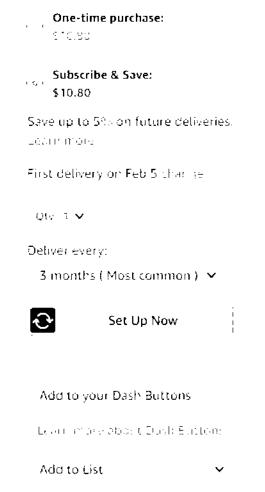
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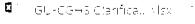


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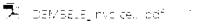




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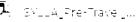
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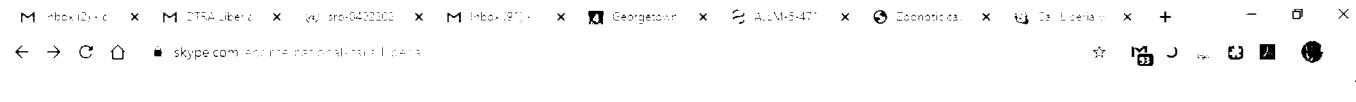












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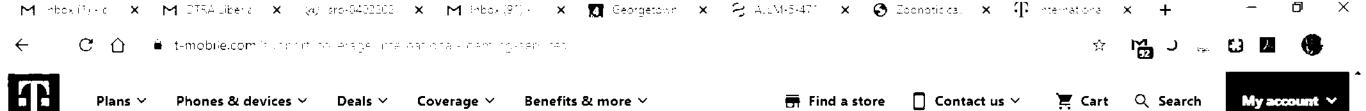
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page, or check out our international roaming site for rates and additional mile.

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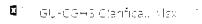
- Magenta, T-Mobile ONE, and Simple Choice plans give you unlimited 2G data and texting in more than 210 countries and destinations at no extra charge. while voice calls are \$0.25/minute (Look up calling and messaging rates.)
- Use our International Roaming checklist to go over everything you need to know about using your phone abroad.
- If you're in a destination where international roaming is not included, you can still use calling and messaging services but data is turned off by default
 - You can turn on data by dialing #RON#.
 - As data is used, you will receive free text messages notifying you of the incurred charges
 - If you want to turn data back off, dial #ROF#.
- If you want to prevent any accidental usage, you can also block voice, messaging, and data when roaming internationally
- To see what plan you're on, or switch to Magenta, check out Change your plan.

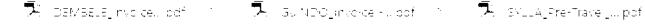
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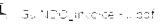




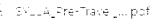














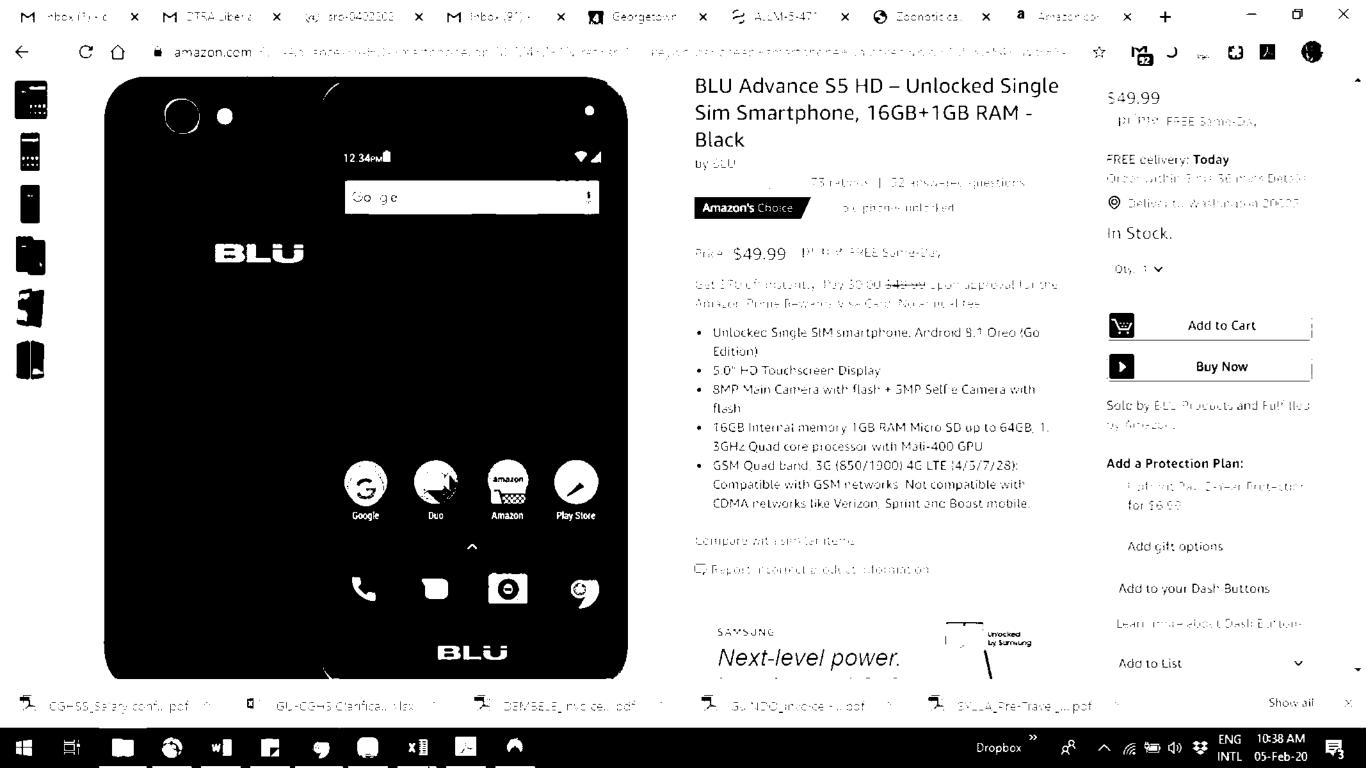


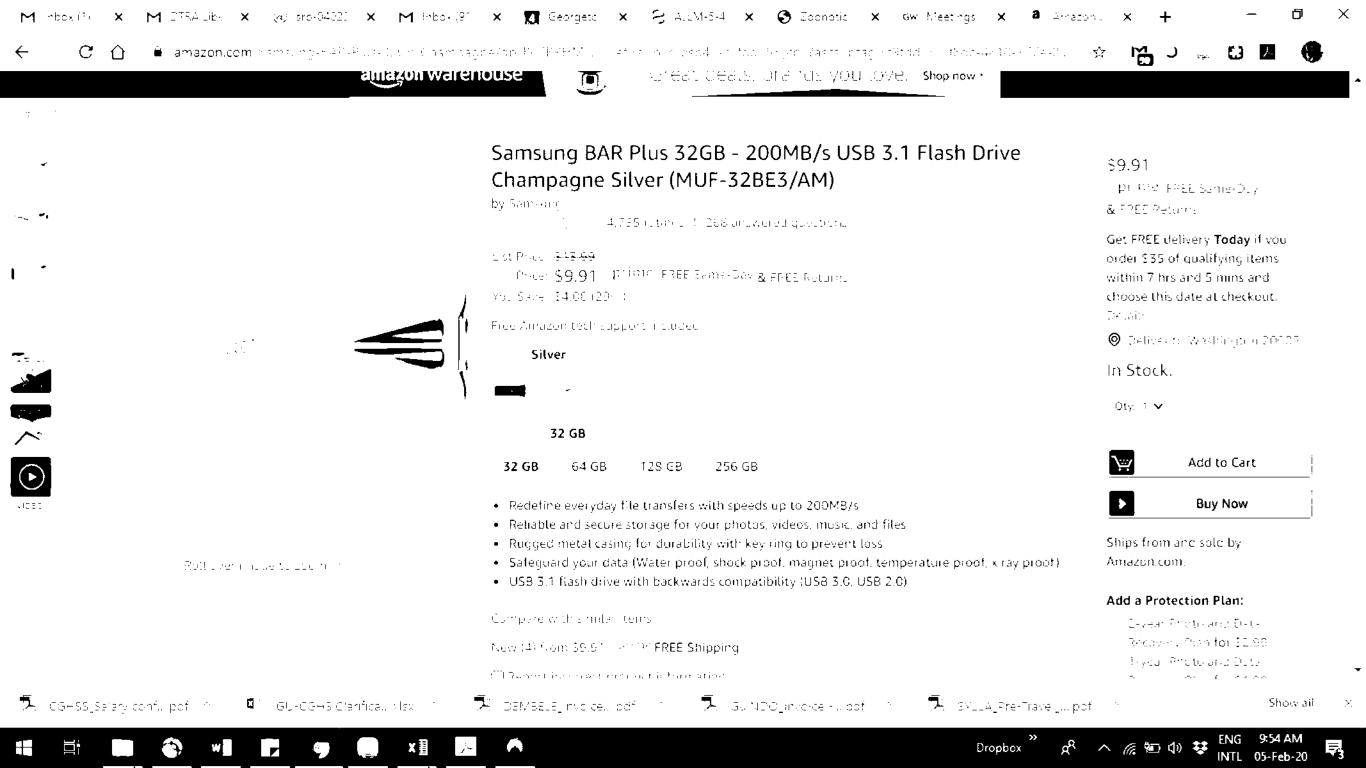












COLLEGES AND UNIVERSITIES RATE AGREEMENT

EIN: 15-30196603A

DATE:11/19/2019

ORGANIZATION:

FILING REF.: The preceding

Georgetown University

agreement was dated

2121 Wisconsin Avenue, NW

06/10/2019

Suite 431

Washington, DC 20007

The rates approved in this agreement are for use on grants, contracts and other agreements with the Federal Government, subject to the conditions in Section III.

SECTION 1: INDIRECT COST RATES

RATE TYPES:

FIXED

FINAL

PROV. (PROVISIONAL)

PRED. (PREDETERMINED)

EFFECTIVE PERIOD

<u>TYPE</u>	FROM	<u>TO</u>	RATE(%) LOCATION	APPLICABLE TO
FINAL	07/01/2018	06/30/2019	55.50 On-Campus	Organized Research
PRED.	07/01/2019	06/30/2020	55.50 On-Campus	Organized Research
PRED.	07/01/2020	06/30/2022	56.00 On-Campus	Organized Research
FINAL	07/01/2018	06/30/2019	42.00 On-Campus	Instruction
PRED.	07/01/2019	06/30/2020	42.00 On-Campus	Instruction
PRED.	07/01/2020	06/30/2022	44.00 On-Campus	Instruction
FINAL	07/01/2018	06/30/2019	35.50 On-Campus	Other Sponsored Activities
PRED.	07/01/2019	06/30/2022	35.50 On-Campus	Other Sponsored Activities
FINAL	07/01/2018	06/30/2019	26.00 Off-Campus	All Programs
PRED.	07/01/2019	06/30/2022	26.00 Off-Campus	All Programs

AGREEMENT DATE: 11/19/2019

TYPE FROM TOPROV. 07/01/2022 Until

Amended

RATE(%) LOCATION

APPLICABLE TO

Use same rates and conditions as those cited for fiscal year ending June 30, 2022.

*BASE

Modified total direct costs, consisting of all salaries and wages, fringe benefits, materials, supplies, services, travel and subgrants and subcontracts up to the first \$25,000 of each subgrant or subcontract (regardless of the period covered by the subgrant or subcontract). Modified total direct costs shall exclude equipment, capital expenditures, charges for patient care, student tuition remission, rental costs of off-site facilities, scholarships, and fellowships as well as the portion of each sub-grant and subcontract in excess of \$25,000.

AGREEMENT DATE: 11/19/2019

SECTION	SECTION I: FRINGE BENEFIT RATES**			
<u>TYPE</u>	FROM	<u>TO</u>	RATE(%) LOCATION	APPLICABLE TO
FIXED	7/1/2019	6/30/2020	32.40 All	Full-Time Employees
FIXED	7/1/2019	6/30/2020	21.20 All	University Fellows
FIXED	7/1/2019	6/30/2020	8.30 All	Temporary Workers
PROV.	7/1/2020	Until amended		Use same rates and conditions as those cited for fiscal year ending June 30, 2020.

^{**} DESCRIPTION OF FRINGE BENEFITS RATE BASE: Salaries and wages.

AGREEMENT DATE: 11/19/2019

SECTION II: SPECIAL REMARKS

TREATMENT OF FRINGE BENEFITS:

The fringe benefits are charged using the rate(s) listed in the Fringe Benefits Section of this Agreement. The fringe benefits included in the rate(s) are listed below.

TREATMENT OF PAID ABSENCES

Vacation, holiday, sick leave pay and other paid absences are included in salaries and wages and are claimed on grants, contracts and other agreements as part of the normal cost for salaries and wages. Separate claims are not made for the cost of these paid absences.

OFF-CAMPUS DEFINITION: For all activities performed in facilities not owned by the institution and to which rent is directly allocated to the project(s), the off-campus rate will apply. Actual costs will be apportioned between oncampus and off-campus components. Each portion will bear the appropriate rate.

Fringe Benefits include: FICA, Retirement, Disability Insurance, Life Insurance, Employee Tuition Remission, Group Hospitalization, Labor Union, Sabbatical Leave, Workers' Compensation, Unemployment Insurance, Dental Insurance, FAS No. 106 Post Retirement Benefits other than Pension and Fringe Benefit Administration.

Fringe benefit rates exclude student salaries and wages.

Equipment means tangible personal property (including information technology systems) having a useful life of more than one year and a per-unit acquisition cost which equals or exceeds the lesser of the capitalization level established by the non-Federal entity for financial statement purposes, or \$5,000.

- *This agreement updates the F&A rates only. All other terms and conditions remain unchanged.*
- **A Fringe Benefit rate proposal for FYE 06/30/2019 is due in our office by 12/31/2019. Next F&A rate proposal for FYE 06/30/2021 is due in our office by 12/31/2021.**

AGREEMENT DATE: 11/19/2019

SECTION III: GENERAL

A. LIMITATIONS:

The rates in this Agreement are subject to any statutory or administrative limitations and apply to a given grant, contract or other agreement only to the extent that funds are available. Acceptance of the rates is subject to the following conditions: (1) Only costs incurred by the organization were included in its facilities and administrative cost pools as finally accepted: such costs are legal obligations of the organization and are allowable under the governing cost principles; (2) The same costs that have been treated as facilities and administrative costs are not claimed as direct costs; (3) Similar types of costs have been accorded consistent accounting treatment; and (4) The information provided by the organization which was used to establish the rates is not later found to be materially incomplete or inaccurate by the Federal Government. In such situations the rate(s) would be subject to renegotiation at the discretion of the Federal Government.

B. ACCOUNTING CHANGES:

This Agreement is based on the accounting system purported by the organization to be in effect during the Agreement period. Changes to the method of accounting for costs which affect the amount of reimbursement resulting from the use of this Agreement require prior approval of the authorized representative of the cognizant agency. Such changes include, but are not limited to, changes in the charging of a particular type of cost from facilities and administrative to direct. Failure to obtain approval may result in cost disallowances.

C. FIXED RATES:

If a fixed rate is in this Agreement, it is based on an estimate of the costs for the period covered by the rate. When the actual costs for this period are determined, an adjustment will be made to a rate of a future year(s) to compensate for the difference between the costs used to establish the fixed rate and actual costs.

D. USE BY OTHER FEDERAL AGENCIES:

The rates in this Agreement were approved in accordance with the authority in Title 2 of the Code of Federal Regulations, Part 200 (2 CFR 200), and should be applied to grants, contracts and other agreements covered by 2 CFR 200, subject to any limitations in A above. The organization may provide copies of the Agreement to other Federal Agencies to give them early notification of the Agreement.

E. OTHER:

If any Federal contract, grant or other agreement is reimbursing facilities and administrative costs by a means other than the approved rate(s) in this Agreement, the organization should (1) credit such costs to the affected programs, and (2) apply the approved rate(s) to the appropriate hase to identify the proper amount of facilities and administrative costs allocable to these programs.

BY THE INSTITUTION:	ON BEHALF OF THE FED	ON BEHALF OF THE FEDERAL GOVERNMENT:		
Georgetown University	DEPARTMENT OF HEALTH	DEPARTMENT OF HEALTH AND HUMAN SERVICES		
(INSTITUTION)	Darryl W.	Digitally signed by Danyi W. Mayes -5 Dit c=US, O=US. Government, our=HHS,		
Whoos	Mayes -S	 au#PSC, ouwPeople, au.9.2342.1930.0300.100.11=2000131669, cn=Carryl W. Mayer -5 Dust 2010.13.32.02.12.35.0500 		
SIGNATURE)	(SIGNATURE)			
WILLEM ROOS	Darryl W. Mayes	_		
NAME)	(NAME)	•		
CONTROLLER	Deputy Director, Cos	t Allocation Services		
TITLE)	(TITLE)			
12/6/2019	11/19/2019			
DATE)	(DATE) 3149			
	HHS REPRESENTATIVE:	Lucy Siow		
	Telephone:	(301) 492-4855		

LIBERIA CHIMPANZEE RESCUE AND PROTECTION DOCUMENTATION TABLE OF CONTENTS

SALARY	1
OTHER DIRECT COSTS	2

CONSULTANCY CONTRACT

NAME:	Dr. James S. Desmond	
ADDRESS:	Liberian Institute for Biomedical Research Charlesville, Margibi County Liberia	
REFERENCE LOG #:	P2Y5JDESMOND03	
PROJECT TITLE:	PREDICT-2 Liberia (Ebola Host Project)	
PERIOD:	01 OCTOBER 2018 30 SEPTEMBER 2019	
PHONE:	+231 776 147 565	
E-MAIL:	desmond@ecohealthalliance.org	
FUNDING SOURCE:	07-306-7119-52039	
CONTRACT AMOUNT:	US \$146,000	
Amendment to the Original Terms &	c Conditions:	
Item 1 Agreement Amount is revised as follows: a) delete \$150, 203.16 b) replace with \$150,727.15 to include 523.99 to cover additional Y5 expenses.		
Item 2 – All other terms and conditions of this Subward Agreement that are not inconsistent with this Amendment remain unchanged and in full force and effect.		
	Dans	
Dr. Peter Daszak President, EcoHealth Alliance	Dr. James S. Desmond Consultant	
DATE	December 3, 2019 DATE	

Bag



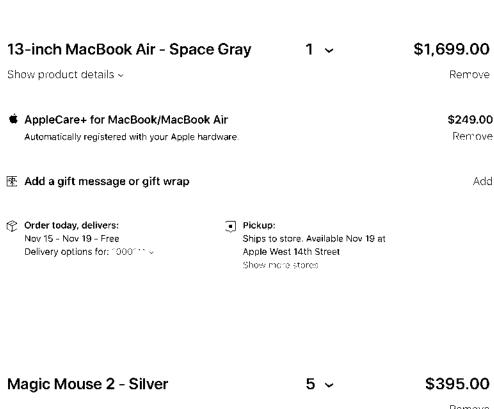
Computer (with AppleCare), mouse and keyboard unit: \$2126 each

Here's what's in your bag.

Get free shipping and free returns on all orders.

М	lagic Keyboard - US English		5 ~	\$495.00 Remove
<u>*</u>	Add a gift message			Add
\$	Order by 5pm, delivers: Today within 2 hours - Fastest Thu, Nov 7 - Free Delivery options for: 1000117	•	Pickup: Today at Apple West 14th Street Show more stores	







Remove

NATIONAL PUBLIC HEALTH INSTITUTE OF LIBERIA DOCUMENTATION TABLE OF CONTENTS

SALARIES	1
EQUIPMENT	2
LAB/SAMPLING COSTS	4
TRAVEL	15



National Public Health Institute Of Liberia

Preventing and Controlling Public Health Threats

March 2, 2020

Eco Health Alliance 460 West 34 Street 17th Floor, New York City USA

Re: Confirmation of Incentives to be paid Key and other personnel working on the DTRA Grants

Dear Sit/Madam

I extend compliments as I write you this communication verifying salaries of Key personnel enlisted and budgeted for in the DETRA grant proposal.

The salaries proposed in the budget are percentages of their individual base salaries. The key staffs on the project will be working on a Full Time Equivalent bases.

Thanks so much for your kind consideration and please be assured that our office is willing at all times to provide you additional clarifications as may be required.

Best Regards,

Mr. Fidel D. Wiah

Deputy Director General for Administration (Acting)



Shipping Account Ecohealth Alliance **Number:** 80626633460 West 34th Street

17th Floor New York ,NY , 10001 United States Edit Address

Save as a Shopping List

Shopping Cart

Item Subtotal: \$29,884.66

This order has exceeded its 1atal Order l'mit of \$20,000.00.

Share Your Shopping Cort

Expand A / Collapse Al

Standard Products

Cart Preferences

Update

Update

↑ STIRLING ULT FREEZER SU780XLE 75845-814 Direct from EA 1 \$22,958.40 \$22,958.40 \$21,958.40 \$22,958.40 \$22,958.40

ø (SBE)

Availability: Shipped directly from GLOBAL COOLING, INC., If availability is critical, please call VWR Customer Support at 1 800 932 5000

Line Item Comments Search / Add a Value Use for all items in cart

Update Other Charges:

^ LN2 BACK-UP SYSTEM FACTORY 75846-036 Direct from EA 1 \$3,439.37 \$3,439.37 INSTALLED Supplier

(SBE)

Availability:- Shipped directly from GLOBAL COOLING, INC., If availability is critical, please call VWR Customer Support at 1-800-932-5000

Line Item Comments Search / Add a Value Charges:

↑ SKELETON RACK SOLUTION 2 INCH 75845-886 Direct from EA 1 \$3,486.89 \$3,486.89 BOXES Supplier

(SBE)

Availability:- Shipped directly from GLOBAL COOLING, INC., If availability is critical, please call VWR Customer Support at 1-800-932-5000

Line Item Comments Search / Add a Value Charges:

Expand A / Collapse Al Item Subtotal: \$29,884.66

Have a promotion code?

Apply Promotion Code

Build your cart from:

- Shopping : ists
- Trequently Ordered items
- Upload Products to Cart

Please note that you will receive an order acknowledgment after order placement that contains updated product delivery information.

Choose File No file chosen

Joloac



Print

Back

NATURAL PROPERTY OF THE PARTY O

National Public Health Institute Of Liberia

Preventing and Controlling Public Health Threats

March 22, 2020

Dr. James Desmond EcoHealth Alliance 460 West 34th Street 17th Floor, New York City USA

Re: Laboratory test cost confirmation

Dear Mr. Desmond

I am writing to confirm the laboratory testing costs associated with the project titled: Reducing the threat from highrisk pathogens causing febrile illness in Liberia.

Based on an analysis of previous costs associated with testing biological samples in similar projects, we estimate a cost of \$33.74 per sample.

Thanks so much for your kind consideration and please be assured that our office is willing at all times to provide you additional clarifications as may be required.

Best Regards.

Mr. Fidel D. Wiah

Deputy Director General for Administration (Acting)



BD Syringe with Sub-Q Needle

Syringe; Becton Dickinson;; With Sub-Q needle; 1mL, 26 gauge; Slip Tip; 100/Pk.

Manufacturer: BD 309597

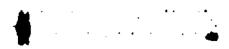
Catalog No.

14-829-10F

\$35.25 / Pack of 100

\$213.21 / Case of 8 PK

Due to product restrictions, please Sign In to purchase or view availability for this product.



BD Disposable Syringes with Luer-Lok™ Tips

Unique integrated BD Luer-Lok™ tip syringe with clear barrel. BD Medical™ Disposable Syringes with Luer-Lok™ Tips are sterile and disposable.

Manufacturer: BD 309657

◀ View more versions of this product

Catalog No.

14-823-435

\$33.25 / Pack of 200

\$98.88 / Case of 4 PK

Due to product restrictions, please Sign In to purchase or view availability for this product.



BD Vacutainer™ Eclipse™ Blood Collection Needle

Provides fast, easy needle-tip protection. BD Vacutainer™ Eclipse™ Blood Collection Needle is a multi-sample blood collection needle with an integrated safety shield that offers a simple, effective way to collect blood while reducing the possibility of needle stick injuries.

Manufacturer: BD 368607

◀ View more versions of this product

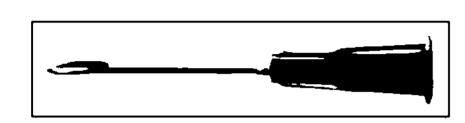
Catalog No.

02-683-101

\$42.55 / Pack of 48

\$339.50 / Case of 10 PK

Due to product restrictions, please Sign In to purchase or view availability for this product.



BD General Use and PrecisionGlide Hypodermic Needles

Fit any Luer-Lok™, slip tip, or eccentric tip syringe

Manufacturer: BD 305165

◀ View more versions of this product

Catalog No.

\$19.25 / Pack of 100

\$150.38 / Case of 10 PK

Due to product restrictions, please Sign In to purchase or view availability

14-826C

for this product.

IBD Van - Charles - Charle

BD Vacutainer™ Plastic Blood Collection Tubes with K₂EDTA: Hemogard™ Closure

Evacuated blood collection tubes for whole blood hematology determinations

Manufacturer: BD 367899

◀ View more versions of this product

Catalog No.

13-680-61

\$43.30 / Pack of 100

\$337.00 / Case of 10 PK

Due to product restrictions, please Sign In to purchase or view availability for this product.







\$30.00 / Pack of 200 \$231.23 / Case of 10 PK

Catalog No.

Qty

Check Availability

22-029-574



Fisherbrand™ Extended Cuff Nitrile Exam Gloves "

Choose a glove with exceptional durability and added protection. The Fisherbrand™ Extended Cuff Nitrile Gloves are extra-thick, fully textured for a superior grip and are tested for use with chemotherapy drug exposure.

\$39.05

Specifications

Certifications/Compliance ASTM D6319, FDA 21 CFR 177-2600,

10993-1 2003, FDA 510(k), Tested for

use with chemotherapy drugs

Coating Material Textured

Color Teal

Length (English) 12 in.

Length (Metric) 30.5 cm

View More Specs

Store samples from general cold storage to the vapor phase of liquid nitrogen with Thermo Scientific™ Nunc™ Biobanking and Cell Culture Cryogenic Tubes.

Manufacturer: Thermo Scientific™ 368632

◀ View more versions of this product

Catalog No.

12-565-171N

\$546.00 / Pack of 450

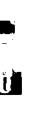
\$1,614.00 / Case of 4 PK

Qty

Check Availability



..



BD Vacutainer™ Venous Blood Collection Tubes: Vacutainer Plus™ Plastic Serum **Tubes, Silicone-Coated, with**

Conventional Stopper Use for serum determinations in chemistry, serology and

Due to product restrictions, please Sign In to purchase or view availability for this product.

23-021-012

Catalog No.

\$35.00 / Pack of 100

\$281.19 / Case of 10 PK

immunohematology

Manufacturer: BD 368660

◀ View more versions of this product

Tablets and case: \$228.98 each

Try Prints

Ecohealth Alliance Inc

Whole Foods Browsing History Melinda's Amazon.com

Hello, Melinda **Account & Lists**

Price

\$26.99

\$201.99

Page 1 of 4

Note we will order 8, only 5 were allowed to be ordered at a time. This adds another

Orders Try Prime

Cart

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Shopping Cart

Get a \$15 credit

when you purchase \$50 or more in Amazon Gift Cards (restrictions apply)

Learn More

Your order qualifies for EREE Shipping. Choose this option at checkout. See cetails

Subtotal (13 items): \$1,225.87

This order contains a gift

Proceed to checkout



SupCase Unicorn Beetle Pro Series Designed for Galaxy Tab A 10.1 (2019 Release), Full-Body Rugged Heavy Duty Protective Case with Built-in Screen Protector for Galaxy Tab A 10.1 Inch 2019 (Black)

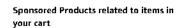
In Stack

Eligible for FREE Shipping

This is a gift Learn more

Qty: 8 Delete Save for later

Compare with similar items.





Fire HD 10 Case 2017... 26 S29.99

See all buying options



Galaxy Tab A 10.1 Case... 14

S16.99

See all buying options



Amazon Fire / Tablet... 1.625 \$14.99

See all buying options



Soke Galaxy Tab A., 296

\$19.99

See all buying options



Samsung Galaxy Tab A 10.1 32 GB Wifi

Tablet Black (2019)

Eligible for FREE Shipping

Gift options not available. I carn more

Qty: 5 Delete Save for later

Compare with similar items

Subtotal (13 items): \$1,225.87 Updated Subtotal (16 items): \$1,831.84

\$605,97 to the total

The price and availability of items at Amazon.com are subject to change. The Cart is a temporary place to store a list of your items and reflects each item's most recent price. Learn more

Do you have a gift card or promotional code? We'll ask you to enter your claim code when it's time to pay.

Customers who shopped for SupCase Unicorn Beetle Pro Series Designed for... also shopped for:



SupCase [Unicorn Bootle... 675

\$26.99 Add to Cart



Galaxy Tab A 10.1 2019... 122

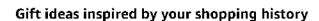
Add to Cart



Cantis Galaxy Tab A 10.1... 123

\$13.99

Add to Cart





BD Vacutainer™ Tube Holder

Low-cost, single-use holder compliant with OSHA regulations

Manufacturer: BD 364815

Catalog No.

22-289-953

\$23.05 / Pack of 250

\$91.90 / Case of 4 PK

Due to product restrictions, please Sign In to purchase or view availability for this product.

SOCIETY FOR THE CONSERVATION OF NATURE OF LIBERIA (SCNL)



Tubman Boulevard, Congo Town, CARE Compound P.O. Box 2628 Monrovia, Liberia, West Africa (+231)886-573-612/886-511-138 Website:www.scnlib.net E-mail:scnliberia@yahoo.com



_		CHECK PAYMENT VOUCHER		
Project	(s) Pr		NO.	
		den Cacita (Liberia) Inc	<u>-(4, 7619</u> 	
Check N	lumber:	D)(4)		
Account Code	Budget code	Description payment or Narrative	Amount	
		Payment to Galden Gate (Liberia Inc. to acquire workshop and Catering Service for the launch of the forest Health Futures Project on June 19, 7019	uso 2,285	
Total	<u></u>		USD 2,255	(C)
Amount 11 Unite	n words	Two thousand two hundred for	fly five	
Prepared Approved Received	by: Con	And Date June 14	,7019 +,2019	
COGIVED	υ y . <u> </u> * _ ·	Mutan Danson Le MIDate: 17/06	119	

Help Conserve Liberia's Natural Resources

利比里亚金门集团公司

GOLDEN GATE (LIBERIA) INC

S.K.Doe Sports Complex, Paynesville, Tei:0555111001 - 0770286700 Montservado Colaty, Monrovia, Eiberia Elmail: goldengatelib#gmail.com

28th May, 2019.

To: ECOHealth Alliance,

QUOTATION # 2019/0528/0916

DATE	DESCRIPTION	QTY	DURATION	RATE(USD)	OFFER(USD)
19th June, 2019	Breakfast, Lunch & 2 Coffee Break	50 Pers.	1 Day.	32/Pers	\$1,600.00
	Hall	1	1 Day.	400/Day	\$400.00
	Extra water	50		1/Bottle	\$50.00
	10% GST				\$205.00
TOTAL					\$2,255.00

Amount in words: Two Thousand Two Hundred And Fifty Five United States Dollars Only.

GOLDEN GATE HOTEL

SENL
SENL
STATE United State Dellers
Workshop In voice 13362 14/06/19 00923713 ECOBANK

\$2,255:00

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Cartalina Cathenne hachdosa
My Dollars - Two
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FOR: GOLDING ITH HOTELLIBIATE

利比里亚金门集团公司 GOXDIN GATE(LIBERIA) INC GOXDIN GATE(LIBERIA) INC. GOXDIN

the are the

INVOICE #2010/0410/0044

TOTAL(U\$D)
\$420.00
\$200.00
\$62.00
\$682.00



SOCIETY FOR THE CONSERVATION OF NATURE OF LIBERIA DOCUMENTATION TABLE OF CONTENTS

SALARIES	1
VEHICLE EQUIPMENT/TRAVEL	2
OTHER DIRECT COSTS	19

Society for the Conservation of Nature of Liberia (SCNL)



Tubman Boulevard, Congo Town, CARE Compound

P.O. Box 2628 Monrovia, Liberia, West Africa

(+231) 886 -573 -612/0777544611

Website: www.scnlliberia.org

E-mail: scnlliberia@yahoo.com



Michael Garbo
Executive Director
Society for Conservation of Nature of Liberia
Congo Town, Monrovia

March 2, 2020

To: DTRA C-WMD Thrust Area 6 Program

This letter is intended to confirm the salary levels for following positions for the project, *Reducing the threat from high-risk pathogens causing febrile illness in Liberia*: social scientist (1), field technician (3), field supervisor (1), driver (2), administrative assistant (1), accounting assistant (1).

Position	No. of Staff	Monthly Salary	Percent Covered	Annual Total
Social Scientist	I	\$550.00	100%	\$6,600.00
Field Technician	3	\$550.00	100%	\$19,800.00
Field Supervisor	1	\$650.00	100%	\$7,800.00
Administrative Asst.	I	\$1,350.00	50%	\$8,100.00
Accounting Asst.	I	\$720.00	50%	\$4,320.00
Driver	2	\$330.00	100%	\$7,290.00
Total	9	\$4150.00	NA	\$54,540.00

These salary levels are based on funding levels for previous projects of a similar nature, primarily the USAID funded PREDICT project. Please feel free to contact me if you have any questions or need additional information.

Sincerely yours,

Mr. Michael F. Garbo

Executive Director/SCNL



P.O Box 176, 40 Dovi's Tower Road, Gibraltar Tel: +350 200 59100 pr +44 207 906 1745 Fax: +350 200 46262 or -44 208 090 3780 E-mail: sales@toyota-gr

www.toyota-gib.com 🚹 💟 🗔

Click here register or login to myTG\$

An easy-to-use web app which allows registered users to create their own vehicle quotations.

Cover Letter - Batch Number 1 - HZJ79. DK IJMBS Service Pack EZJ79L DK IJMBS Serv. Pack for HZJ79. IJMBS A2 - TGS Workshop Fitted Options - TGS Compatible Parts Packaces

Tα Partners in Animal Protection and Conservation

Attention Subject Quotation

Client Reference 1 x HZJ79 SC - Liberia

E-Mail

James Desmond

(b)(6)

Date: 8/05/2019 Our Ref: 144625 Account No: (b)(6)

Dear Mr Desmond.

Thank you for your enquiry. We have pleasure in attaching our quotation as requested.

Freight Service Details - Consignment No 1 HZJ79L-TJMRS-A2

Gibraltar, Gibraltar Shipped From Monrovia, Liberia Destination Estimated Time of Sailing (ETS) Gibraltar 11/06/2019 Estimated Time of Arrival (ETA) Monrovia, Liberia 23/07/2019 Transit time in days 42

161,693 JPY Costs Frequency Every 10 days

Freight Method Monrovia, Liberia via Valencia RORO

Important Shipping Information

Alternate Routes Freight Service Details - Consignment No 1 HZJ79L-TJMR\$-A2

Monrovia, Liberia Destination Estimated Time of Sailing (ETS) Gibraltar 11/06/2019 30/06/2019 Estimated Time of Arrival (ETA) Monrovia, Liberia Transit time in days 19 Costs 227,332 JPY 60,729 JPY Insurance Frequency Weekly

Freight Method Monrovia, Liberia via Algeciras FCL ALTERNATE ROUTE BATCH 1 TOTAL 4,919,031 JPY

ALTERNATE ROUTE INDICATIVE BATCH 1 TOTAL 45,547 USD

Important Shipping Information

Delivery

- Kindly note that the quoted ETS/ETA dates are subject to change and will be confirmed at the time of order. Shipping dates will depend on stock levels as well as on our workshop workload, both which change on a daily basis.
- * If delivery is via Container, please note that off-loading and de-stuffing charges may apply at destination and are the responsibility of the buyer.
- * Kindly also note that our vehicle stock is available on a first come first served basis and we recommend that you place your order as soon as possible to ensure availability.

Batch Summary

Batch 1 Summary CIF Monrovia, Liberia via Valencia RORO (Incoterms 2010) 4.852.571 JPV Batch 1 Summary 44,931.21 INDICATIVE USD

Vehicle & Fleet Insurance

TGS has partnered with the leading international insurance firm Clements, to offer its customers competitive world-wide insurance coverage specifically designed for Aid & Humanitarian organisations. Through this partnership, TGS can provide insurance cover on a global flat rate for your vehicle or fleet and includes towing, theft, rental reimbursements amongst other benefits, as listed below:

- Worldwide comprehensive cover
- · A simple, fast and hassle-free claim procedure
- . In addition to the physical damage cover, the policy may be adjusted to your needs and include optional modules (such as excess liability, political violence, personal accident, duty coverage)
- . Customers will benefit from a unique premium discount structure if specific accessories or services are also purchased with vour vehicle









P.O Box 176, 40 Dovi's Tower Road, Gibraltar Tel: +350 200 59100 pr +44 207 906 1745 Fax: +350 200 46262 or -44 208 090 3780 E-mail: sales@toyots

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If interested, please contact us for additional information or request for quotation - sales@wystaig.com

Download a copy of our insurance flyer on this link - -: o

Incoterms

Batch 1: CIF

Under CIF terms, the buyer is responsible for customs clearance at destination.

Payment Terms

Bank transfer with order

Batch 1: Warranty Service - Liberia:36 Months or 100000 Kms (whichever comes first)

Full Toyota warranty and after-sales service is included in the price of the vehicles supplied by Toyota Gibraltar Stockholdings Ltd (TGS). It's important to note that unauthorised traders cannot offer Toyota approved in-country warranty and after-sales service. A free pre-delivery inspection (PDI) and the issue of the Toyota Warranty Booklet will be carried out by the local Toyota Distributor. Please note that the local Toyota Distributor may charge for the installation of unassembled accessories, such as roof rack(s). The Distributor will also carry out a 1000 Km service check, free of charge except for lubricants, fluids or filters used, and will arrange the application of warranty if necessary. Please note that non-Toyota equipment fitted as a TGS option is not endorsed by Toyota and consequently shall not benefit from the Toyota warranty and warranty service. This non-Toyota equipment will be separately warranted by TGS who will match the conditions of the warranty of the original manufacturer. It is important that the Pre-Delivery Inspection is carried out by the Toyota Distributor before the vehicle is put into operational use.

Batch 1: Warranty Service - Note

Please note that any spare parts purchased from TGS may not be accepted or used by the local distributor during routine maintenance or servicing of your vehicle(s) at their premises.

Batch 1 - The Main Official Toyota Distributor is located in Monrovia

Prices are valid until the 7th June 2019, this does not include indicative prices provided in alternative currencies). Please note that the freight price is only valid for the number of vehicles quoted. Any changes in quantities will require a revised quotation.

Spare Parts Service

We have enclosed details of Spare Parts Packages available for each model. Please note the service package is shown with and without tyres; the maintenance package includes tyres as standard. Please also note that when spare parts are shipped with vehicles, considerable savings can be made as the parts will be freighted inside the vehicle free of charge to the final destination.

We hope that our quotation is of interest and look forward to hearing from you. Should you have any queries or require more information, please do not hesitate to contact us quoting our reference.

Yours sincerely

Sylvie Dyos Sales Executive

Direct Line: +35020059183

E-Mail: Sylvie.dyos@toyota-gib.com







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Toyota Motor Europe NV/SA

Batch Number 1

Cover Letter = Batch Number 1 = HZ.79L-DK-T.MRS Service Pack HZ.79L-DK-T.VRS Serv. Pack for HZ.79L-T.MRS-A2 = TGS Workshop Littled Cotions = TGS Compatible Parts Packages

Land Cruiser 79 Single Cabin Pick-Up, 3 seater (Airbags, Air Conditioning, ABS), Model: HZJ79L-TJMRS SFX: A2

General Specifications (For use in extreme climatic and physical conditions)

Transmission 5 speed, Manual. Brakes: Front: Disc, Rear: Drum

Drive Type: 4x4

Tyres Radial Front: 7.50R16-8 5.50F Rear: 7.50R16-8 5.50F. Steel

Suspensions Front: Coil, Rear: Leaf

Wheelbase LWB 3180 mm, Ground Clearance: 235 mm

Weight Kerb Weight: 2140kg, Gross Vehicle Weight: 3200kg, Payload: 1060kg

Seats 3 Seater, Front: 1+2 Bench, Rear: - . Material: Vinyl

Length: 5195mm, Width: 1790mm, Height: 1975mm, Volume: 18.4m3 all excluding accessories **Dimensions**

Colour White Country of Origin Japan

Engine Model 1HZ - 4164cc, Diesel(Tank 90+90I), 6 cylinders, BHP: 129, KW: 96, Cooling (Water), electrics 12 Volts

No of doors 2

Standard Features:

Engine & Chassis Air Cleaner: cyclone with snorkel Battery: 65 amp-hour battery (12v) Battery: 80D26 (12V)
Brake control valve (Load Sensing

Pressure Valve)

Differential - rear 4.300 4P Engine oil cooler

Fuel sedimenter w/fuel filter Full-floating rear axle High altitude compensator Power steering

Stabiliser bar - front & rear

Transfer box protection **Exterior** Antenna

Bumper Deck guard frame

High/Low 2-speed windshield wipers (inc. mist)

Lockable fuel cap

Mud guards: front & rear

Outside rear view mirror - Door

Rear step bumper

Semi-sealed halogen headlamps Side steps

Towing hook: front (eye) with rear pintle hook

Windshield - green laminated

Interior Air cleaner warning Ashtray Assist grips x 3

Bottle Holder (Front) + Back Panel (Pick-Pre-wiring for audio with 2 speakers Up)

Brake fluid level warning Cigarette lighter

Clock: digital

Dash silencer (interior only) Door ajar warning

Drop-down tail-gate with TOYOTA mark Floor mats: rubber mat (FR: D+P) Floor silencer (under front seat)

Footrest - Driver

Fuel gauge Fuel level warning light Sun visors (D&P)

Timing belt replacement warning light

w/lock

Glove box: w/o lock Transfer - 4WD lever & knob Trip Meter Vinyl floor covering Headrests x 2 Heater: front

Voltage meter warning light Interior light: centre Interior rear view mirror (day and night)Water temperature gauge

Miscellaneous Odometer: digital Oil pressure warning light Owner's manual - English One touch 2-4WD selector (H4 button) Owner's manual - French Parking brake warning light Tool Kit & Jack

Security & Safety and antenna Anti-lock braking system (ABS) Seat belts: front x 3 (2 x 3 point & 1 x 2 Central door locking w/ remote

point) Spare wheel carrier; deck guard frame. Speedometer km/h

Steering column-Tilt & Telescopic &

Collapsible

Steering wheel lock Sub fuel gauge Sub fuel tank switch

JPY

2,835,000

Factory Options Included In Price

Airbags / Driver & Front passenger Air conditioning (non-CFC)

Ex-Works Gibraltar, Standard Vehicle

ABS Brakes

TGS Options

Basic Price

2nd battery with split diode and battery holder	110,800	
Fuel pre-filter kit (incl. 2x spare filters) (W/SECOND	39,500	
BATTERY OPTION ONLY)	39,300	
Supply 5x FS1001 Fleetguard spare diesel fuel filters	17,400	
Pioneer AM, FM radio-cd, MP3 player, bluetooth, AUX jack &	25,600	
USB (remov.front)	25,600	
Basic safety pack (Exting./Triangles/First	45 700	
A.Kit/Rope/Vest/Solar Flashlight	15,700	
Emergency escape tool, USB charger	2,100	
Set of locking wheel nuts (not fitted)	4,600	
Transit safety box (to secure easily removable items)	22,100	
2nd spare wheel - Michelin XS 750R16 (sand tyre)	50,700	
Change tyres to Michelin XS 750R16 sand tyre	91,900	
Original carrier extension for 2nd spare wheel (750R16)	5,300	
Vinyl spare wheel cover with TGS logo	0	
Axle (front and rear) and gearbox breather extension kit	20,700	
Recovery point (fitted at the front)	28,900	
Vehicle tool kit (7-piece tool kit/booster cables/solar	41 600	
flashlight/gloves)	41,600	
12V LED Worklamp wih magnetic base	14,400	
20L moulded plastic jerry can (diesel) with flexible spout	10,900	
Electric 12V winch with synthetic rope and heavy duty bull	000 000	
bar	238,900	
Front windscreen repair kit	2,300	
High lift jack 120cm incl. fitting inside the cargo bed	38,600	
Jerry can holder (single), externally mounted in load area	18,300	







Platform for the high lift jack

9,500



Toyota Motor Europe NV/SA

TGS MORE THAN JUST CAR5

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237,370

161,693

59,908

4,852,571

4,852,571

44,931.21

JPY JPY

JPY

JPY

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JPY

USD

INDICATIVE

Pneumatic differential lock FR+RR incl. pump up kit 6m & air pressure gauge	428,300	
1 2 3		
Rear white PVC canopy with stainless steel frame and rear windows	154,300	
Replacement rear bumper bar LC79, inc. Hi-Lift jacking points	125,500	
Winch recovery accessories in storage bag	40,700	
		1,558,600
per unit		4,393,600

Parts packages included

TGS Options Total Price

Sub-Total Price

Total Unit Price

HZJ79L-DK-TJMRS Service Pack HZJ79L-DK-TJMRS Serv.

Pack

Freight Monrovia, Liberia via Valencia RORO

Insurance Please note that all claims have an Excess Clause

(Deductable) applied. This means that the first £1,200 (or equivalent) of a claim is not payable by the insurance

company.

1 Unit CIF Monrovia, Liberia via Valencia RORO **Grand Total**

(Incoterms 2010)

1 Unit CIF Monrovia, Liberia via Valencia RORO **Grand Total**

(Incoterms 2010)

Stock Availability

HZJ79L-TJMRS-A2 Availability: In Stock: 58 Units, MAY: 15 Units, JUN: 8 Units.









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HZJ79L-DK-TJMRS Service Pack HZJ79L-DK-TJMRS Serv. Pack for HZJ79L-TJMRS-A2

Cover Letter - Batch Number 1 - HZ, 79L DK TUMBS Service Pack HZ, 79L DK TUMBS Serv, Pack for HZ, 79L TUMBS A2 - TGS Workshop Fitted Cotions - TGS Compatible Parts Packages

Item	Description	Qty	Unit Price	Price
1	AIR FILTER	5	5,905	29,525
2	BRAKE FLUID DOT4 1L	2	1,829	3,658
3	BULB KIT H4 - TYPE1 KIT: H4	1	1,420	1,420
4	COOLANT 1L LLC CONCENTRATE	1	1,166	1,166
5	COOLER COMPRESSOR BELT	1	1,908	1,908
6	ENGINE OIL 15W40 5L	5	3,106	15,530
7	FAN & ALTERNATOR BELT	1	1,811	1,811
8	FLAP INNER-TUBE 750R16	4	1,440	5,760
9	FRONT BRAKE DISC PADS KIT	1	14,883	14,883
10	FRONT WIPER BLADE (LEFT)	2	2,101	4,202
11	FRONT WIPER BLADE (RIGHT)	2	1,943	3,886
12	FUEL FILTER	8	4,812	38,496
13	INNER TUBE 750R16	4	2,166	8,664
14	OIL FILTER	10	2,367	23,670
15	OIL SUMP PLUG GASKET	10	129	1,290
16	RADIATOR HOSE NO.1	1	2,206	2,206
17	RADIATOR HOSE NO.2	1	2,060	2,060
18	TYRE DUNLOP QUALIFIER TG21 750R16C 114/112S RBL TT	4	29,496	117,984
19	WINDSCREEN WASHER FLUID CONCENTRATE -50 C 0.25L	5	228	1,140

Total: 279,259 Discount 15% 41,889

Total: JPY 237,370 Total: INDICATIVE USD 2,197.87







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Price

Toyota Motor Europe NV/SA

TGS Workshop Fitted Options

Description

Cover Letter - Batch Number 1 - HZ.,791-3K-UMBS Service Pack HZ.,791-DK-TJMBS Serv, Pack for HZ.,791-JMBS-A2 - TGS Workshop Littled Options - TGS Compatible Parts Packages

HZJ79L-TJMRS-A2 - A2, Land Cruiser 79 Single Cabin Pick-Up, 3 seater (Airbags, Air Conditioning, ABS)

This is a partial list of the most frequently requested Options and Accessories that can be fitted by our Workshop. Most of these items are held in stock, but please check availability with our sales team prior to confirming your order. If an item that you require does not appear on this list, we will be happy to provide a full quotation on request.

IMPORTANT: Please note that the estimated shipment date may be affected if any further options are required other than those quoted. This would depend upon the number and type of options chosen, so please contact our sales team for further information.

·			
Options Cat	regory: Protection equipment		
\$B8	8 x lap Type Seat Belts (Only to be used with JUM4 Option)	42,100	JPY
SG8	Aluminium 8mm skid plate LC70 series	46,400	JPY
FLP	Front acrylic light protectors	10,200	JPY
MB	Mesh barrier for factory deck guard LC79	58,100	JPY
RLP	Rear light protectors	16,300	JPY
REVÇAM	Reversing camera & monitor system	78,300	JPY
EX1	1kg fire extinguisher, including fitting	5,200	JPY
\$AFETY	Basic safety pack (Exting:/Triangles/First A.Kit/Rope/Vest/Solar Flashlight	15,700	JPY
EET	Emergency escape tool, USB charger	2,100	JPY
HAMMER	Escape hammer for breaking side glass, inc. seat belt cutter	6,300	JPY
VEST	High visibility vest	500	JPY
REVBUZ	Reversing buzzer 97dB(A) @ 1m	17,200	JPY
BUL\$MT	SRS Heavy duty black smart bull bar including front bumper	185,600	JPY
BUL	SRS Heavy duty bull bar including front bumper	117,500	JPY
UJP	Universal joint protection, front and rear	58,800	JPY
TRI	Warning triangle	008	JPY
Options Cat	egory: Recovery & towing equipment		
JUMP	Heavy-duty jump leads	15,600	JPY
RRBTÓW	50mm tow ball (REQUIRES REPLACEMENT REAR BAR)	14,600	JPY
AIR	Air jack (4,000kg rated)	52,400	JPY
BOGSTP	All terrain vehicle mobility bog strips	88,100	JPY
JACK	Bottle Jack Stonne telescopic	9,800	JPY
RRBUNI	Combined ball & pin coupling (REQUIRES REPLACEMENT REAR BAR)	47,300	JPY
WIB6	Electric 12V winch with synthetic rope and heavy duty bull bar	238,900	JPY
SANDTR	Flexible sand tracks (1 pair)	22,800	JPY
SHOVEL	Folding shovel	8,400	JPY
MINHND	Hand winch (2400kg pull, 1600kg lift) + 20m rope	43,000	JPY
ни	High lift jack 120cm incl, fitting inside the cargo bed	38,600	JPY
HIJLFTMT	Lifting adapter for Hi-Lift jack	8,200	JPY
HIJBAS	Platform for the high lift jack	9,500	JPY
REÇOV2	Recovery kit for recovery point in storage bag	15,700	JPY
RECOVTR	Recovery tracks (1 pair)	30,900	JPY
ROPE	Tow rope, 3000Kg rolling load capacity.	4,700	JPY
RECOV	Winch recovery accessories in storage bag	40,700	JPY
RECOVPFR	Recovery point (fitted at the front)	28,900	JPY
REÇOVPRR	Recovery point (fitted at the rear)	35,200	JPY
=	egory: 4x4 equipment		
LAMPLED	12V LED Worklamp wih magnetic base	14,400	JPY
FOG2	2 x 55W fog lamps (ONLY WITH BULL BAR OPTION)	36,600	JPY
JERFUEL	20L moulded plastic jerry can (diesel) with flexible spout	10,900	JPY
JERWAT	20L moulded plastic water jerry can	5,600	JPY
\$PO3	2x 100W rectangular spot/driving lights (ONLY WITH BULL BAR OPTION)	57,100	JPY
SPO3	2x 100W rectangular spot/driving lights (ONLY WITH SMART BAR OPTION)	64,000	JPY







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GPSENB Enable GPS capability (CODAN Envoy) 34,000 JPY CODTPS Envoy programming software including USB & memory stick cables 52,700 JPY GPSENV GPS receiver/antenna for Codan Envoy/NGT SRx radio (Fitted) 83,900 JPY SATIRD1 Iridium PTT 9575 Extreme satellite phone with vehicle docking adapter (NO SIM CARD) 443,900 JPY VHFDM1 Radio VHF Motorola DM4601, 1,000 channels, 1-25W, 136-174MHz w/keypad 141,200 JPY Options Category: General equipment BEDAL1 Aluminium bed liner (floor and tailgate only) 229,500 JPY JUM4 Supply and fit 4 inward facing folding seats for 8 persons 195,800 JPY FILTFG Fuel pre-filter kit (incl. 2x spare filters) 53,000 JPY FLAGPO Flag pole holder mounted on the passenger side of vehicle 15,400 JPY WRK Front windscreen repair kit 2,300 JPY RCDP Pioneer AM, FM radio-cd, MP3 player, bluetooth, AUX jack & USB (remov.front) 25,600 JPY COOL14 Portable cool box 14L, 12V 21,600 JPY		· ·		
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COOL14 Portable cool box 14L, 12V 21,600 JPY		' ·		
SECHT Seat covers LO79 Sco LHD 3 seater (fitted) 27,100 JPY				
	SECFI	Seat covers LC79 Sco LHD 3 seater (IIIIe0)	27,100	TL1







P.O Box 176, 40 Dovi 's Tower Road, Gibraltar Tel* +350 200 59100 or +44 207 906 1745 Fax: +350 200 46282 or -44 208 090 3780 E-mail* sales@toyota-pib.com www.toyota-gib.com

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Agents for

	Toyota Motor Europe NV/SA		
JUM4	Supply and fit 4 inward facing folding seats for 8 persons	0	JPY
CASE1	Aluminium case	7,500	JPY
FLAGM	Ambassador magnetic flag holder	11,500	JPY
OWF	Owner's manual in French	4,400	JPY
W\$MCDE	Repair manual in English CD format HZJ7# 08/2014>	53,800	JPY
-	gory: Ambulance		
WRAP	Emergency First Aid blanket	1,200	JPY
FAK	First aid kit. recommended by British Red Cross	1,400	JPY
RB	Rescue blanket 150x200cm	2,900	JPY
Options Cate	gory: Power solutions		
BATIBS	2nd battery with IBS battery management and battery holder	148,300	JPY
BAT	2nd battery with split diode and battery holder	110,800	JPY
BATT	Battery reinforcement (for factory battery)	8,200	JPY
POWERPACK	Emergency vehicle power pack 12V/200HP	158,600	JPY
SOCKER	12V 2nd lighter socket mounted in rear	21,000	JPY
WINISO	Isolator Switch, Winch	14,700	JPY
INVER	Power Inverter 600W (12V D/C to 220V A/C)	35,100	JPY
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•	egory: Packages	_	
RECOVPE	Recovery package (electric)	0	JPY
RECOVPM	Recovery package (manual)	0	JPY
SANDP	Sand package	0	JPY
VEP	Vehicle Emergency package	0	JPY
VSP	Vehicle security package	0	JPY
Options Cate	gory: Fleet Management		
TRAÇKHYB	Global Satellite and GSM Vehicle Tracking Device 2226 (with non-activated SIM card)	155,600	JPY
TRACKPORT	Global GSM Portable Vehicle Tracking Quick-Fit Device 6731 (with activated SIM card)	31,300	JPY
TRACKGSM	Global GSM Vehicle Tracking Device 6141 (with non-activated SIM card)	58,500	JPY
TPMPOR1	Tracpoint monthly fee and portable GSM Quick-Fit subscription package (1 year)	39,900	JPY
TPMGSM1	Tracpoint online management software (including security) and GSM subscription package (1st year) <100 assets	47,700	JPY
TPMGSM2	Tracpoint online management software (including security) and GSM subscription package (1st year) >100 assets	42,100	JPY
TPMHYB1	Tracpoint online management software (including security) and HYBRID subscription package (1st year) <100 assets	90,500	JPY
TPMHYB2	Tracpoint online management software (including security) and HYBRID subscription package (1st year) >100 assets	84,900	JPY
TPSGSM1	Tracpoint online security software and GSM subscription package (1st year) <100 assets	44,000	JPY
TPSGSM2	Tracpoint online security software and GSM subscription package (1st year) >100 assets	38,400	JPY
TP\$HYB1	Tracpoint online security software and HYBRID subscription package (1st year), <100 assets	86,800	JPY
Options Cate	gory: Security equipment		
GZVSG1	Vehicle Security Grille - Front Windscreen, headlights & taillights	138,200	JPY
FOGF	Fog lamps for factory LC70 series front bumper	88,000	JPY
RLB	External roll cage, 6 point fixing	559,400	JPY
IMMOB	Ignition immobiliser key switch.	12,500	JPY
MŲL	MUL-T-LOCK transmission (gear) lock	44,200	JPY
ALM	Remote control alarm with siren and engine immobilizer	69,800	JPY
NUT	Set of locking wheel nuts (not fitted)	4,600	JPY
TUBO	Steering wheel lock "FURBOLOCK" - theft deterrent	9,000	JPY
LOC	Steering wheel/pedal lock	6,300	JPY
T\$B	Transit safety box (to secure easily removable items)	22,100	JPY
ETCH	Window etching on all vehicle windows (maximum 7 figures)	21,300	JPY
KEYMASTER	Additional Master Key 70#	4,600	JPY
KEYSUB	Additional Sub Key 70#	5,100	JPY
KEYTRANS	Transmitter, Door Control 70#	30,700	JPY
Options Cate	egory: Decals		
CROBLU3	Blue Cross on White Background on Front Doors & Bonnet	9,800	JPY
Ombiana Oct			
Options Cate	egory: Customized Option		









P.O Box 176, 40 Devi's Tower Road, Gibraltar Tel: +350 200 59100 or +44 207 906 1745 Fax: +350 200 46262 or -44 208 090 3780 E-maili sales@toyota-gib.com www.toyota-gib.com

Agents for Toyota Motor Europe NV/SA

GZMCP MOBILE COMMAND POST CONVERSION LC79 SCB CONV2 Personnel Carrier - Conversion LC79 Scb

3,772,900 JPY

JPY







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Toyota Motor Europe NV/SA

TGS Compatible Parts Packages

Cover Letter - Batch Number 1 - HZ, 79L DK TUMBS Service Pack HZ, 79L DK TUMBS Serv, Pack for HZ, 79L TUMBS A2 - TGS Workshop Fitted Cotions - TGS Compatible Parts Packages

TGS recommends the following genuine spare parts but if you require greater or lesser amounts of any of the parts mentioned, or wish to change specific parts, we are entirely flexible and will tailor the package to your exact instructions.

HZJ79L-TJMRS (ABS + DRUM) Maintenance Pack: HZJ79L-TJMRS (ABS + DRUM) Maint. Pack for HZJ79L-TJMRS-A2 - A2

This Spare parts Package contains parts which are required for normal maintenance requirements during the first two years or 50,000kms of ownership. In addition it contains a comprehensive selection of emergency parts.

In addi	tion it contains a comprehensive selection of emergency parts.			
Item	Description	Qty	Unit Price	Price
1	ABSORBER, SHOCK, FR	2	7,725	15,450
2	ABSORBER SET, SHOCK,	2	7,699	15,398
3	GASKET KIT, ENGINE	1	13,668	13,668
4	SHOE KIT, BRAKE, RR	1	15,371	15,371
5	FRONT/REAR AXLE HUB SEAL	2	2,443	4,886
6	OIL SUMP PLUG GASKET	10	129	1,290
7	WINDSCREEN WASHER FLUID CONCENTRATE -50 C 0.25L	5	228	1,140
8	CLUTCH RELEASE CYLINDER REPAIR KIT	1	2,855	2,855
9	FRONT BRAKE DISC PADS KIT	1	14,883	14,883
10	ENGINE OIL 15W40 5L	5	3,106	15,530
11	ENGINE COOLANT LIQUID CONCENTRATE 5L	Ĩ	4,345	4,345
12	CYLINDER HEAD COVER GASKET	1	1,730	1,730
13	WATER PUMP	1	16,780	16,780
14	THERMOSTAT GASKET	1	435	435
15	RADIATOR HOSE NO.1	1	2,206	2,206
16	RADIATOR HOSE NO.2	1	2,060	2,060
17	EXHAUST CUSHION	4	1,028	4,112
18	AIR FILTER	5	5,905	29,525
19	GLOW PLUG	6	3,512	21,072
20	INJECTOR NOZZLE	6	9,338	56,028
21	WHEEL 5.50F-16 TYPE H STEEL LC70	1	23,111	23,111
22	STEERING DAMPER	1	26,719	26,719
23	FRONT WIPER BLADE (RIGHT)	2	1,943	3,886
24	FRONT WIPER BLADE (LEFT)	2	2,101	4,202
25	REAR AXLE SHAFT OIL SEAL (LEFT/RIGHT)	2	579	1,158
26	OIL FILTER	10	2,367	23,670
27	FAN & ALTERNATOR BELT	1	1,811	1,811
28	THERMOSTAT	1	4,567	4,567
29	WHEEL NUT	10	666	6,660
30	COOLER COMPRESSOR BELT	1	1,908	1,908
31	BULB KIT H4 - TYPE1 KIT: H4	1	1,420	1,420
32	BRAKE FLUID DOT4 1L	2	1,829	3,658
33	FUEL FILTER	8	4,812	38,496
		Total:		380,030
		Discount	15.00%	57,005
		TOTAL: JI		323,025
			DICATIVE USD	2,991.00
34	FLAP INNER-TUBE 750R16	1,440	4	5,760
35	TYRE DUNLOP QUALIFIER TG21 750R16C 114/112S RBL TT	29,496	4	117,984
36	INNER TUBE 750R16	2,166	4	8,664
		Total:		132,408
		Discount	15.00%	19,861
GRAND	TOTAL including tyres	TOTAL: JI	Pγ	435,572
		Total: INI	DICATIVE USD	4,033.00







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Agents for Toyota Motor Europe NV/SA

HZJ79L-DKMRS (ABS + DRUM) Maintenance Pack: HZJ79L-DKMRS (ABS + DRUM) Maint. Pack for HZJ79L-TJMRS-A2 - A2

This Spare parts Package contains parts which are required for normal maintenance requirements during the first two years or 50,000kms of ownership.

In addi	ition it contains a comprehensive selection of emergency parts.		•	,
Item	Description	Qty	Unit Price	Price
1	ABSORBER, SHOCK, FR	2	7,725	15,450
2	ABSORBER SET, SHOCK,	2	7,699	15,398
3	FRONT/REAR AXLE HUB SEAL	2	2,443	4,886
4	SHOE KIT, BRAKE, RR	1	15,371	15,371
5	GASKET KIT, ENGINE	1	13,668	13,668
6	WINDSCREEN WASHER FLUID CONCENTRATE -50 C 0.25L	5	228	1,140
7	CLUTCH RELEASE CYLINDER REPAIR KIT	1	2,855	2,855
8	FRONT BRAKE DISC PADS KIT	1	14,883	14,883
9	ENGINE OIL 15W40 5L	5	3,106	15,530
10	ENGINE COOLANT LIQUID CONCENTRATE 5L	1	4,345	4,345
11	CYLINDER HEAD COVER GASKET	1	1,730	1,730
12	WATER PUMP	1	16,780	16,780
13	THERMOSTAT GASKET	1	435	435
14	RADIATOR HOSE NO.1	1	2,206	2,206
15	RADIATOR HOSE NO.2	1	2,060	2,060
16	EXHAUST CUSHION	1	1,028	1,028
17	AIR FILTER	5	5,905	29,525
18	GLOW PLUG	6	3,512	21,072
19	INJECTOR NOZZLE	6	9,338	56,028
20	WHEEL 5.50F-16 TYPE H STEEL LC70	1	23,111	23,111
21	STEERING DAMPER	1	26,719	26,719
22	FRONT WIPER BLADE (RIGHT)	2	1,943	3,886
23	FRONT WIPER BLADE (LEFT)	2	2,101	4,202
24	OIL SUMP PLUG GASKET	10	129	1,290
25	REAR AXLE SHAFT OIL SEAL (LEFT/RIGHT)	2	579	1,158
26	OIL FILTER	10	2,367	23,670
27	FAN & ALTERNATOR BELT	1	1,811	1,811
28	THERMOSTAT	1	4,567	4,567
29	WHEEL NUT	10	666	6,660
30	COOLER COMPRESSOR BELT	1	1,908	1,908
31	BULB KIT H4 - TYPE1 KIT: H4	1	1,420	1,420
32	BRAKE FLUID DOT4 1L	2	1,829	3,658
33	FUEL FILTER	8	4,812	38,496
		Total:		376,946
		Discount	15.00%	56,542
		TOTAL: JI	Pγ	320,404
		Total: INI	DICATIVE USD	2,967.00
34	FLAP INNER-TUBE 750R16	1,440	4	5,760
35	TYRE DUNLOP QUALIFIER TG21 750R16C 114/112S RBL TT	29,496	4	117,984
36	INNER TUBE 750R16	2,166	4	8,664
		Total:		132,408
		Discount	15.00%	19,861
GRANI	D TOTAL including tyres	TOTAL: JI	γ	432,951









Society for the Conservation of Nature of Liberia (SCNL)



Tubman Boulevard, Congo Town, CARE Compound

P.O. Box 2628 Monrovia, Liberia, West Africa

(+231) 886 -573 -612/0777544611

Website: www.scnlliberia.org

E-mail: scnlliberia@yahoo.com



Michael Garbo

Executive Director

Society for Conservation of Nature of Liberia

March 20, 2020

Dear James Desmond,

Congo Town, Monrovia

This letter is intended to confirm the approximate costs for field sampling per animal. These costs are based on extensive field operations for the USAID funded PREDICT project in which nearly 6000 animals (bats and rodents) were sampled. We estimate that the field costs for consumables is approximately \$27.03 per animal sampled.

We are using this rate for the proposed project: *Reducing the threat from high-risk pathogens causing febrile illness in Liberia*. Please feel free to contact me if you have any questions or need additional information.

Sincerely yours,

Mr. Michael F. Garbo
Executive Director/SCNL

Society for the Conservation of Nature of Liberia (SCNL)



Tubman Boulevard, Congo Town, CARE Compound

P.O. Box 2628 Monrovia, Liberia, West Africa

(+231) 886 -573 -612/0777544611

Website: www.scnlliberia.org

E-mail: scnlliberia@yahoo.com



Michael Garbo
Executive Director
Society for Conservation of Nature of Liberia
Congo Town, Monrovia

March 20, 2020

Dear James Desmond,

Due to difficult road conditions in Liberia and the age of the vehicle, a White Toyota Land Cruiser (2012 — model: HZJ76L-RKMRS; JTEEB71J407015751), our vehicle costs per month over the past 12-months have been approximately \$428.00 for a total of \$5136 annually. This costs were incurred during extensive field work under the USAID funded PREDICT project. In addition, in order to make this vehicle roadworthy for fieldwork it will require an investment of \$670. The annual total for year 1 is \$10,942.00 notwithstanding the purchase of a new vehicle, also included in the budget.

Sincerely yours,

Mr. Michael F. Garbo

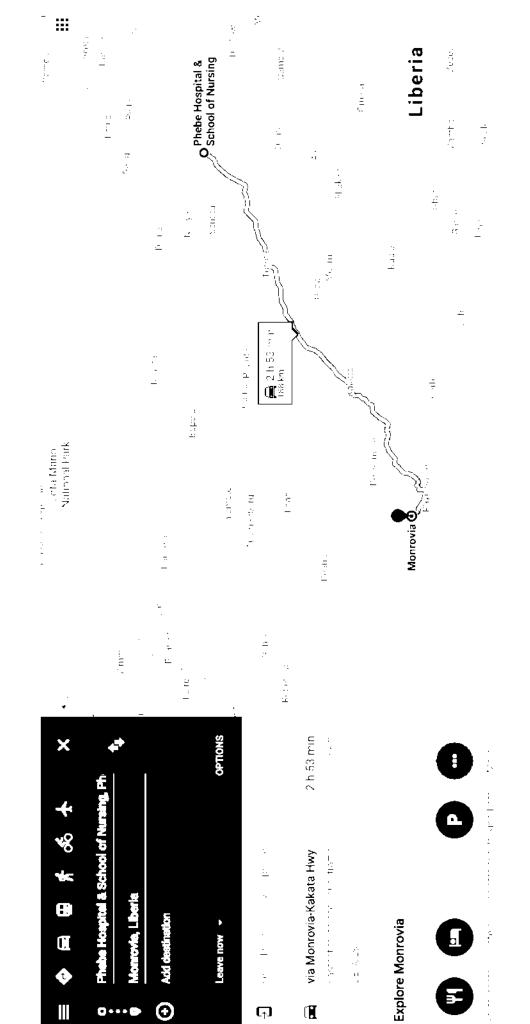
Executive Director/SCNL

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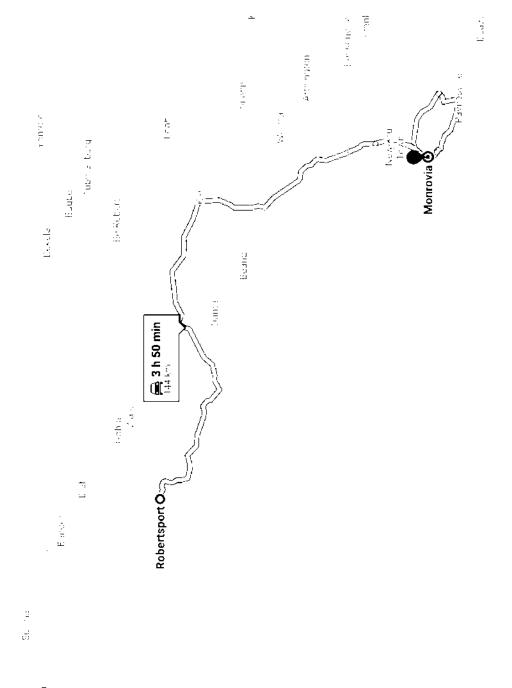


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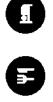
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Page 1 of 4

Note we will order 8, only 5 were allowed to be ordered at a time. This adds another

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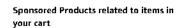
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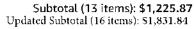
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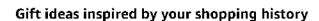
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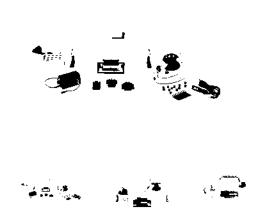


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Compliance

Meets all global certifications. Suitable for worldwide voltages 100 to 240 VAC 50/60 Hz

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2-Year warranty

Specification	ons
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Capacity 6 x 1.5/2mL tubes Max. Speed 6000rpm (rotor 1: adapters for 0.5mL and 0.2mL 50 to 60Hz Hertz tubes) Max. RCF 2999 x G Туре Mini-centrifuge kit 100/240V Voltage **Electrical Requirements** Universal plug; Car adapter Includes Mini Centrifuge, 12V Refrigerated No car adapter, 12V DC power adapter, transport box, 16place micro tube rack For Use With Mini centrifuge (Equipment) Product Line Centrifuges and Microcentrifuges

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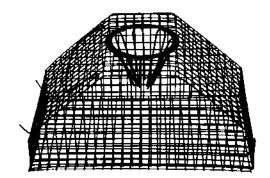


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- Size of the opening can be adjusted to accommodate the size of the rodent being trapped
- · Simple hinged bottom makes for easy removal and reuse
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- Easy-to-use design

Product Summary

This non-mechanical Grip Catch and Release Rodent Trap with multi-catch technology is the ideal and humane way to trap and relocate larger rodents, rats, squirrels, chipmunks and other similarly-sized gnawing rodents and animal pests. Fully assembled and ready to use. 12 1/2in.L x 8in.W x 6in.H.

What's Included

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Features + Benefits

- Multi-catch technology allows you to catch multiple pests at one time without the need to reset the trap again and again
- Size of the opening can be adjusted to accommodate the size of the rodent being trapped
- · Simple hinged bottom makes for easy removal and reuse
- · Steel construction resists rust and corrosion
- · Easy-to-use design

Key Specs

 Item#
 68611
 Includes
 1 trap

 Brand
 Grip
 Assembly Required
 No

Manufacturer's Warranty 3 month parts/no labor Dimensions L x W x H (in.) 12 1/2 x 8 x 6 1/2

Ship Weight 2.0 lbs Product Weight (lbs.) 2

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Proposal Number FRBAA14-6-2-0436

Phase I Proposal Number FRBAA14-6-1-0945

Topic Thrust Area 6

Proposal Title Reducing the threat from high-risk pathogens causing febrile illness in Liberia

Applicant Information

ApplicantEcoHealth AllianceMail Address460 W 34th St 17th Floor

Tax ID 311726494 **City** New York

DUNS 0770900660000 State/Province NY

CAGE Zip 10001 - 2320

Website Country USA

 POC Name
 Dr. Ellen Carlin
 POC Email
 carlin@ecohealthalliance.org

Cost

Applicant Certification

Organization Type Non-Profit Organization

Are Human Subjects involved? No

Are Vertebrate Animals involved? No

Has a proposal for essentially equivalent N work been submitted to other US government agencies or DoD

components?

Agency 1 Contract/Grant No.

Agency 2 Contract/Grant No.

Agency 3 Contract/Grant No.

Are you a current DoD Contractor or No

Grantee?

Agency Point Of Contact

Phone #

Principal Investigator 1 Business Official 1

Prefix	Dr.	Prefix	Dr.
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State	NY	State	NY
Country	USA	Country	USA
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Proprietary Information (list page numbers)

List a maximum of 8 Key Words or phrases, separated by commas, that describe the Project.

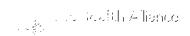
Technical Abstract (Limit your abstract to 200 words with no classified or proprietary information) Project summary/abstract This publicly releasable abstract is provided to DTRA for use in fulfillment of Section 8123 of the Defense Appropriations Act and future versions of the same. This project is designed to help identify the causes of infectious acute febrile illness (AFI) in Liberia, particularly among patients with a history of animal contact. AFI is a group of illnesses characterized by the rapid onset of fever and may include related symptoms like headache, chills, joint pain. Many of the pathogens that cause AFI are difficult to diagnose. This is especially true in countries where a malaria diagnosis is often presumed and no further testing is performed, a situation that creates vulnerability to unexpected outbreaks. In Liberia, one of the countries directly impacted during the 2014-2016 West Africa Ebola outbreak, the pathogens and risk factors that result in a burden of febrile illness in the population have not been systematically identified. This project's goal is to build capacity in Liberia for threat reduction through an integrated human-animal surveillance approach to high consequence zoonotic pathogens associated with human AFI. We will do this by testing samples from patients presenting at hospitals with febrile illness for high-risk pathogens, while also assessing the animals with which these patients interact. At the National Public Health Institute of Liberia, we will use molecular methods including real-time PCR, next generation sequencing, and antibody serology to identify viral, bacterial, and protozoal causes of

fever. Laboratory results will be compared to the presumptive clinical diagnoses. We will interview patients to characterize their animal exposure and will sample domestic and peridomestic animals (rodents, bats, livestock, dogs) in the homes and communities of pathogen-positive patients. Results will allow us to develop improved clinical diagnostic protocols, estimate the frequency of human exposure to high consequence pathogens, characterize exposure to potential animal reservoirs and carriers, and implement risk reduction strategies. This project will support the goals of Liberia's One Health Coordination Platform and provide a basis for future detection, surveillance, and threat reduction activities. The work will build on U.S. investments that have begun to reveal circulating animal pathogens of highconsequence concern, utilize the substantial laboratory infrastructure built in Liberia in the last four years, and sustain personnel capacities that have been developed to support it.

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Reducing the threat from high-risk pathogens causing febrile illness in Liberia/William B. Karesh

DTRA Thrust Area 6/Cooperative Counter WMD Research with Global Partners Broad Agency Announcement HDTRA1-14-24-FRCWMDBAA



I. ABSTRACT: To test the hypothesis that a proportion of acute febrile illness in Liberia is misdiagnosed and potentially the result of emergent zoonotic pathogens of public health and proliferation risks, we will build local capacity using One Health approach to assess circulating pathogens and improve clinical and biosurveillance protocols for biological threat reduction. With the National Public Health Institute of Liberia (NPHIL), we will enroll patients presenting with acute fever at major hospitals in Monrovia and Bong County. Patient samples will be screened at the point of care per normal clinical protocols and tested at NPHIL for high-consequence viral, bacterial, and protozoal causes of fever via multiplexed specific real-time PCR, next generation sequencing, and convalescent serology. Laboratory results will be compared to the presumptive clinical diagnoses and both datasets will be compared to county surveillance records. We will interview patients to characterize their animal exposure and, with a local non-governmental organization and the Ministry of Agriculture, will sample domestic and peridomestic animals (rodents, bats, livestock, dogs) in the homes and communities of pathogen-positive patients to identify evidence of those pathogens in animals. Results will allow us to develop improved clinical diagnostic protocols, estimate the frequency of human exposure to high consequence pathogens, characterize exposure to potential animal reservoirs and carriers, and implement risk reduction strategies. This project will support the goals of Liberia's One Health Coordination Platform and provide a basis for future detection, surveillance, and threat reduction activities.

II. SCOPE

A. Objective: This project's goal is to build Liberian capacity for threat reduction through an integrated human-animal surveillance approach to high consequence zoonotic pathogens associated with human acute febrile illness (AFI). AFI is a group of illnesses caused by a variety of pathogens difficult to differentiate clinically due to similarities in presentation. While there is no universal definition, AFI is often considered as rapid onset (i.e., acute) fever with or without related symptoms (headache, chills, joint pain). Many AFI causative agents may go undetected empirically by common rapid diagnostic tests or by existing surveillance platforms. We will work to mitigate this challenge through scientific discovery, hypothesis testing, and capacity building while leveraging significant U.S. government and other investment in workforce building and laboratory infrastructure. As many emerging diseases have been inadequately studied in Liberia,² this project will provide fundamental baseline knowledge of pathogens circulating and potentially causing human illness. Its outcomes will suggest opportunities for improved clinical training, tailored case definitions, and other methods to improve identification rates for especially dangerous pathogens at the index case level and prior to widespread transmission.³ The desired endpoint is a broad, sustainable surveillance program that enhances public and global health security. We outline three objectives toward the project goal and three hypotheses to test in support of their achievement:

Hypothesis 1: Emergent and/or high-risk pathogens cause an undiagnosed subset of acute febrile illness in humans in Liberia \rightarrow Objective 1: Identify causative agents of \land FI in Liberia Hypothesis 2 (a sub-hypothesis of H1): \land subset of \land FI cases are due to high-consequence zoonoses, even among patients who test positive for endemic pathogens \rightarrow Objective 2: Identify evidence for zoonotic transmission of high-consequence \land FI pathogens Hypothesis 3: Exposure to domestic animals and wildlife increases the likelihood that \land FI cases result from zoonotic animal to human transmission \rightarrow Objective 3: Identify risk factors for zoonotic \land FI in humans

B1. Background: Limited detection and diagnostic capacity reduces the ability of clinicians and public health professionals to accurately identify infectious agents. Febrile illness presents an unquantified and undifferentiated burden to Liberian health and the health care system and continues to do so. Liberia's public health authorities do not assess incidence of febrile illness. Some studies are just beginning to assess this. Other published studies have reported on causative agents of infectious fever in other low- and middle-income countries (LMIC), including in West Africa.^{2,4-6} In low resource settings where malaria is endemic, patients presenting with febrile illness may be treated presumptively for malaria⁷ and not receive an accurate diagnosis for reasons such as poor differential protocols or lack of available diagnostics.8-11 Co-infections may also be common, particularly with malaria parasites; for example, 19% of Ebola PCR-positive samples from an Ebola Treatment Unit in Liberia were also positive for *Plasmodium* spp. 12 Malaria was the clinical diagnosis for >60% of fever cases in a recent study in Tanzania, but the actual cause of fever in only 1.6%. 13 Where studies have sought to investigate the source of febrile illness, highrisk pathogens of proliferation concern such as Brucella, dengue virus, and viral hemorrhagic fevers have been observed.^{2,4,14} In Sierra Leone, over 25% of patients negative for Lassa virus showed serological evidence of infection with other arthropod-borne hemorrhagic fever viruses.⁶ The specific challenge for Liberian health authorities is that pathogens that result in a burden of febrile illness in the population—and the zoonotic transmission pathways that may drive it—have not been systematically nor comprehensively identified.

B2. Research Justification: Inaccurate identification of pathogens may result in untreated illness, further transmission, and development of antimicrobial resistance. 15.16 It can increase the risk of accidental acquisition of dangerous pathogens from the environment or diagnostic specimens. Improper diagnosis can also skew health care providers' perceptions of disease prevalence among health care providers.³ Diagnosis limited to a single disease (malaria, typhoid) ignores the risks of co-infection. Further, a poor understanding of the diversity of zoonotic viruses in animal reservoirs creates an impediment to preventing outbreaks of novel zoonotic viruses; developing an a priori understanding of these pathogens' molecular characteristics may help reduce the time to identification of the animal reservoir and mechanism of spillover in an outbreak.¹⁷ Because many emerging diseases have been inadequately studied in Liberia, this project will provide new knowledge of pathogens circulating in people and animals and potentially causing human illness there. This baseline will enable more informed biosurveillance and decision-making, and the process to develop this knowledge offers significant opportunity for building Liberia's capacity to rapidly and accurately detect and diagnose biological threats. The study will promulgate new findings about especially dangerous and other high-consequence agents (U.S. "Select Agents" and other emerging infections with pandemic potential) circulating in Liberia that may result in pandemics or be appropriated for misuse, and for which risk assessments and mitigation measures are yet to be developed. Hypothesis testing will leverage preliminary data we have collected through USAID's PREDICT project about the general Liberian population, which suggest that the split among those who do and do not have live animal contact is up to 60%/40%, enabling a control group and thus a strong statistical basis from which to test hypothesis 3. While causation cannot be definitively confirmed in any case in which we find a zoonotic pathogen, by uncovering individuals' exposures to animals that are known hosts to those pathogens, and by identifying the same pathogen (and genetic relatedness) or antibodies in such animals, we can develop an evidence base tied to transmission risk. The use of human subjects is necessary to enable testing the hypotheses at the core of this proposal about human febrile illness their interactions with livestock and wildlife. Human sample testing will be for research purposes only, not diagnosis; the multiplex

screening assays we will employ are not approved for clinical use and the tests in most cases will not be run immediately. An Institutional Review Board application is pending. Sampling of animals (non-lethally) is necessary to assess the presence and prevalence of circulating high-consequence pathogens and antibodies in animal populations, and to test the hypothesis that human interaction with these animals may increase transmission risk. An Institutional Animal Care and Use Committee application is pending. Bats and rodents are prioritized because they are key wildlife reservoirs for zoonotic viruses; ¹⁸ livestock and dogs can also harbor zoonotic agents and are likely to have relatively significant direct and indirect interfaces with humans.

B3. Expected Outcomes and Scientific Impact for C-WMD Science: This project will help further identify and characterize the etiological agents of infectious AFI in Liberia, particularly among patients with a history of animal contact. It will build on U.S. investments that have begun to reveal circulating animal pathogens of high-consequence concern and will utilize the laboratory infrastructure built in Liberia in the last four years and support personnel that have been trained to support it. It will also support Liberia's One Health Coordination Platform (OHCP) by using an integrated human-animal approach to surveillance and detection of high consequence zoonotic pathogens, and by ensuring that relevant sectors including those representing the environment (through the national Forestry Development Authority and through EHA's sustainable forestry research initiative) are included in data sharing and are represented at project workshops. The combined approach of PCR (singleplex and multiplex), next-generation sequencing (NGS), and antibody serology will maximize detection capability more than any single test alone, ¹⁷ and enable the design of more routine single- or multi-plex qPCR testing flows based on the most common pathogens for the national labs to use when receiving AFI samples. Serology will be especially relevant for animal sampling because antigen positive sample rates may be low (PREDICT bat sampling, for instance, provided $\sim 4\%$ positive viral infection rate on PCR; unpublished data). The project will also produce a unique incidence profile of high-consequence viral and bacterial agents in the human febrile population and their relatedness to pathogens circulating in animal species with close human contact, and differentiate the illness they cause from routine or endemic pathogens including protozoal species. Establishing a pathogen baseline or a microbiodiversity inventory is critical for: 1) enabling rapid identification of agents of high-consequence concern to the national and international communities; 2) creating a comparator for future surveillance data and intervention activities; and 3) building capacity for sampling and diagnostics to enable targeted and syndromic surveillance. Accurate and timely detection of rare and high-risk pathogens based on clinical assessment of febrile patients combined with appropriate and accurate laboratory testing can greatly facilitate implementation of appropriate control measures, reducing population morbidity and mortality, and minimizing potential biological threats. 10,19,20 Building on existing DTRA investments, this project will help ensure continuity of past and ongoing training and capacity building efforts. By collating results from a similar project in development for Guinea and coordinating with other febrile illness studies in-country, this work will help produce a regional picture of febrile zoonotic disease risk in West Africa that can inform U.S. personnel decisions in the region, surveillance efforts, and medical countermeasure investment priorities.

B4. Potential Challenges and Proposed Solutions: Collaborative research projects assume a degree of risk (communication difficulties, pressures on sustainability of each partner's commitment). We have selected core collaborators based on their excellent scientific reputation and existing relationships with EcoHealth Alliance (EHA). The Liberian ministries and scientists implementing this project are heavily invested in the success of their surveillance and detection capacity building, demonstrated through their successful PREDICT partnerships and collaboration

with DTRA to construct a new reference laboratory; all U.S. partners have demonstrated a sustained commitment to and successful track record in West Africa and to strengthening surveillance and detection. To overcome laboratory diagnostic challenges, we will employ a multiplatform laboratory approach to achieve the greatest sensitivity and specificity possible and the addition of NGS will improve power to detect positive samples. Socially, we do not believe that mistrust of government/health workers post-Ebola crisis presents a risk: our patient population will have already sought health care, and we will be using local hires to implement the study; EHA also has a track record of successful enrollment of human subjects in Liberia for PREDICT over the last three years. EHA will provide financial oversight over all project partners' budgets and expenditures. Liberia does not have a VAT and our conversations with Liberian partners indicate it is unlikely they will instate one in the near future.

C. Programmatics

- 1. Study site: Liberia has been working to mitigate challenges in infectious disease diagnosis, surveillance, and case reporting to the national level.^{21,22} In accordance with Integrated Disease Surveillance and Response (IDSR) system guidelines, national protocols require diagnostic confirmation for many of the known causes of febrile illness,²³ but in many cases no further testing is performed. We choose to work in Liberia because: 1) recent federally-funded evaluations have begun to document a presence of high-consequence and potentially highconsequence zoonotic pathogens circulating in animal populations there, including Zaire ebolavirus;²⁴ 2) the presence of and risk factors for emerging infections are still relatively understudied; and 3) historically weak laboratory infrastructure has recently benefitted from construction and capacity building since the Ebola outbreak, and now requires further training and sustainment. At the county level, Montserrado is chosen due to the greatest potential for a large sample size from one of its major public, high-volume hospitals with 200 beds, Redemption Hospital on the outskirts of Monrovia. Bong County is a rural comparator with Phebe Hospital, a private hospital that receives public money and affords a reasonably wellequipped facility with good patient volume. Further, Bong County borders the Forest Region of Guinea, where inaccessibility inhibits research on the Guinea side of the border. Both counties also demonstrate relatively detailed weekly reporting to their health ministries, thereby providing a sizable basis for comparison to weekly epidemiological data.
- **2. Performers**: EHA will lead on study design/methodological development, animal sampling field implementation (co-lead), and analysis and results development/dissemination. All other major activities will be led by country partners, including government agencies and NGOs. Our collaborative team incorporates the human, animal, and environmental sectors, critical to supporting a One Health approach and meeting project objectives to identify and mitigate zoonotic diseases. Team members have a long history of successful collaborations on research and capacity building initiatives (number of years of collaboration with EHA listed in first column):

Institution	Study design	Human patient recruit- ment	Human sampling, transport & training	transport & training	Sample testing & lab training	Analysis & dissemination		
EHA	✓(Lead)			√(Co-Lead)		✓(Lead)		
Overall proj	ect oversig	ght; day-to-d	lay project	William B. Karesh, DVM (PI)				
development and strategic management,				Ellen P. Carlin, DVM (Co-I)				
including w	eekly phor	ne calls with	partners;	Jonathan Epstein, DVM, MPH, PhD (Co-I)				

study design	n developr	nent and refi	nement; field	Anne Laudisoit, Ph	D, Senior Eco	logist		
sampling; h	uman subj	ects research	n training;	Emily Hagan, MPH, Behavioral Risk Scientist				
data analysi	s; risk red	uction works	shop lead; and	Catherine Machalaba, MPH, Policy Advisor				
information	dissemina	ation through	ı workshops,	Noam Ross, PhD,	Senior Scientis	t, Modeler		
conferences	s, and pape	ers; Tasks 1-	7					
NPHIL (4)	✓	✓(Lead)	✓(Lead)		√(Co-Lead)	✓		
Overall pro	ject oversi	ght for Liber	ria-based	<i>Mosoka Fallah</i> , Ph	D, MPH, MA	(Co-I)		
activities; s	tudy desig	n; lab oversi	ght and	Fatorma Bolay, Ph	D, MS, Labora	atory Scientist		
personnel d	ecisions;			John Dogba, MPH	I, Laboratory S	cientist		
direct labor	atory supe	rvision; pers	onnel	Bode Shobayo, MS	Sc, Laboratory	Scientist		
decisions; a	ssisting w	ith laborator	y training,					
staffing, &	testing; lia	ison with M	OH on humar					
sampling; li	iaison with	i MOΛ for v	et personnel;					
data analysi	s & disser	nination; Tas	sks 1-3, 6, 7					
LCRP (10)	✓		✓	√(Co-Lead)		✓		
EHA in-cou	ıntry proje	ct liaison; w	orking with	James Desmond, MS, DVM, Field Veterinarian				
all ministrie	es and NG	Os to ensure	intra-project					
		sight over an						
sampling; s	tudy desig	n, data analy	sis &					
disseminati	on; Tasks	1, 4-7						
SCNL (4)	✓		√	✓(Lead)	✓(Lead)	✓		
			plementation	Michael Garbo, M	S, Environmer	ntal Scientist		
		lesign; data ε	malysis &					
disseminati	on; Tasks	1, 2, 4-7						
UNMC	√			√	√	✓		
(0.4)					·			
		•		Michael Wiley, Ph	D, Molecular E	Biologist		
		control; stu						
	s & disser	nination; Tas	sks 1, 3, 6, 7					
GU (4)	✓					✓		
		ents to study		Claire Standley, Pl				
1 *		on data gen		Erin Sorrell, PhD,	Senior Scientis	st		
		Liberia and s	_					
_		nea, where th	ney are					
	•	project; data						
	-	ng and imple						
		neetings; Ta						
EHA: EcoHeal	th Alliance:	MOH: Liberia	Ministry of Hea	lth: NPHIL: National Pr	iblic Health Instit	ute of Liberia:		

EHA: EcoHealth Alliance; MOH: Liberia Ministry of Health; NPHIL: National Public Health Institute of Liberia; SCNL: Society for the Conservation of Nature of Liberia; LCRP: Liberia Chimpanzee Rescue and Protection; UNMC: University of Nebraska Medical Center; GU: Georgetown University Center for Global Health Science and Security.

D. Relevance

In Liberia, individuals suffering from fever who report to health care providers may be treated symptomatically or empirically for presumptive endemic diseases like malaria or typhoid. Positive results from rapid diagnostics (e.g., for malaria and typhoid), which are becoming increasingly available at the point of care even in remote areas, do not rule out other underlying febrile agents for which advanced testing is not the norm; in general, samples to test for Ebola are sent to the

national reference laboratory only when a clinician has a particular index of suspicion. The scientific community's fundamental understanding of infectious febrile illness in Liberia is thus based largely on conjecture. This project will advance the state of emerging infectious disease science by generating knowledge about a range of circulating pathogens in people and animals in Liberia, including presence, speciation, incidence, and estimated prevalence. This foundation will allow research and public health communities to measure change against this baseline—both naturally occurring changes, and reductions in incidence following effective interventions. It will also help establish baselines for incidence which can then inform procedures such as outbreak investigations or activation of the national emergency operations center. The project will also advance Liberia's capacity for research and biosurveillance. Improving ability to rapidly detect and report new incidence will improve the country's readiness for outbreaks whether natural or intentional. Informing interventions such as modified clinical intake, differential algorithms, and diagnostic protocols will minimize vulnerability to outbreaks. Little is known about viral dynamics of wildlife as they relate to spillover risk, creating a significant impediment to preventing human outbreaks of novel zoonotic viruses. 17 This study will help generate an evidence base and strengthen Liberia's experience in leading interdisciplinary research and surveillance efforts. The project will engage students from the University of Liberia and Cuttington University, Project staff will be fully trained in human subjects research, sample transport, biosafety and biosecurity, diagnostic testing, animal sampling, data analysis, risk reduction, and reporting. We will ensure that all surveillance data and other results are shared among the Liberian ministries of health, agriculture, and forestry, and we will assist them in their reporting to the World Health Organization (WHO) and the World Animal Health Organisation (OIE), thus advancing Liberia's commitment to meeting international obligations.

III. CREDENTIALS

Principal Investigator: Dr. William Karesh is the Executive Vice President for Health and Policy for EHA. He serves as the President of the OIE Working Group on Wildlife Diseases. Dr. Karesh was the Technical Director of the \$75M USAID Emerging Pandemic Threats PREDICT project, Dr. Karesh designed, organized, and managed the implementation of zoonotic disease research in 28 countries and served as the liaison to coordinate with government, university, and NGO partners in the \$140M second phase of the project resulting in the collection of over 350,000 specimens from humans, livestock, and wildlife yielding gene sequencing suggesting the identification of over 900 novel viruses, including a new filovirus and the first finding of Ebola Zaire in a bat in West Africa. He has created, directed, and/or managed projects and programs in more than 60 countries, including efforts to minimize the impact of diseases such as Ebola, influenza, and anthrax and to develop global surveillance systems for emerging diseases.

Prime Organization: EcoHealth Alliance is a leading research organization established more than 40 years ago that works with local partners in more than 30 countries at the nexus of health, biodiversity, conservation, and international development. EHA has extensive field experience in West Africa and expertise in pandemic prevention and the interconnectedness among zoonotic pathogens, humans, animals, and the environment. EHA has worked in Liberia since 2015 as the country lead for USAID's PREDICT project and since 2019 undertaking a privately funded forest sustainability and health initiative. Working with Liberian partners including NPHIL and SCNL, EHA recently detected Zaire ebolavirus for the first time in a bat in West Africa via the sampling methods that will be used in the present study. For the PREDICT project, our team in Liberia enrolled 585 people and sampled 5387 wild and domestic animals. EHA has a staff of

approximately 50 based primarily in New York City, including scientists (e.g., social scientists, veterinarians, ecologists, analysts, IT experts, economists, epidemiologists), administration, and communications staff. EHA has an extensive record of publishing high quality, peer-reviewed papers, journals, briefing documents, and reports. EHA's demonstrated multi-disciplinary expertise in producing highly utilized and understandable science-based outputs will contribute significantly to achieving project goals and provide objective methods for tracking project utilization of project findings.

Partners: The National Public Health Institute of Liberia (NPHIL) is responsible for infectious disease surveillance, detection, and reporting in Liberia. NPHIL is charged with public health and biomedical research functions and as such will lead the project with government partners through a memorandum of understanding (MOU). DTRA is working with NPHIL to build a biosafety level 3 laboratory that will replace its current research laboratory (Liberia Institute of Biomedical Research, LIBR); LIBR is already equipped with singleplex and multiplex real-time PCR and ELISA serology capability and is capable of safely and securely running a variety of assays; a related laboratory capacity building project is under consideration and if funded will work within LIBR emphasizing NGS. NPHIL will work via an MOU with the Ministry of Health (MOH) to implement the human clinical element of the present study by providing personnel to execute the study protocol at county hospitals. NPHIL will also support the training of scientists and technicians from the Ministry of Agriculture's (MOA) Central Veterinary Laboratory (CVL). The scientists will train at NPHIL in the same techniques as the NPHIL scientists. Training a CVL technician and local students in field and laboratory work is a priority for this project and will support Liberia's own OHCP priorities. The scientists will ultimately bring the skills back to their own laboratory, which is equipped with modern equipment, test kits for priority zoonotic diseases, reagents, and consumables that can be used for PCR, ELISA, and bacteriological techniques. Liberia Chimpanzee Rescue and Protection (LCRP) is a Liberia-based non-governmental organization supporting chimpanzee conservation. LCRP works closely with Liberian ministries, including NPHIL and the Forestry Development Authority, on regulatory and policy matters; and advances research on chimpanzee health by working to mitigate infectious disease introduction, including high-consequence infections such as influenza and monkeypox. Its director has been an EHA employee or consultant for 10 years. Society for the Conservation of Nature of Liberia (SCNL) is a non-profit organization that promotes nature conservation, supports the establishment of a protected area network, encourages good governance of natural resource management, and increases public participation in biodiversity conservation. SCNL has implemented animal sampling requirements for the Ebola Host Project (part of PREDICT) through its field teams, who are highly trained in animal sampling, especially bat sampling. Given its experience with cold storage transport, SCNL will also transport the human samples. The University of Nebraska Medical Center (UNMC) is one of four campuses of the University of Nebraska, and one of the major research centers in the state with excellent laboratory and infectious disease credentials. UNMC is developing a separate laboratory capacity-building proposal with NPHIL at LIBR that, if funded, would create efficiencies with training and sample processing for this project. UNMC will leverage as appropriate ongoing work of the U.S. Naval Medical Research Unit-No. 3 (NAMRU-3) in the country in support of the project's laboratory testing objectives. The Georgetown University Center for Global Health Science and Security (GU) is a leading academic institution working on applied public health and policy objectives globally. Its scientists have backgrounds in threat reduction approaches, laboratory bench science, and biosurveillance

reporting structures. The team worked on a 5-year cooperative agreement to improve capacity in neighboring Guinea in emergency management, laboratory capacity, and One Health coordination.

IV. WORK TO BE PERFORMED

A. General. We will produce a cross-sectional data set that identifies pathogens and their relative abundance circulating in people and animals that are potentially resulting in human cases of acute febrile illness. Our approach will enable us to make preliminary epidemiological connections among species. It will also enable us to characterize zoonotic risk and allows for the potential to

design interventions. We will compare laboratory-confirmed diagnostic data to hospital diagnoses and disease data as reported to the MOH, and in so doing will assess the level of sensitivity in current diagnoses, and work with local partners to develop improved clinical diagnostic pathways. Through workshops (Attachment 3) and laboratory training, Liberian partners will further strengthen their growing capabilities in diagnostics and surveillance, thereby increasing their opportunities for rapid detection and concomitant consequence mitigation. With two option years, we will create opportunities to expand the study to new sites to the north and northeast with different ecologies and occupational drivers of disease risk (livestock farming, mining), and host a regional technical workshop. Public health surveillance and biomedical research training will be a central component of the study.

B. Summary of Tasks

Task 1: Establish an evidence-based research platform for assessing and addressing high-consequence pathogens in Liberia (Y1); **Task 2**: Enroll human patients and undertake sampling (Y1-3 & OY1-2); **Task 3**: Undertake sample

Trainin	g Workshops	Timeline
Works	nop 1a: All participants	At Kickoff
•	Overall research study protocol	
Worksl	nop 2a: Task 2 personnel, students	Mid Y1
•	Overview of human study protocol	End Y3
•	IRB/human subjects research protocol	
•	Recruitment, consent, & enrollment	
•	Patient questionnaire and	
	administration	
•	Community safety during sample	
	collection	
Worksl	nop 3a: Task 3 personnel, students	At kickoff
•	Biosafety and biosecurity	Mid Y1
•	Sample storage and disposition	Y3 refresh
Works	nop 3b: Task 3 personnel, students	At kickoff
•	real-time PCR testing and analysis	Mid Y1
•	NGS testing and analysis	Y3 refresh
•	Serology testing and analysis	
Worksl	nop 4a: Task 4 personnel, students	At Kickoff
•	Overall animal study protocol	Mid Y1
•	IACUC/animal subjects research	Y3 refresh
•	Personal protective equipment	
•	Transport protocol	
Worksl	nop 5a: Task 3 and other interested	Y2
person	nel	
•	Results interpretation	
•	Bioinformatics	
	nop 6a: All personnel, other invited	OY2
ministr	ies relevant to risk and impact mgt.	
•	Questionnaire and diagnostic data	
	analysis	
•	Reporting (national and international)	
•	Economic analysis	
•	Risk reduction strategies	

processing and testing (Y1-3 & OY1-2); **Task 4**: Undertake preliminary animal sampling (Y1); **Task 5**: Visit communities: human-animal interface assessment, animal sampling, and human serology (Y2-3 & OY1-2); **Task 6**: Analyze data (Y2-3 & OY1-2); **Task 7**: Disseminate information to stakeholders (Y2-3 & OY1-2)

C. Detailed Tasks

Year 1

Task 1: Establish an evidence-based research initiative for assessing and addressing highconsequence pathogens in Liberia

Description and Execution: EHA will oversee refinement and finalization of human and animal study protocols and data collection instruments. This stage incorporates planning and training in the protection of human subjects and animal subjects; training in laboratory biosafety, biosecurity, and safe disposal of samples or sampling materials after laboratory work (which will adhere to guidelines in the BMBL 5th edition, sections III VI²⁵); laboratory diagnostic techniques; and any necessary revisions to original sampling and testing approach based on DTRA feedback and discussion at the kick-off meeting. We will refine our human subjects data collection tools, piloting our instruments within our research network to assure validity and reliability of the questionnaires. A database will be created for secure data entry and data storage of human subjects data. MOH will assign personnel to train clinical staff and oversee study in clinics in Monrovia and Bong. NPHIL and CVL will assign personnel to laboratory. EHA and Liberian partners will host kickoff meeting in Monrovia, Liberia to which all partners will be invited. Each study partner will present on its roles and specific desired outcomes to support its agency's priorities. In addition, we will invite other researchers undertaking febrile illness and related research in-country, such as the U.S. Centers for Disease Control and Prevention (AFI study), the Walter Reed Army Institute of Research (Joint West Africa Research Group), and the Henry Jackson Foundation (sepsis study). Human subjects research and lab training workshops will occur during kick-off.

Resources: EHA: Three EHA (3) scientists will oversee all necessary refinements to and finalization of human and animal study protocols; work will be done in collaboration with all study partners for input and review. One (1) scientist to provide human subjects research training and clinical protocol-specific training. NPHIL and SCNL: Will assist EHA with logistics for kick-off meeting (conference location, agenda development, etc.). All partners: at least one (1) scientist per partner (and three (3) from EHA) to attend kick-off meeting. UNMC scientists (2) will host first of three five-day laboratory training workshops (biosafety & biosecurity (1 day), diagnostic techniques (4 days)) concurrent with kick-off.

<u>Metrics of success</u>: Number of partner organizations and number of scientists from each organization who attended kick-off meeting; presentations delivered; partner agreement to finalized protocols; number of personnel assigned to field and lab positions.

<u>Deliverables</u>: Methods and related protocols available for distribution to all partners at or before kick-off meeting and revised as necessary after kick-off; list of Liberian personnel to be assigned to field and laboratory stations; database for secure human subjects data storing and analysis; data collection instruments; completed kick-off meeting.

Subtasks: (Format: Year#.Task#.Subtask#)

- 1.1.1 Refine and finalize human and animal study protocols and data collection instruments
- 1.1.2 Secure and finalize all research permits (human and animal) including IRB, IACUC, and national approvals in Liberia
- 1.1.3 Assign MOH, NPHIL, and CVL staff to field and laboratory positions
- 1.1.4 Host kick-off meeting in Liberia
- 1.1.5 Conduct Workshop 1a: overall research protocol (concurrent with Task 1.1.4)

Task 2: Enroll human patients and undertake sampling

<u>Description and Execution</u>: Due to the potentially prolonged timeframe to acquire IRB approval in country, human enrollment is expected toward the end of Year 1. EHA will train study staff in

human subjects research and patient recruitment; biosafety, safe and secure sample collection, handling, packaging, and transport; and implementation of the study protocol. Training will provide the principles for safe and ethical human subjects research; and project-specific teachings to ensure staff understand, practice, and can implement the study protocol (enrollment determination, informed consent, and questionnaire administration (demographic information, animal ownership), sample acquisition, data entry, and sample packaging and readying for transport). MOH will provide a locally hired on-site project coordinator to work with the hospital team and oversee the study protocol (train clinicians and nurses; be alerted when febrile patients arrive; work with hospital staff to oversee informed consent, enrollment, sample collection, and interviews). Hospital personnel from Redemption Hospital and Phebe Hospital will follow their routine intake and diagnostic procedures, then invite voluntary enrollment from adult patients and children older than four years of age (with parental consent) presenting with acute febrile illness (documented fever ≥37.5°C at presentation, with or without concomitant reported symptoms within five days of presentation). Fever may be accompanied by other signs but only fever is needed for enrollment. Patients too ill to provide informed consent will be excluded from enrollment. Once enrolled, blood specimens and a nasopharyngeal/oral swab will be collected (for research, not diagnosis), centrifuged (for serum samples), and temporarily stored in a portable ultracold freezer (Stirling, USA) until picked up for transport to LIBR; SCNL will transport research specimens from clinical study sites to LIBR following standard chain of custody protocols (strict cold-chain (liquid nitrogen), biosafety, and biosecurity) (Attachment 3). (Human samples will be collected in duplicate or in a single vial on site and aliquoted in the laboratory.) Clinicians will provide enrolled patient records to the study team to enable review to provide background medical history and other relevant information. Given the high expected number of acutely febrile patients and low expected incidence of high-consequence pathogens, we will recruit continuously, aiming for a total recruitment base of 1,500. For sample collection, clinical research staff will collect specimen concurrently with in-house diagnostic sample collection or shortly thereafter, whichever is least intrusive to patient care. Clinical study sites already employing in-house diagnostics for febrile patients will continue to follow their standard protocols to collect blood and process for ruling out pathogens per their routine protocols via rapid diagnostic and other inhospital tests (Redemption: malaria rapid diagnostic test (RDT) and microscopy, typhoid RDT; Phebe: malaria and typhoid RDT). For enrolled subjects positive for malaria or typhoid, we will screen their samples to determine whether they are co-infected with other agents that may be contributing to their acute fever.

<u>Study design</u>: Cross-sectional sampling will be used to provide a representative sample of a relatively urban or relatively rural population (depending on site) of individuals with fever. Longitudinal sampling of target populations (not individuals) across up to 2.5 years per clinical study site will maximize the opportunity for detection and possibly reveal seasonal trends in infection or other time-related changes in trends. We will review historical and concurrent surveillance reports for the study counties and for neighboring counties as comparators.

<u>Sample size</u>: Sampling will be based on available volume in the clinical sites but is designed to assure detection of rare pathogens and answering questions about the relative proportion of febrile illness caused by each. We estimate a sample size of 1,500 will enable us to accurately determine the prevalence of causal agents of 95% of AFI cases within 5% of true prevalence with 90% power (based on 1,000 simulated studies). We will also be able to detect rare Λ FI agents with prevalences as low as 0.2% with 95% power.

<u>Resources</u>: <u>EHΛ</u>: One (1) scientist to train in human subjects research, including overall study protocol, informed consent, questionnaire administration, data storage, and one (1) scientist to train in sample storage and transport protocol. <u>MOH</u>: One (1) assigned project coordinator for each site; one (1) laboratory technician for sample processing and storage for each site. Two (2) students total from University of Liberia and/or Cuttington University to participate in field work (1 bachelors as a trainee, 1 masters as part of practicum) in biomedicine, public health, nursing, or anthropology. <u>SCNL</u>: One (1) driver to be trained in and to implement sample transport. <u>NPHIL/MOA</u>: Four (4) laboratory scientists (one from each ministry) to participate in training for complete awareness of sample collection, packaging, and transport protocols. Dedicated -80°C freezer.

<u>Metrics of success</u>: Completion dates and number of study staff trained in human subjects research and in specific project protocols; presence of project coordinators at each study site; number of patients enrolled; number of samples sent to LIBR, number of samples tested at LIBR.

<u>Deliverables</u>: Relevant project staff trained in protection of human subjects in research and project protocols; completed on-boarding of project coordinator for each study site; initial enrollment of patients into the study.

Subtasks: (Format: Year#.Task#.Subtask#)

- 1.2.1 Conduct Workshop 2a: IRB/human subjects research
- 1.2.2 Locally-hired project coordinator reports to hospital at each study site
- 1.2.3 Enroll patients (continuous)

Task 3: Undertake sample processing and testing

Description and Execution: NPHIL will receive and process samples at LIBR until the new DTRAfunded national reference laboratory in Monrovia comes online during the study. LIBR reception personnel will be briefed on the study protocol and will notify the project supervisor on receipt of the samples, at which point study-specific inventory and storage procedures will be followed. (One aliquot will be immediately stored while a second is processed for molecular testing.) LIBR has an ABI 7000 Sequence Detection System in operation on which the laboratory scientists and technicians are well trained; a MiSeq system for NGS that is available but requires staff training; and ELISA platforms for serology. NPHIL will budget for and be responsible for ordering needed consumables throughout the project, and UNMC will provide assistance, training, and oversight. LIBR staff are already trained in real-time PCR and ELISA platforms; UNMC will refresh these skills and provide additional training via two one-week didactic and hands-on workshops Y1; another dedicated workshop in Y3; and in other years if needed via visits to the laboratory. These will cover execution of specific pathogen tests, advanced techniques (NGS), and results interpretation (including NGS bioinformatics); sample inventory management; and biorisk management. UNMC will provide oversight and mentorship through their at least twice-yearly working visits to Monrovia and the laboratory as well as video and teleconference. UNMC will leverage its additional DTRA work at LIBR (under funding consideration) to assist with skillbuilding among laboratory scientists and technicians there. UNMC will assess competence at each visit via a standardized evaluation form to use as a basis for targeted future training.

<u>Laboratory assays</u>: Three types of tests—quantitative real-time PCR, NGS, and ELISA—will be used together to characterize infection with and exposure to high-consequence zoonotic pathogens in people and animals.¹⁷ To establish a baseline library of viral and bacterial pathogens in common peridomestic wildlife hosts (e.g., bats and rodents), we will test 300 archived oral, fecal, and blood samples collected under the PREDICT Ebola Host Project and stored at LIBR, running them on the MiSeq NGS platform via Ampliseq panels that can be designed to target thousands of

amplicons (Illumina, USA) including specific pathogens and conserved primers. This will allow us to begin training technicians on the technique, which will be used in follow-on project years. Results from this unbiased screening will inform development of the real-time PCR array and provide early insights about potential pathogens and their locations. We are in discussion with NPHIL to determine whether archived human samples from overlapping areas (e.g., Montserrado and Bong) could be used for the same purpose.

For the main study protocol, human samples (which will arrive earliest at end of Y1) will be processed via a modified TAC system (ThermoFisher, USA) for PCR-based detection, a multiple parallel singleplex nucleic acid amplification system that can run on LIBR's existing ABI 7000 PCR machine using a standard 96-well plate. 5,26,27 Its sensitivity (88%), specificity (99%), modest run time (40-90 minutes), and array of available pathogen tests meet the needs of the project. This assay can also be useful in the future for rapid pathogen detection in an outbreak. We will test for the viral, bacterial, and protozoal pathogens listed in the table, for most of which the TAC has already been validated and cycling optimization parameters are published. The pathogens in the table are select agents, Liberian zoonotic disease priorities, and/or plausible febrile etiologies that will help us rule out most of the common etiologies while looking to identify rarer cases of emerging pathogens. Most can be detected in blood (simplifying sampling) except for influenzas and coronaviruses, which will require a nasopharyngeal swab tested by singleplex real-time PCR.

Samples positive by TAC array will be confirmed using specific real-time PCR assays, using

Pathogens of Interest Major animal host(s) of interest Zaire ebola Bats, dogs Bombali Bats Lassa Rodents Marburg Bats Crimean-Congo Hem, fever Bats, rodents, ungulates Rift Valley fever Bats, rodents, ungulates, dogs Monkeypox Influenza Bats, rodents, ungulates, dogs, poultry Dengue Dogs West Nile fever Bats, rodents, ungulates, dogs Chikungunya Rodents Hepatitis B Rodents, chickens Hepatitis E Arenavirus Rodents Bats, rodents, ungulates, dogs, poultry Bunyavirus Coronavirus Bats, rodents, ungulates, dogs Filovirus Bats, rodents, dogs Flavivirus Bats Bats, rodents, ungulates, dogs, poultry Paramyxovirus Bats, rodents, ungulates, dogs Poxvirus Togavirus Bats, rodents Coxiella hurnetti Rodents, ungulates, dogs Yersinia pestis Rodents, dogs, cats Brucella spp. Rodents, ungulates, dogs Burkholderia mallei Rodents, ungulates, dogs Burkholderia pseudomallei Rodents, ungulates, dogs Leptospira spp. Bats, rodents, ungulates, dogs Salmonella enterica п/а Salmonella enterica serovar Typhi n/a Neisseria meningitidis Borrelia spp Rodents, dogs Rickettsia spp. Bats, rodents, ungulates, dogs Plasmodium spp. Техрановота врр. Rodents, ungulates, dogs Leishmania spp. Bats, rodents, ungulates, dogs

published protocols. We will also apply NGS via AmpliSeq to viral positives (estimated $\leq 10\%$) to characterize the pathogen by extending genomic sequence and the using phylogenetic analyses to determine how the sequence compares to known relatives. Using NGS will also allow us to determine whether the patient (or animal) is infected with additional pathogens. Specimens positive for any new pathogens via NGS will be confirmed via singleplex real-time PCR; findings will support the design of more refined single-plex PCR tests, a diagnostic mode already in routine use at LIBR, and potential refinement of the TAC assays. We estimate that $\sim 10\%$ of samples will be negative by TAC and will run these through NGS, pooled by three, to assess for novel pathogens.

Extraction of RNA/DNA using commercial kits lyses the viruses and bacteria and thus can be handled at BSL-2 conditions; any other steps prior to deactivation of the samples will be

performed under BSL2+ conditions, inside a BSL-3 biosafety cabinet. Aliquots of all samples, extractions, and serological preparations will be inventoried and stored in a dedicated, secure, onsite -80°C freezer for potential later project use and analysis. Biobank sample repository information and associated metadata will be maintained in a database developed by EHΛ. Consistent with BTRP guidance, we will ensure all samples are destroyed at the end of the project period pursuant to and consistent with Select Agent Program²⁸ and BMBL 5th edition protocols. Persources: EHA: One (1) scientist to participate as observer in laboratory training workshops; general project oversight; data management. UNMC: One (1) scientist to order/oversee ordering of equipment and consumables for LIBR. Two (2) scientists to conduct five-day in-country laboratory training workshop mid-Y1. In addition, one (1) lead scientist will be available outside the workshops throughout the project until the trainees are competent at each test the project requires. NPHIL and MOΛ: Two (2) lab technicians from each agency (4 total) to be trained and to conduct sample processing.

<u>Metrics of success</u>: Number and type of equipment provided to NPHIL; number of laboratorians trained and completion date of training; number and kind of tests in which trainees become competent; UNMC progress reports demonstrating new skillsets learned and areas for improvement; number of samples processed; number of pathogens/pathogen families identified. <u>Deliverables</u>: Equipment and consumables provided to laboratory; training workshop completed; annual report-outs from training team at the annual stakeholder meetings; annual report-outs from trainees at annual stakeholder meetings demonstrating new techniques and competencies gained in prior year; data reports on tested samples.

Subtasks: (Format: Year#.Task#.Subtask#)

- 1.3.1 Provide necessary equipment and consumables to NPHIL laboratory (continuous)
- 1.3.2 Conduct Workshop 3a: laboratory biosafety and biosecurity, sample disposition
- 1.3.3 Conduct Workshop 3b: laboratory sample testing techniques
- 1.3.4 Provide continuous on-the-job training in laboratory techniques
- 1.3.5 Submit annual report

Task 4: Undertake preliminary animal sampling

Description and Execution: While laboratory training is beginning, preliminary field animal sampling will begin in Y1 with sampling in communities selected based on previous cases of AFI from historical hospital admissions trends, including some communities from which the study site hospitals draw patients. We will review a sampling of hospital records from Monrovia and Bong in search of geographic trends in AFI presentations going back three years, and begin randomized sampling of peridomestic and wild animals in four communities identified as part of this process and continue every three months. In five-day/five-night trips we will target approximately 50 bats, 50 rodents, 50 livestock (including chickens if poultry-transmitted infection is suspected), and 10 dogs per sampling event, allowing for approximately 640 animals sampled in Y1 to include blood and oral/nasopharyngeal specimens, and feces and urine when possible. Samples will be processed on site as outlined in Attachment 3. Our teams are trained in species identification, and we will also plan to barcode approximately 5% of individual bats and rodents in Y1 to improve species determination and team training. All animals will be non-lethally sampled with strict adherence to U.S. IACUC-approved protocols following those currently used by EHA scientists globally (Attachment 3) and using bat and rodent sampling protocols we developed for the PREDICT project (Attachment 3). All personnel undertaking animal sampling will be will be trained to ensure competency with a combination of didactic and practical training. SCNL will transfer samples to LIBR consistent with PREDICT protocols (Attachment 3).

<u>Resources</u>: <u>EHA</u>: One US-based (1) veterinarian (up to three Liberia trips per year) and one (1) EHA veterinarian based in Liberia; one (1) disease ecologist to take part in some of the trips and help oversee approach; one (1) scientist to oversee human subjects data collection. <u>SCNL</u>: One (1) lead scientist (for some trips) plus four (4) field technicians, one (1) social scientist, and two (2) drivers per sampling trip. <u>LCRP</u>: One (1) veterinarian for oversight and participation in some collection events. <u>Other</u>: At least one (1) MOA veterinary technician and one (1) student (e.g., University of Liberia) trained on as many of the sampling trips as possible.

<u>Metrics of success</u>: Number of animals sampled; number of samples successfully delivered to LIBR for processing; percentage of tests successfully completed; at least one veterinary technician trained; at least one student trained.

Deliverables: Blood and other biological samples to LIBR for processing.

Subtasks: (Format: Year#.Task#.Subtask#)

- 1.4.1 Conduct Workshop 4a: IACUC/animal subjects research
- 1.4.2 Review hospital records in search of geographic trends in acute febrile illness presentations
- 1.4.3 Sample in communities identified as part of this process and continue every three months

Year 2

Task 2: Continued: Enroll human patients and undertake sampling

<u>Description and Execution</u>: Same as Year 1, Task 2, with reduced focus on training and placing staff and more on continued implementation of study protocol.

<u>Resources</u>: MOH: One (1) project coordinator at each clinical site and one (1) clinical laboratory technician at each clinical site. SCNL: One (1) driver to transport samples.

<u>Metrics of success</u>: Number of patients enrolled; presence of project coordinators at each study site; number of patients enrolled; number of samples sent to LIBR.

<u>Deliverables:</u> Enrollment of patients into the study; completion of workshop on results interpretation to include advanced bioinformatics.

Subtasks: (Format: Year#.Task#.Subtask#)

- 2.2.2 Locally-hired project coordinator reports to hospital at each study site
- 2.2.3 Enroll patients (continuous)

Task 3: Continued: Undertake sample processing and testing

<u>Description and Execution</u>: Same as Year 1, Task 3 for human samples. With the addition of animal samples per Year 1, Task 4: MOA technicians (trained under Task 1.3.2 and 1.3.3) will lead sample processing with oversight from NPHIL project laboratory coordinator and UNMC. We will prioritize ELISA-based serology on the animal samples, using specific tests based on pathogens of relevance in that species to will increase our opportunity to detect key pathogens by applying serological techniques. Serological assays are available for most of the pathogens of interest; we expect to average five ELISAs per sample and will pool by five. A subset of animal samples (10% pooled by three) will also be screened for the same pathogens using NGS, particularly important for testing Hypotheses 2 and 3 assessing shared zoonotic pathogens and characterizing phylogenetic relatedness and therefore potential evidence of transmission. Positives will be confirmed via singleplex PCR.

With the addition of human serology samples per Year 2, Task 5: We will run specific ELISA-based assays on patients' convalescent serum and on community members' serum (ELISAs are available for all pathogens of interest, either commercially or from research laboratories).

Resources: Same as Year 1, Task 3

<u>Metrics of success</u>: Number and kind of tests in which trainees become competent; self-reported trainee progress reports demonstrating new skillsets learned; number and kind of tests in which

trainees become competent; UNMC progress reports demonstrating new skillsets learned and areas for improvement; number of samples processed; number of pathogens/pathogen families identified.

<u>Deliverables:</u> Same as Year 1, Task 3 Subtasks: (Format: Year#.Task#.Subtask#)

- 2.3.1 Provide necessary equipment and consumables to NPHIL laboratory (continuous)
- 2.3.4 Provide on-the-job training in laboratory techniques (continuous)
- 2.3.5 Submit annual report
- 2.3.6 Conduct Workshop 5a: Host workshop on results interpretation/bioinformatics

Task 5: Visit communities: human-animal interface assessment, animal sampling, and human serology

<u>Description and Execution</u>: Study design: Animal sampling will continue in Y2, expanding to communities of enrolled patients, sampling in and around study enrollees' homes and surrounding areas; we plan to reach three communities in Y2. This task predominantly supports Hypothesis 3. It is designed to: a) assess the risk interface between people and animals; b) strategically target and sample animal species for the pathogens/antibodies they are most likely to have based on what is already known about pathogen-host proclivity; and c) enable follow-up serology on patients and their community neighbors. Specifics of the design are provided for each goal.

a. Human-animal interface assessment: As patients begin enrolling (by Y1 Q4) they will be informed about the potential study follow-up; those that test positive for a zoonotic pathogen per Task 3 will qualify for a follow-up visit. With their agreement, they will participate in a second, more detailed human-animal interface questionnaire (assessing variables such as age, occupation, species and location of owned animals, type and frequency of animal contact (livestock and wildlife), perceptions and knowledge of zoonotic disease). The expected percentage of positive patients for other than malaria will likely maximize at ~10% based on published studies in other countries (and unpublished PREDICT data for Liberia, <10%), 2,26,29 although some bacterial agents could push that number higher. 13 We expect most of the positives to cluster geographically and will visit a total of five communities with the highest incidence of positives, targeting 20 humans and 400 animals (which may be split by more than one taxon) per community. These visits will occur every 2-3 months, ideally within 1-2 months of recognizing the cluster, but certainly within 12 months as we will be looking for serological (IgG) evidence of the same pathogens in the animal populations. At the start of the visit, an SCNL team member will administer a questionnaire (collecting responses on a tablet) to assess potential risk factors and enable characterization of the frequency and nature of animal exposure. The questionnaires will be designed by study staff experienced in survey development and implementation in LMIC and in infectious disease contexts in particular.

b. Animal sampling: With consent of the animal's owner, we will sample the patient's animals and animals living peridomestically; in addition, we will sample owned, peridomestic, and wild animals in and near the community. The goal is comprehensive sampling of community animals. This will be a cross-sectional study of animals in communities where evidence (based on lab findings) exists of zoonotic infection. Sampling is designed to maximize the detection of rare pathogens and answering questions about the relative proportion of febrile illness caused by each. If the 400 animals in each community are sampled across up to four taxa (100 each), we will be able to detect pathogen seroprevalence in each taxon/community as low as 3% with 95% power, with greater power when targeting fewer than four taxa per community. For detailed capture and sampling methods, see Year 1 Task 4, modified to reflect sampling targeted toward patients. In

areas where patients frequent (such as fields, livestock grazing areas, hunting grounds, etc.), we will perform line transects or a grid within each; average trapping success in rainy season is 13% and 8% in dry season for peridomestic animals; for domestic animals can be as high as 50% all year if traps are adapted.

c. <u>Human serology</u>: We will follow up with the patient and with their reaffirmed consent we will collect a blood specimen. We will also enroll up to 20 consenting community members from which to collect a biological blood specimen for serological testing (specific ELISAs) and administer the questionnaire on animal contact. The follow-up sampling in the patient will enable us to confirm the previous diagnosis (empirical or PCR-based); and to compare it to the serologic profile of the animals. Sampling the surrounding community members will give insight into the antibody profile of the community members, those with historical exposure, those where exposure did not progress to disease, and those who did not go to a participating research hopsital. This combined with the questionnaire on animal contact will provide strong evidence, where it exists, of spillover. Serology may be important as a correlate for infection risk; for detecting circulation of the pathogen in the absence of clinical illness; and for considering "prevalence of exposure" since we know certain antibodies can persist over time.

Resources: Same as Year 1, Task 4 with the addition of one (1) EHA scientist to oversee human subjects data collection.

<u>Metrics of success</u>: Number of animals sampled; number of samples successfully delivered to LIBR for processing; percentage of tests successfully completed; at least one veterinary technician trained; at least one student trained.

<u>Deliverables</u>: Blood and other biological samples to LIBR for processing.

<u>Subtasks</u>: (Format: Year#.Task#.Subtask#)

- 2.5.1 Review study patient records for geographic trends in AFI presentations
- 2.5.2 Undertake sampling in and around study enrollees' homes
- 2.5.3 Undertake sampling from broader patients' communities
- 2.5.4 Administer human-animal interface assessment
- 2.5.5 Collect human samples for serology

Task 6: Analyze data

Description and Execution: We will compare any diagnoses established at the clinical sites to laboratory results; and compare clinical study site diagnoses and laboratory results to national weekly and monthly county surveillance records. We will estimate population in catchment areas (from where the patient population comes) to develop prevalence estimates of each detected pathogen. We will compare phylogenetic sequence data from humans and animals to identify possible shared strains and infer transmission. Using the questionnaire data comparisons of exposure variables across varying demographics measures in study sites will be conducted to characterize high risk behaviors and statistical analysis will be employed to identify differences between groups with a 95% probability of detecting a difference. As appropriate, multivariate analysis will be utilized to evaluate the relationship between the positive biological findings and key measures of contact to evaluate the factors that influence and may have led to AFI pathogen exposure. The pathogen and human interface data collected in this study; characterization of zoonotic potential through phylogenetic analyses undertaken in this and other studies (such as PREDICT); and additional data such as available spatial, ecological, and environmental data will inform models designed to help tease correlation from causation. Understanding the diversity of circulating pathogens in animals and the behavioral interactions between people and animals can

inform risk mitigation;¹⁷ the data will thus provide the foundation of an OY2 risk reduction workshop (see that section for more detail).

<u>Resources</u>: <u>EHA</u>: Four (4) scientists to analyze data and prepare summaries. <u>NPHIL, MOH, MOA</u>: Up to three (3) scientists representing one from each entity to assist with analysis. <u>UNMC</u>: One (1) scientist to assist with analysis.

<u>Metrics of success</u>: Development of research analyses and compilations for sharing with partners; completion of annual reports to DTRA; specimens shared with other researchers.

Deliverables: Annual stakeholders meeting; annual report to DTRA.

Subtasks: (Format: Year#.Task#.Subtask#)

2.6.1 Undertake data analysis

Task 7: Disseminate information to stakeholders

<u>Description and Execution</u>: We will host the annual stakeholders meeting to which we will invite all project partners as well as others doing related research in country. We will discuss preliminary data and analyses and use these to inform any needed modifications to forward sampling strategy. We will review protocols for biosafety, specimen transport, and animal handling at each annual meeting. We will provide support travel for at least one (1) Liberian scientist to present at an international conference. We will share samples as appropriate with other in-country projects to ensure synergies. We will compile and summarize research results and share with all partners and other in-country researchers as appropriate and use it to develop an annual report for DTRA.

<u>Resources</u>: <u>EHΛ</u>: Four (4) scientists to prepare summaries, present at annual meetings and other conferences, prepare annual report to DTRΛ, host annual meeting. <u>NPHIL, MOH, MOΛ</u>: Up to three (3) scientists representing one from each entity to assist with writing and presenting; up to one (1) scientist to present at an international conference. <u>LCRP, UNMC, GU</u>: One (1) scientist to assist with writing and presenting. Representatives from all partners to attend annual meeting.

<u>Metrics of success</u>: Development of compilations for sharing with partners; completion of annual reports to DTRA; specimens shared with other researchers

Deliverables: Annual stakeholders meeting; annual report to DTRA

Subtasks: (Format: Year#.Task#.Subtask#)

- 2.7.1 Host annual stakeholders meeting
- 2.7.2 Present to DTRA at Annual Technical Review
- 2.7.3 Submit annual report
- 2.7.4 Share specimens if available and appropriate with other in-country researchers
- 2.7.5 Support Liberian scientist to present at international conference

Year 3

Task 2: Continued: Enroll human patients and undertake sampling

<u>Description and Execution, Resources, Metrics of success, Deliverables, Subtasks</u>: Same as Year 2, Task 2

Task 3: Continued: Undertake sample processing and testing

Same as Year 2, Task 3 minus analytics workshop. Addition of one (1) post-doc to the laboratory to work on this project half-time and attend training in the United States at UNMC for one month.

Task 5: Continued: Visit communities: human-animal interface assessment, animal sampling, and human serology

<u>Description and Execution, Resources, Metrics of success, Deliverables</u>: Same as Year 2, Task 5. We plan to reach two communities in Y2.

<u>Subtasks</u>: (Format: Year#.Task#.Subtask#)

Task 6: Continued: Analyze data

<u>Description and Execution</u>: Same as Year 2, Task 6. We will also compare diagnostic results for endemic agents to reports for these diagnoses in the preceding years to allow for control for any changed practices (even if subconscious) in our target counties based on the project team's presence; this will also allow for a controlled comparison of the impact on incidence of any differential diagnosis or testing interventions we may implement in OY1 and OY2. MOH and CVL will lead the selection of Liberian laboratorians and at least one (1) Liberian student for analytics trainings; train in-country in basic bioinformatics analysis. We will develop recommendations for adapted differential diagnostic protocols and testing practices.

Resources, Metrics of success, Deliverables, Subtasks: Same as Year 2, Task 6

Task 7: Continued: Disseminate information to stakeholders

<u>Description and Execution</u>: Same as Year 2, Task 7. Broaden annual stakeholders meeting to include regional partners from Guinea and possibly other adjacent countries; share information about ongoing research; plan cross-border study for OY1. Importantly, broaden outreach to communities that have engaged in sampling to share results and discuss preliminary risk mitigation strategies.

Resources, Metrics of success, Deliverables: Same as Year 2, Task 7

Subtasks: (Format: Year#.Task#.Subtask#)

Same as Year 2, Task 7 minus Liberian conference travel, and with the addition of:

- 3.7.6 Host regional technical and networking workshop (concurrent with Subtask 3.6.1)
- 3.7.7 Prepare/submit up to two (2) peer-reviewed manuscripts
- 3.7.8 Engage sampled communities for follow-up education

Option Year 1

Task 2: Continued: Enroll human patients and undertake sampling

Same as Year 1, Task 2 with following difference:

Description and Execution: Same as Year 1, Task 2 except enrollment will occur in two new county clinical sites enabling broader geographical data capture including a border region with Guinea. Pending human and animal research results in Y1-3 and review of relevant infectious disease reporting country-wide, we will likely work in: 1) Ganta, a large city in Nimba county which borders Guinea, and a county in which mining activity hypothetically presents increased risk of bat-borne zoonoses; and 2) Lofa county, which shares a large border with both Guinea and Sierra Leone. The clinical studies in Monrovia and Bong will draw down at the end of Y3 once patient targets are reached. Should sufficient diagnostic data be available at this stage to inform improved clinical intake and diagnostic protocols, we will implement an intervention in one of the two hospitals and compare outcomes in the intervention location. Data will not be directly comparable since sites are unique (variations in community occupational hazards, pathogen prevalence in animal populations, etc.) but this approach may provide an opportunity for a preliminary assessment of how well an intervention could improve diagnostic test choice and accuracy of results. With a shorter timeframe for collecting data, if hospital studies in OY1 and the first quarter of OY2 generate 750 patients, our power for accurate prevalence measurement goes from 90% to 80% and the rare prevalence we are likely to detect at 95% power goes from 0.2% to 0.4%.

Task 3: Continued: Undertake sample processing and testing

Same as Year 3, Task 3

Task 5: Continued: Visit communities: human-animal interface assessment, animal sampling, and human serology

Same as Year 3, Task 5. We expect to visit two communities in OY1.

Task 6: Continued: Analyze data

Same as Year 3, Task 6

Task 7: Continued: Disseminate information to stakeholders

<u>Description and Execution</u>: Same as Year 3, Task 7 minus regional workshop and community engagement. In addition, review findings to date on prevalence and transmission pathways and economic information for prevention and control options for acceptability and prioritization in preparation for OY2 risk reduction workshop.

Deliverables: Same as Year 3, Task 7.

Resources: Same as Year 3, Task 7 minus Liberian international conference travel.

Metrics of success and Subtasks: Same as Year 3, Task 7

Option Year 2

Task 2: Continued: Enroll human patients in the two new counties and undertake sampling

Description and Execution: Same as Year 1 Task 2. Sampling in Monrovia and Bong will have concluded (unless a decision has been made that more samples are needed or desired at this stage). Sampling in the two new counties will be complete by the middle of OY2. Analyze results of the clinical intervention and use them to develop guidelines for improved management of acute febrile illness diagnostic procedures; discuss at OY2 annual meeting.

Task 3: Continued: Undertake sample processing and testing

Same as Year 3, Task 3

Task 5: Continued: Visit communities: human-animal interface assessment, animal sampling, and human serology

Same as Year 2 Task 5, with sampling winding down within the first quarter of Y1. We are targeting one final sampling event in OY2.

Task 6: Continued: Analyze data

Same as Year 2, Task 5

Task 7: Continued: Disseminate information to stakeholders

<u>Description and Execution</u>: Same as Option Year 1, Task 7 with the addition of risk reduction workshop. Project data will provide the foundation of an OY2 risk reduction workshop at the annual meeting to engage multi-sectoral Liberian participants to review statistical evaluation of diagnostic data, identify key risk interfaces, assess economic options for prevention and control, and develop threat reduction measures. Workshop products include 1) development of priorities for refined PCR and serological tests based on study findings, 2) recommendations for an updated national surveillance and reporting strategy and plan, 3) inclusion of stakeholders (e.g., National Disaster Management Authority, the Forestry Development Authority, the Ministry of Finance) to consider options for risk and impact reduction and generate policy recommendations. In addition, community engagement will be especially important as the project ends; we will work with MOH and MOA to develop written educational products designed for laypersons to explain project results, community impact, and risk mitigation, and thank community members for their participation.

<u>Resources</u>: Same as Year 2, Task 7 with the addition of one (1) additional EHA scientist to conduct the risk reduction workshop

<u>Metrics of success</u>: Same as Year 2, Task 7 with the addition of completion of attendance at risk reduction workshop, tangible outcomes in the form of revised protocols, etc.

<u>Deliverables</u>: Annual stakeholders meeting; annual report to DTRA; completion of risk reduction workshop; development of risk reduction options, cost-benefit analysis, and policy recommendations tied to Liberia's multi-sectoral National Action Plan for Health Security.

<u>Subtasks</u>: (Format: Year#.Task#.Subtask#) Same as Year 2, Task 7 with the addition of:

OY2.7.9 Conduct Workshop 6a: risk reduction (concurrent with annual stakeholders meeting)

V. PERFORMANCE SCHEDULE

Task	Y1	Y2	Y3	OY1	OY2
Task 1: Establish evidence-based research initiative for high-cor	nsequen	ce patho	gens in l	Liberia	
1.1 Refine and finalize human and animal study protocols					
1.2 Secure and finalize all research permits (human and animal)					
1.3 Assign MOH, NPHIL, and CVL staff to field and lab positions					
1.4 Host kick-off meeting in Liberia					
1.5 Conduct Workshop 1a: overall research protocol					
Task 2: Enroll human patients and undertake sampling	•			•	•
2.1 Conduct Workshop 2a: IRB/human subjects research					
2.2 Local project coordinator reports to hospital at each study site					
2.3 Enroll patients (continuous)		T			
Task 3: Undertake sample processing and testing					· —
3.1 Provide equipment and consumables to LIBR					
3.2 Conduct Workshop 3a: biosafety/biosecurity, sample disp.					
3.3 Conduct Workshop 3b: laboratory sample testing techniques					
3.4 Provide on-the-job training in lab techniques (continuous)					
3.5 Submit Y1 annual report					
3.6 Conduct Workshop 5a: results interpretation, bioinformatics					
3.7 Host regional technical and networking workshop					
Task 4: Preliminary animal sampling	1				
4.1 Conduct Workshop 4a: IACUC/animal subjects research					
4.2 Review hospital records for geo, trends in AFI presentations					
4.3 Sample animals in select communities (preliminary)					
Task 5: Visit communities: interface assessment, animal sampling	ոց, հատ	an serol	ogy	<u>'</u>	
5.1 Review study patient records for geographic AFI trends					
5.2 Administer human-animal interface assessment					
5.3 Undertake animal sampling in/around study enrollees' homes					
5.4 Undertake animal sampling from patients' communities					
5.5 Collect human samples for scrology					
Task 6: Analyze data	•			•	•
6.1 Undertake data analysis					
Task 7: Disseminate research results to stakeholders	•			•	•
7.1 Host annual Stakeholders meeting					
7.2 Present to DTRA at Annual Technical Review					
7.3 Submit annual report					
7.4 Share specimens if appropriate w/ other in-country researchers					
7.5 Support Liberian scientist to international conference					
7.6 Host regional technical and networking workshop					
7.7 Prepare/submit up to two (2) peer-reviewed manuscripts					
7.8 Engage sampled communities for follow-up education					
7.9 Conduct Workshop 6a: risk reduction workshop					

Confirmed Proposal Expiration Date: "EHA holds the proposal, to include proposed costs, firm for 180 days after the submission date as stated in the invitation to submit a full proposal."

RESEARCH & RELATED BUDGET - Budget Period 1

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZAT	TIONAL DUNS:	07709006	60000	Enter name of Organi	ization: Ecolieal:	th Allia	ance				
Budget Type	e: Project	Subav	vard/Consortiur	n	Budget P	eriod: 1	Sta	rt Date:	01/01/2020	End Date: 12/31/2020	
A. Senior/K	ey Person										
Prefix	First	Middle	Last	Suffix	Base Salary (\$)	Çal.	Months Acad.	Sum.	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	William		Karesh		284,108.00	1.50			35,513.50	12,571.78	48,085.28
Project Ro	le: PT										
Or.	Eller.		Carlin		147,420.00	6.00			73,710.00	26,093.34	99,803.34
Project Ro	le: Cc PI										
or.	Jonathan		Epstein		170,888.00	1.00			14,240.67	3,041.20	19,281.87
Project Ro	le: Co-PT										
Or.	Мээт		Ross		91,740.00	0.60			4,587.00	1,623.80	6,210.80
Project Ro	le: Co Investi	gater									
	Catherine		Machalaba		83,790.00	1.00			6,982.50	2,471.81	9,454.31
Project Ro	le: Co-Investi	gator									
	Emily		Hagan		66,095.00	4.00			22,031.67	7,799.21	29,830.88
Project Ro	le: Ce Investi	gater									
Br.	Anne		Laudisoit		75,500.00	1.20			7,550.00	2,672.70	10,222.70
Project Ro	le: Co-Investi	gator									
Additional Can	ior Key Persons:			Add Attac	chment					equested for all Senior ons in the attached file	
Additional Sen	nor key rersons:								·	otal Senior/Key Person	222,889.18
									10	Au ochionkey reison	222,000,10

B. Other Personnel

B. Other Per	sonnei											
Number of Personnel	Project Role	Cal.	Months Acad.	Sum.	Requested Salary (\$)	Fringe Benefits (\$)						
	Post Doctoral Associates											
	Graduate Students											
	Undergraduate Students											
	Secretarial/Clerical											
1	Operations Assistant	6.00			27,853.00	9,859.96						
1	Total Number Other Personnel Total Other Personnel											
				Total S	Salary, Wages and F	ringe Benefits (A+B)						
				Fund	ds Requested (\$)							
D. Travel				Fun	ds Requested (\$)							
1. Domestic	Travel Costs (Incl. Canada, Mexico and U.S. Possessions)				16,402.00							
2. Foreign T	Fravel Costs				77,815.00							
		Total Tra	vel Cost		94,217.00							
E. Participa	nt/Trainee Support Costs			Fun	ds Requested (\$)							
1. Tuition/Fe	ees/Health Insurance											
2. Stipends												
3. Travel												

Total Participant/Trainee Support Costs

Number of Participants/Trainees

Subsistence

Other

Funds

Requested (\$)

37,712.96

37,712.96

260,602.14

F. (Other Direct Costs	Funds Requested (\$)
1.	Materials and Supplies	
2.	Publication Costs	
3.	Consultant Services	4,500.00
4.	ADP/Computer Services	
5.	Subawards/Consortium/Contractual Costs	481,216.31
6.	Equipment or Facility Rental/User Fees	
7.	Alterations and Renovations	
8.		
9.		
10.		
	Total Other Direct Costs	485,716.31
<u>G. [</u>	Direct Costs	Funds Requested (\$)
	Total Direct Costs (A thru F)	840,535.45
Г	Indirect Cost Type Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
ī		
Ľ	Indirect - Subs	40,000.00
Coa	Total Indirect Costs nizant Federal Agency	154,982.12
(Age	ncy Name, POC Name, and Phone Number)	
<u>I. To</u>	otal Direct and Indirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	995,517.57
<u>J. F</u>	ee	Funds Requested (\$)
<u>K. 1</u>	Total Costs and Fee	Funds Requested (\$)
	Total Costs and Fee (I + J)	995,517.57
<u>L. E</u>	Budget Justification	
(Only	y attach one file.)	nt View Attachment

RESEARCH & RELATED BUDGET - Budget Period 2

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIO	ONAL DUNS:	077090068	eccc	Enter name of Org	anization: Ecolical	th Allis	ince				
Budget Type:	∑ Project	Subaw	ard/Consortiu	m	Budget P	eriod: 2	Sta	rt Date:	01/01/2021	End Date: 12/31/2021	
A. Senior/Key	/ Person										
Prefix	First	Middle	Last	Suffix	Base Salary (\$)	Çal.	Months Acad.	Sum.	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	William		Karesh		284,108.00	1.50			37,289.18	13,200.37	50,489.55
Project Role:	F1										
Or.	Ellen		Carlin		147,420.00	6.00			77,395.50	27,398.01	104,793.51
Project Role:	Co PI					·	•				
Dr.	Jonathan		Epstein		170,888.00	1.00			14,952.70	5,293.26	20,245.96
Project Role:	Co-P1										
Or.	Noam		Ross		91,740.00	0.60			4,816.35	1,704.99	6,521.34
Project Role:	Co Investi	galor									
	Catherine		Machalaba		83,790.00	1.00			7,331.63	2,595.40	9,927.03
Project Role:	Cc-Investi	gator									
	Emily		Hagan		66,095.00	4.00			22,692.62	8,033.19	30,725.81
Project Role:	Co Investi	galor									
Dr.	Anne		Laudisoit		75,500.00	1.20			7,937.50	2,806.34	10,733.84
Project Role:	Co-Investig	gator									
Additional Senio	r Key Persons:			Add A	attachment					equested for all Senior ons in the attached file	
	·								•	otal Senior/Key Person	233,437.04

В.	Other Per	sonnel						
	Number of Personnel	Project Role		Cal.	Months Acad.	Sum.	Requested Salary (\$)	Fringe Benefits (\$)
		Post Doctoral Associates						
		Graduate Students						
		Undergraduate Students						
		Secretarial/Clerical						
	1	Operations Assistant		6.00			29,245.6	10,352.98
	1	Total Number Other Personnel						Total Other Personnel
						Total S	alary, Wages and	Fringe Benefits (A+B)
Li	ist items and Equipment					Fund	s Requested (\$)	
Α.	dditional Equ		Add Attachm					
		Total funds requested for all e	equipment listed					
				Total Eq	uipment			
D	. Travel					Fund	s Requested (\$)	
1.	. Domestic	Travel Costs (Incl. Canada, Mexico and U.S. Possess			16,402.00			
2. Foreign Travel Costs							75,876.50	
				Total Tra	vel Cost		92,278.50	
E	. Participa	nt/Trainee Support Costs				Fund	s Requested (\$)	

Total Participant/Trainee Support Costs

Tuition/Fees/Health Insurance

Number of Participants/Trainees

Stipends Travel Subsistence

Other

Funds Requested (\$)

39,598.61

39,598.61 273,035.65

F. Other Direct Costs		Funds Requested (\$)
1. Materials and Supplies		3,000.00
2. Publication Costs		4,000.00
3. Consultant Services		1,000.00
4. ADP/Computer Services		
5. Subawards/Consortium/Contractual Costs		496,476.92
6. Equipment or Facility Rental/User Fees		
7. Alterations and Renovations		
в.		
9.		
0.		
	Total Other Direct Costs	504,476.92
i. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	869,791.07
I. Indirect Costs Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect DC		119,460.52
	Total Indirect Costs	119,460.52
Agency Name, POC Name, and OC Phone Number)		
Total Direct and Indirect Costs		Funds Requested (\$)
Total Direc	ct and Indirect Institutional Costs (G + H)	989,251.59
. Fee		Funds Requested (\$)
. Total Costs and Fee		Funds Requested (\$)
	Total Costs and Fee (I + J)	989,251.59
Budget Justification		
Only attach one file.)	FINAL	

RESEARCH & RELATED BUDGET - Budget Period 3

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIO	ORGANIZATIONAL DUNS: CTTC9CC66CCCC Enter name of Organization: Ecoffealth Alliance										
Budget Type:	Project	Subaw	ard/Consortiu	m	Budget P	eriod: 3	Sta	rt Date:	01/01/2022	End Date: 12/31/2022	
A. Senior/Ke	y Person										
Prefix	First	Middle	Last	Suffix	Base Salary (\$)	Çal.	Months Acad.	Sum.	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	William		Karesh		284,108.00	1.50			39,153.63	13,860.39	53,014.02
Project Role	: P1										
Dr.	Ellen		Carlin		147,420.00	6.00			81,265.28	28,767.91	110,033.19
Project Role	: Co PI					·	· ·				
Dr.	Jonathan		Epstein		170,888.00	1.00			15,700.34	5,557.82	21,258.26
Project Role	: Co-PI										
Dr.	Noam		Ross		91,740.00	0.60			5,057.17	1,790.24	6,847.41
Project Role	: Co Investi	gator									
	Catherine		Machalaba		83,790.00	1.00			7,698.21	2,725.17	10,423.38
Project Role	: Co-Investi	gator									
	Emily		Hagan		66,095.00	4.00			23,373.40	8,274.18	31,647.58
Project Role	: Co Investi	galor									
ār.	Anne		Laudisoit		75,500.00	1.20			8,333.88	2,946.65	11,270.53
Project Role	: Co-Investi	gator									
Additional Senio	or Key Persons:			Add A	ttachment					equested for all Senior	
	•								•	otal Senior/Key Person	244,494.37

. Other Per	sonnel						
Number of Personnel	Project Role		Cal.	Months Acad.	Sum.	Requested Salary (\$)	Fringe Benefits (\$)
	Post Doctoral Associates						
	Graduate Students						
	Undergraduate Students						
	Secretarial/Clerical						
1	Operations Assistant		6.00			30,707.93	10,870.61
1	Total Number Other Personnel						Total Other Personnel
					Total S	alary, Wages and Fi	ringe Benefits (A+B)
Equipment	ipment:	Add Attachment			Fund	s Requested (\$)	
	Total funds requested for a	• •					
		To	tal Eq	uipment			
). Travel					Fund	s Requested (\$)	
I. Domestic	Travel Costs (Incl. Canada, Mexico and U.S. Posse	ssions)				16,402.00	
2. Foreign T	Foreign Travel Costs					74,229.50	
		То	tal Tra	vel Cost		90,631.50	
. Participar	nt/Trainee Support Costs				Fund	s Requested (\$)	
l. Tuition/Fε	ees/Health Insurance						

Total Participant/Trainee Support Costs

Number of Participants/Trainees

Stipends Travel Subsistence

Other

Funds Requested (\$)

41,578.54

41,578.54

286,072.91

	Funds Requested (\$)
	4,000.00
	1,000.00
	492,263.96
Total Other Direct Costs	497,263.96
	Funds Requested (\$)
Total Direct Costs (A thru F)	873,968.37
Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
maneer obst visite (30) maneer obst obse (4)	122,145.40
Total Indirect Costs	122,145.40
	Funds Requested (\$)
ect and Indirect Institutional Costs (G + H)	996,113.77
	Funds Requested (\$)
	Funds Requested (\$)
Total Costs and Fee (I + J)	996,113.77
` '	
2 57027	
	Total Direct Costs (A thru F) Indirect Cost Rate (%) Indirect Cost Base (\$) Total Indirect Costs ect and Indirect Institutional Costs (G + H)

RESEARCH & RELATED BUDGET - Budget Period 4

OMB Number: 4040-0001 Expiration Date: 10/31/2019

## Budget Project Subaward/Consortium Budget Period: 4 Start Date:	ORGANIZATIO	ONAL DUNS:	0770900660000	Enter name of Org	anization:	EcoHealt	ah Allis	ince				
Prelix First Middle Last Suffix Base Salary (\$) Cal. Acad. Sum. Requested Salary (\$) Requested (\$)	Budget Type:	∑ Project	Subaward/Cons	ortium		Budget Pe	eriod: 4	Sta	rt Date	: 01/01/2023	End Date: 12/31/2023	
Prefix First Middle Last Suffix Base Salary (S) Cal. Acad. Sum. Salary (S) Benefits (S) Requested (S)	A. Senior/Key	/ Person										
Project Role: F1	Prefix	First	Middle Last	Suffix	Base	Salary (\$)						
Project Role: Co PT	or.	William	Karesh				1.50			41,111.30	14,553.41	55,664.73
Project Role: Co_PT Dr. Jonathan Dpstein 170,888.00 1.00 16,485.35 5,835.81 22,321.16 Project Role: Co_PT	Project Role	: P1										
Project Role: Co-P1	Or.	Ellen	Carlin		14	7,420.00	6.00			85,328.54	30,206.30	115,534.84
Project Role: Cc-P1 Dr. Noam Ross 91,740.00 0.60 5,310.03 1,879.75 7,189.78 Project Role: Cc Investigator Catherine Machalaba 83,790.00 1.00 8,083.10 2,861.42 16,944.54 Project Role: Cc-Investigator Emily Ragan 66,095.00 4.00 24,074.60 8,522.41 32,597.01 Project Role: Cc Investigator Dr. Anne Laudisoit 75,500.00 1.20 8,740.07 3,093.98 11,834.05 Project Role: Cc-Investigator Add Attachment Total Funds requested for all Senior Key Persons in the attached file	Project Role	: Co PI										
Project Role: Co Investigator Catherine Machalaba 83,790.00 1.00 8,683.11 2,861.42 10,944.54	Dr.	Jonathan	Epstei:	5	170	c,aaa.cc	1.00			16,485.35	5,835.81	22,321.16
Project Role: Co Investigator	Project Role	: Co-PI										
Catherine Machalaba 83,790.00 1.00 8,683.12 2,861.42 10,944.54	Or.	Noam	Ross		91	1,740.00	0.60			5,310.03	1,879.75	7,189.78
Project Role: Cc-Investigator Emily Ragan 66,095.00 4.00 24,074.60 8,522.41 32,597.01 Project Role: Cc Investigator Sr. Anne Landisoit 75,500.00 1.20 8,740.07 3,993.98 11,834.05 Project Role: Cc-Investigator Total Funds requested for all Senior Key Persons in the attached file	Project Role	: Co Investi	gator									
Emily Hagan 66,095.00 4.00 24,074.60 8,522.41 32,597.01		Catherine	Machala	nba	8.	3,790.00	1.00			8,083.13	2,861.42	10,944.54
Project Role: Co Investigator Dr. Anne Laudisoit 75,500.00 1.20 8,740.07 3,093.98 11,834.05 Project Role: Co-Investigator Add Attachment Total Funds requested for all Senior Key Persons in the attached file	Project Role	: Co-Investi	gator									
Anne Laudisoit 75,500.00 1.20 8,740.07 3,093.98 11,834.05 Project Role: Cc-Investigator Add Attachment Total Funds requested for all Senior Key Persons in the attached file		Ewila	Hagan		6	6,095.00	4.00			24,074.60	8,522.41	32,597.01
Project Role: Cc-Investigator Add Attachment Total Funds requested for all Senior Key Persons in the attached file	Project Role	: Co Investi	gator									
Add Attachment Total Funds requested for all Senior Key Persons in the attached file	Dr.	Anne	Laudisc	oit	7!	5,500.00	1.20			8,740.07	3,093.38	11,834.05
Add Attachment Key Persons in the attached file	Project Role	: Co-Investi	gator									
Add Attachment Key Persons in the attached file												
	Additional Senio	r Kev Persons:		Add A	attachment							
										·		256,086.11

B. Other Personnel

Number of Personnel	Project Role	Cal.	Months Acad.	Sum.	Requested Salary (\$)	Fringe Benefits (\$)
	Post Doctoral Associates					
	Graduate Students					
	Undergraduate Students					
	Secretarial/Clerical					
1	Operations Assistant	6.00			32,243.33	11,414.1
1	Total Number Other Personnel					Total Other Personne
				Total Sa	alary, Wages and Frin	nge Benefits (A+B
Equipment	d dollar amount for each item exceeding \$5,000 t item			Funds	Requested (\$)	
Equipment	t item			Funds	Requested (\$)	
	t item				Requested (\$)	
Equipment ditional Equ	t item	equipment listed in the attack				
Equipment ditional Equ Travel Domestic	t item Jipment: Total funds requested for all o	equipment listed in the attack			s Requested (\$)	
Equipment ditional Equ Travel Domestic	Total funds requested for all o	equipment listed in the attack	ipment		s Requested (\$)	
Equipment ditional Equ Travel Domestic Foreign T	Total funds requested for all o	equipment listed in the attach Total Equi	ipment	Funds	: Requested (\$) 16,402.00 75,876.50	
Equipment ditional Equ Travel Domestic Foreign T	Total funds requested for all of the control of the	equipment listed in the attach Total Equi	ipment	Funds	5 Requested (\$) 16,402.00 75,876.50 92,278.50	

Total Participant/Trainee Support Costs

Number of Participants/Trainees

Travel

Other

Subsistence

Funds Requested (\$)

43,657.47

43,657.47

299,743.58

F. Other Direct Costs		Funds Requested (\$)
Materials and Supplies		
2. Publication Costs		4,000.00
3. Consultant Services		1,000.00
4. ADP/Computer Services		
5. Subawards/Consortium/Contractual Costs		438,647.13
6. Equipment or Facility Rental/User Fees		
7. Alterations and Renovations		
8.		
9.		
0.		
	Total Other Direct Costs	443,647.13
3. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	835,669.21
Indirect Costs Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect DC		127,047.06
	Total Indirect Costs	127,047.06
Cognizant Federal Agency		
Agency Name, POC Name, and POC Phone Number)		
. Total Direct and Indirect Costs		Funds Requested (\$)
	otal Direct and Indirect Institutional Costs (G + H)	962,716.27
I. Fee		Funds Requested (\$)
K. Total Costs and Fee		Funds Requested (\$)
	Total Costs and Fee (I + J)	962,716.27
Budget Justification		
Only attach one file.)	vice FGA FINAL	

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIO	ONAL DUNS:	0770900660000	Enter name of Organization:	EcoRealth All	iance			
Budget Type:	Project	Subaward/Consortiu	m	Budget Period:	Start D	ate: 01/01/2024	End Date: 12/31/2024	
A. Senior/Key	/ Person							
Prefix	First	Middle Last	Suffix Base	e Salary (\$) Ca	Months I. Acad. Sur	Requested m. Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
or.	William	Karesh		84,108.00 2.00		57,535.84	20,374.77	77,930.61
Project Role:	FI PI							
Or.	Ellen	Carlin	1	47,420.00 6.00		89,534.97	31,716.62	121,311.59
Project Role:	Co PI							
5r.	Jonathan	Mpstein	1	7C,888.CC 1.00		17,309.63	6,127.61	23,437.23
Project Role:	Сс-РІ							
Dr.	Noam	Ross		91,740.00 1.00		9,232.55	3,289.56	12,582.11
Project Role:	Co Investig	gator			·			
Budget Type: A. Senior/Key Per Prefix Fi Dr. Will Project Role: P1 Dr. Dr. Jonar Project Role: Co- Dr. Noam Project Role: Co- Cathe Project Role: Co- Emil Project Role: Co-	Catherine	Machalaba		83,790.00 2.00		16,974.54	6,008.39	22,983.53
Project Role:	Co-Investig	gator						
	Emily	Hagan		66,095.00 4.00		24,796.83	8,778.08	33,574.91
Project Role:	Co Investig	gator						
or.	Anne	Laudisoit		75,500.00 1.20		9,177.07	3,248.68	12,425.75
Project Role:	Co-Investig	ator						
Additional Senio	r Kev Persons		Add Attachment				requested for all Senior cons in the attached file	
Additional Sellio	n Rey Persons:				J [·		304,245.73
						11	otal Senior/Key Person	3V4, Z45. I3

B. Other Per	sonnel					
Number of Personnel	Project Role	Cal.	Months Acad.	Sum.	Requested Salary (\$)	Fringe Benefits (\$)
	Post Doctoral Associates					
	Graduate Students					
	Undergraduate Students					
	Project Role Post Doctoral Associates Graduate Students Undergraduate Students Secretarial/Clerical Operations Assistant Total Number Other Personnel Equipment Description It items and dollar amount for each item exceeding \$5,000 Equipment item ditional Equipment: Total funds requested for all equip					
1	Operations Assistant	6.:	00		33,855.50	11,984.85
1	Total Number Other Personnel					Total Other Personnel
				Total :	Salary, Wages and Fr	inge Benefits (A+B)
C. Equipme	nt Description					
List items an	d dollar amount for each item exceeding \$5,000				_	
Equipment	t item			Fun	ds Requested (\$)	
Additional Equ	upment:	Add Attachment				
	Total funds requested for all ed	quipment listed in the at	tached file			
		Total (Equipment			
D. Travel				Fun	ds Requested (\$)	
1. Domestic	Travel Costs (Incl. Canada, Mexico and U.S. Possession	ons)			16,402.00	
2. Foreign T	Fravel Costs				78,549.00	
		Total 1	ravel Cost		94,951.00	
E. Participa	nt/Trainee Support Costs			Fun	ds Requested (\$)	
1. Tuition/Fe	ees/Health Insurance					
2. Stipends						

Total Participant/Trainee Support Costs

Number of Participants/Trainees

Travel

Other

Subsistence

Funds Requested (\$)

45,840.35

45,840.35

350,086.08

F. Other Direct Costs		Funds Requested (\$)
Materials and Supplies		
2. Publication Costs		4,000.00
3. Consultant Services		1,000.00
4. ADP/Computer Services		
5. Subawards/Consortium/Contractual Costs		375,169.92
6. Equipment or Facility Rental/User Fees		
7. Alterations and Renovations		
в.		
9.		
0.		
	Total Other Direct Costs	380,169.92
i. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	825,207.00
I. Indirect Costs Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect DC	Total Indirect Costs	144,011.86
Cognizant Federal Agency Agency Name, POC Name, and OC Phone Number)		
Total Direct and Indirect Costs		Funds Requested (\$)
Total Dir	rect and Indirect Institutional Costs (G + H)	969,218.86
. Fee		Funds Requested (\$)
. Total Costs and Fee		Funds Requested (\$)
	Total Costs and Fee (I + J)	969,218.86
. Budget Justification		
Only attach one file.)	UA EINAL o	

RESEARCH & RELATED BUDGET - Cumulative Budget

	Totals	; (\$)
Section A, Seлior/Key Person		1,261,152.43
Section B, Other Personnel		208,387.93
Total Number Other Personnel	5	
Total Salary, Wages and Fringe Benefits (A+B)		1,469,540.36
Section C, Equipment	Ī	
Section D, Travel	Ì	464,356.50
1. Domestic	82,010.00	
2. Foreign	382,346.50	
Section E, Participant/Trainee Support Costs		
1. Tuition/Fees/Health Insurance		
2. Stipends		
3. Travel		
4. Subsistence		
5. Other		
6. Number of Participants/Trainees		
Section F, Other Direct Costs		2,311,274.24
1. Materials and Supplies	3,000.00	_,,,
2. Publication Costs	16,000.00	
3. Consultant Services	8,500.00	
4. ADP/Computer Services		
5. Subawards/Consortium/Contractual Costs	2,283,774.24	
6. Equipment or Facility Rental/User Fees	2,010, 1101	
7. Alterations and Renovations		
8. Other 1		
9. Other 2		
10. Other 3		
Section G, Direct Costs (A thru F)		4,245,171.10
Section H, Indirect Costs	Γ	667,646.96
Section I, Total Direct and Indirect Costs (G + H)	L [4,912,818.06
Section J, Fee	L T	373107010300
Section K, Total Costs and Fee (I + J)	L T	/ 010 010 04
	L	4,912,818.06

OMB Number: 4040-0001 Expiration Date: 10/31/2019

10 YEAR R&R SUBAWARD BUDGET ATTACHMENT(S) FORM

Instructions: On this form, you will attach the 10 Year R&R Subaward Budget files for your grant application. Complete the subawardee budget(s) in accordance with the 10 Year R&R budget instructions. Please remember that any files you attach must be a PDF document.

Click here to extract the 10 Year R&R Subaward Budget Attachment

Important: Please attach your subawardee budget file(s) with the file name of the subawardee organization. Each file name must be unique.

1) Please attach Attachment 1	SCNL		Delete Attachment	View Attachment
2) Please attach Attachment 2	NPHIL		Delete Attachment	View Attachment
3) Please attach Attachment 3	LCRP		Delete Attachment	View Attachment
4) Please attach Attachment 4	<u>nzwo</u>		Delete Attachment	View Attachment
5) Please attach Attachment 5	GU-CGHS		Delete Attachment	View Attachment
6) Please attach Attachment 6		Add Attachment		
7) Please attach Attachment 7		Add Attachment		
8) Please attach Attachment 8		Add Attachment		
9) Please attach Attachment 9		Add Attachment		
10) Please attach Attachment 10		Add Attachment		

OMB Number: 4040-0001 Expiration Date: 10/31/2019

51,720.00

51,720.00

ORGANIZATIO	ONAL DUNS:	55990113	60000 E	nter name of Org	ganization:	Socia	ty for	the Cor	nscrvatio	on of Nature o	i Liberia		
Budget Type:	Project	⊠ Subav	vard/Consortium			Budg	et Period	:1 S	Start Date	g1/01/2020	End Date:	12/31/202	0
A. Senior/Ke	y Person												
Prefix	First	Middle	Last	Suffix	Base Sa	lary (\$)	Cal.	Months Acad.		Requested Salary (\$)	Frin Benefit	•	Funds Requested (\$)
Mr.	Michael		Garbo				0.60			0.0	:0	0.00	0.00
Project Role	B: Ca Investi	galor											
Additional Senic	or Key Persons:			Add	Attachment					Key Per	requested for sons in the att Total Senior/Ko	ached file	0.00
Number of Personnel	Projec	t Role				Cal.	Months Acad.	Sum.		Requested Salary (\$)	Fring Benefits		Funds Requested (\$)
	Post Doctora	l Associates											
	Graduate Stu	idents											
	Undergradua	te Students											
1	Secretarial/C	lerical				12.00				10,800.00		c.cc	10,800.00
1	Social Scie	ntists				12.00				6,600.00		c.cc	6,600.00
4	Field Techn	icians				12.00				26,400.00		c.cc	26,400.00
2	Drivers					12.00				7,920.00		c.cc	7,920.00

Total Number Other Personnel

Total Salary, Wages and Fringe Benefits (A+B)

Total Other Personnel

. Equipment De	escription		
	lar amount for each item exceeding \$5,0	000	Eurola D
Equipment item	·		Funds Requested (\$)
Vehicle			40,000.00
dditional Equipme	ıt:	Add Attachment	
	Total funds requested	for all equipment listed in the attached file	
		Total Equipment	40,000.00
. Travel			Funds Requested (\$)
. Domestic Trav	el Costs (Incl. Canada, Mexico and U.S. P	Possessions)	32,600.00
. Foreign Travel	Costs		
		Total Travel Cost	32,600.00
. Participant/Tr	ainee Support Costs		Funds Requested (\$)
. Tuition/Fees/H	ealth Insurance		
. Stipends			
. Travel			
. Subsistence			
. Other			
Number of	Participants/Trainees	Total Participant/Trainee Support Costs	
F. Other Direct	Costs		Funds Requested (\$)
1. Materials and	Supplies		5,620.00
2. Publication Co	sts		
3. Consultant Se	vices		
4. ADP/Compute	Services		
5. Subawards/Co	nsortium/Contractual Costs		
6. Equipment or l	Facility Rental/User Fees		
7. Alterations and	Renovations		
з.			
9.			
0,			
-, -	-	Total Other Direct Cos	sts 5,620.00

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	129,940.00
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	8.00	7,195.20
	Total Indirect Costs	7,195.20
Cognizant Federal Agen (Agency Name, POC Name, POC Phone Number)		
I. Total Direct and I	ndirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	137,135.20
J. Fee		Funds Requested (\$)
K. Total Costs and		Funds Requested (\$)
	Total Costs and Fee (I + J)	137,135.20
L. Budget Justificat	ion	
(Only attach one file.)	1275 Budget Justification_SCNL_FINAL.p	ent View Attachment

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIONAL DUNS: Enter name of Organization: 5599011360000 Society for the Conservation of Nature of Liberia Subaward/Consortium **Budget Type:** □ Project Budget Period: 2 01/01/2021 End Date: 12/31/2021 Start Date: A. Senior/Key Person Months Requested Fringe **Funds** Cal. Acad. Sum. Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Suffix Base Salary (\$) 0.60 Michael Garbo 0.00 0.00 0.00 Project Role: |Co Investigator Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 0.00 **B. Other Personnel** Months Requested **Funds** Number of Fringe Project Role Sum. Personnel Çal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates **Graduate Students** Undergraduate Students Secretarial/Clerical 12.00 10,800.00 C.CC 10,800.00 Social Scientists 12.00 6,600.00 C.CC 6,600.00 12.00 26,400.00 c.cc 26,400.00 Field Technicians

12.00

Drivers

Total Number Other Personnel

7,920.00

Total Salary, Wages and Fringe Benefits (A+B)

c.cc

Total Other Personnel

7,920.00

51,720.00

51,720.00

Э.	Equipment Desc	cription				
Lis	t items and dollar Equipment item	amount for each item	exceeding \$5,000			Funds Requested (\$)
Ado	ditional Equipment:			Add Attachment		
		Total	funds requested for all e	nuipment listed in the a	ttached file	
			·		Equipment	
3.	Travel					Funds Requested (\$)
<u></u> I,		Costs (Incl. Canada, Me	exico and U.S. Possessi	ons)		42,400.00
2.	Foreign Travel Co			,		42,400.00
	v			Total	Travel Cost	42,400.00
Ξ.	Participant/Trair	nee Support Costs				Funds Requested (\$)
١.	Tuition/Fees/Heal	th Insurance				
2.	Stipends					
3.	Travel					
1.	Subsistence					
5.	Other					
	Number of Pa	rticipants/Trainees	Total	Participant/Trainee Sup	pport Costs	
F.	Other Direct Co	sts				Funds Requested (\$)
1.	Materials and Sup	pplies				32,400.00
2.	Publication Costs					
3.	Consultant Servic	es				
4.	ADP/Computer Se	ervices				
5.	Subawards/Consc	ortium/Contractual Costs	5			
6.	Equipment or Fac	ility Rental/User Fees				
7.	Alterations and Re	enovations				
8.						
9.						
0.						
				Total Othe	er Direct Costs	32,400.00

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	126,520.00
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	8.00	10,121.60
	Total Indirect Costs	10,121.60
Cognizant Federal Agen (Agency Name, POC Name, a POC Phone Number)		
I. Total Direct and Ir	ndirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	136,641.60
J. Fee		Funds Requested (\$)
K. Total Costs and I	Fee	Funds Requested (\$)
	Total Costs and Fee (I + J)	136,641.60
L. Budget Justificat	ion	
(Only attach one file.)	1275 Budget Justification_SCNL_FINAL.p	

OMB Number: 4040-0001 Expiration Date: 10/31/2019

7,920.00

51,720.00

51,720.00

ORGANIZA ⁻	FIONAL DUNS:	55990113	60000	Enter name of Or	ganization:	Socie	ty for	the Co	nscrvati	on of Nature of	Liberia	
Budget Typ	e: Project	⊠ Subav	vard/Consortiu	ım		Budge	et Period	l: 3 S	Start Date	e: 01/01/2022	End Date: 12/31/202	2
A. Senior/k	(ey Person											
Prefix	First	Middle	Last	Suffix	Base Sala	агу (\$)	Cal.	Months Acad.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Mr.	Michael		Garbo				0.60	,		0.00	0.00	0.00
Project R	ole: Co Investi	igator										
B. Other P	nior Key Persons ersonnel									·	sons in the attached file Lotal Senior/Key Person	0.00
Number o Personne		ct Role				Cal.	Months Acad.	Sum.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctora	al Associates										
	Graduate St	udents										
	Undergradua	ate Students										
	Secretarial/C	Clerical				12.00				10,800.00	0.00	10,800.00
	1 Social Sci	entists				12.00			7	6,600.00	c.cc	6,600.00
						12.00				0,000.00		2,200.00

12.00

Drivers

Total Number Other Personnel

7,920.00

Total Salary, Wages and Fringe Benefits (A+B)

c.cc

Total Other Personnel

C.	Equipment Desc	ription					
Lis	t items and dollar a	amount for each item exce	eding \$5,000			Funds R	equested (\$)
Adc	litional Equipment:			Add Attachment			
		Total fund:	s requested for all e	quipment listed in the a	ttached file		
			·		Equipment		
D.	Travel					Funds R	Requested (\$)
1.	Domestic Travel C	osts (Incl. Canada, Mexico	and U.S. Possessi	ons)			32,600.00
2.	Foreign Travel Co	sts					
				Total	Travel Cost		32,600.00
E .	Participant/Train	ee Support Costs				Funds R	Requested (\$)
1.	Tuition/Fees/Healt	h Insurance					
2.	Stipends						
3.	Travel						
4.	Subsistence						
5.	Other						
	Number of Par	ticipants/Trainees	Total	Participant/Trainee Su	pport Costs		
F.	Other Direct Cos	ts				Funds	Requested (\$)
1.	Materials and Sup	olies					21,600.00
2.	Publication Costs						
3.	Consultant Service	es .					
4.	ADP/Computer Se	rvices					
5.	Subawards/Conso	rtium/Contractual Costs					
6.	Equipment or Faci	ity Rental/User Fees					
7.	Alterations and Re	novations					
8.							
9.							
10.							
				Total Othe	er Direct Costs		21,600,00

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	105,920.00
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	8.00	8,473.60
	Total Indirect Costs	8,473.60
Cognizant Federal Agen- (Agency Name, POC Name, a POC Phone Number)		
I. Total Direct and Ir	ndirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	114,393.60
J. Fee		Funds Requested (\$)
K. Total Costs and I		Funds Requested (\$)
	Total Costs and Fee (I + J)	114,393.60
L. Budget Justificat	ion	
(Only attach one file.)	1275 Budget Justification_SCNL_FINAL.p	

OMB Number: 4040-0001 Expiration Date: 10/31/2019

51,720.00

51,720.00

ORGANIZATIONAL DUNS: Enter name of Organization: 5599011360000 Society for the Conservation of Nature of Liberia Subaward/Consortium **Budget Type:** □ Project Budget Period: 4 01/01/2023 End Date: 12/31/2023 Start Date: A. Senior/Key Person Months Requested Fringe **Funds** Cal. Acad. Sum. Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Suffix Base Salary (\$) 0.60 Michael Garbo 0.00 0.00 0.00 Project Role: |Co Investigator Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 0.00 **B. Other Personnel** Months Requested **Funds** Number of Fringe Project Role Sum. Personnel Çal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates **Graduate Students** Undergraduate Students Secretarial/Clerical 12.00 10,800.00 C.CC 10,800.00 Social Scientists 12.00 6,600.00 C.CC 6,600.00 12.00 26,400.00 c.cc 26,400.00 Field Technicians 12.00 7,920.00 c.cc Drivers 7,920.00

Total Number Other Personnel

Total Salary, Wages and Fringe Benefits (A+B)

Total Other Personnel

C.	Equipment Desc	ription					
Lis	t items and dollar a	amount for each item exce	eding \$5,000			Funds R	equested (\$)
Adc	litional Equipment:			Add Attachment			
		Total fund:	s requested for all e	quipment listed in the a	ttached file		
			·		Equipment		
D.	Travel					Funds R	Requested (\$)
1.	Domestic Travel C	osts (Incl. Canada, Mexico	and U.S. Possessi	ons)			32,600.00
2.	Foreign Travel Co	sts					
				Total	Travel Cost		32,600.00
E .	Participant/Train	ee Support Costs				Funds R	Requested (\$)
1.	Tuition/Fees/Healt	h Insurance					
2.	Stipends						
3.	Travel						
4.	Subsistence						
5.	Other						
	Number of Par	ticipants/Trainees	Total	Participant/Trainee Su	pport Costs		
F.	Other Direct Cos	ts				Funds	Requested (\$)
1.	Materials and Sup	olies					21,600.00
2.	Publication Costs						
3.	Consultant Service	es .					
4.	ADP/Computer Se	rvices					
5.	Subawards/Conso	rtium/Contractual Costs					
6.	Equipment or Faci	ity Rental/User Fees					
7.	Alterations and Re	novations					
8.							
9.							
10.							
				Total Othe	er Direct Costs		21,600,00

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	105,920.00
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	8.00	8,473.60
	Total Indirect Costs	8,473.60
Cognizant Federal Agen- (Agency Name, POC Name, a POC Phone Number)		
I. Total Direct and Ir	ndirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	114,393.60
J. Fee		Funds Requested (\$)
K. Total Costs and I		Funds Requested (\$)
	Total Costs and Fee (I + J)	114,393.60
L. Budget Justificat	ion	
(Only attach one file.)	1275 Budget Justification_SCNL_FINAL.p	

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIONAL DUNS: Enter name of Organization: 5599011360000 Society for the Conservation of Nature of Liberia Subaward/Consortium **Budget Type:** □ Project **Budget Period: 5** 01/01/2024 End Date: 12/31/2024 Start Date: A. Senior/Key Person Months Requested Fringe **Funds** Cal. Acad. Sum. Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Suffix Base Salary (\$) 0.60 Michael Garbo 0.00 0.00 0.00 Project Role: |Co Investigator Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 0.00 **B. Other Personnel** Months Requested **Funds** Number of Fringe Project Role Sum. Personnel Çal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates **Graduate Students** Undergraduate Students Secretarial/Clerical 12.00 10,800.00 C.CC 10,800.00 Social Scientists 12.00 6,600.00 C.CC 6,600.00

12.00

12.00

Field Technicians

Total Number Other Personnel

Drivers

26,400.00

7,920.00

Total Salary, Wages and Fringe Benefits (A+B)

c.cc

c.cc

Total Other Personnel

26,400.00

7,920.00

51,720.00

51,720.00

C. Equipr	nent Desc	cripti	on											
	and dollar a	amo	unt for e	ach ite	exe	ceeding	\$5,000				F	unds l	Reque	sted (\$)
Additional E	Equipment:								Add Attachment					
				To	otal fur	nds requ	ested for a	ll equ	uipment listed in the a	attached file				
									Total	Equipment				
D. Travel											F	unds I	Reque	sted (\$)
1. Domes	stic Travel C	Costs	(Incl. C	anada,	Mexic	co and U	J.S. Posse	ssio	ns)					22,800.0
2. Foreig	n Travel Cos	osts												
									Total	Travel Cost				22,800.0
E. Partici _l	pant/Train	nee S	upport	Costs	s						F	unds l	Reque	sted (\$)
I. Tuition	/Fees/Healt	lth Ins	urance											
2. Stipen	ds													
3. Travel														
1. Subsis	stence													
5. Other														
N.	umber of Par	ırticipa	nts/Traii	iees			To	otal F	Participant/Trainee Su	pport Costs				
F. Other I	Direct Cos	sts										Funds	s Requ	ested (\$)
1. Materia	als and Supp	pplies												10,800.0
2. Publica	ation Costs	i												
3. Consu	Itant Service	es												
4. ADP/C	omputer Se	ervice	s											
5. Subaw	ards/Conso	ortium	/Contrac	tual Cc	osts									
6. Equipr	nent or Facil	cility R	ental/Us	er Fees	s									
7. Alterat	ions and Re	enova	tions											
8.														
9.														
0.														
									Total Othe	er Direct Costs				10.800.0

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	85,320.00
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	8.00	6,825.60
	Total Indirect Costs	6,825.60
Cognizant Federal Agency (Agency Name, POC Name, and POC Phone Number)		
I. Total Direct and Ind	irect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	92,145.60
J. Fee		Funds Requested (\$)
K. Total Costs and Fe		Funds Requested (\$)
	Total Costs and Fee (I + J)	92,145.60
L. Budget Justificatio	n	
(Only attach one file.)	75 Budget Justification_SCNL_FINAL.p	

RESEARCH & RELATED BUDGET - Cumulative Budget

	Totals	s (\$)
Section A, Senior/Key Person		0.00
Section B, Other Personnel		258,600.00
Total Number Other Personnel	40	
Total Salary, Wages and Fringe Benefits (A+B)		258,600.00
Section C, Equipment	Ī	40,000.00
Section D, Travel	Ī	163,000.00
1. Domestic	163,000.00	
2. Foreign		
Section E, Participant/Trainee Support Costs		
1. Tuition/Fees/Health Insurance		
2. Stipends		
3. Travel		
4. Subsistence		
5. Other		
6. Number of Participants/Trainees		
Section F, Other Direct Costs		92,020.00
1. Materials and Supplies	92,020.00	
2. Publication Costs		
3. Consultant Services		
4. ADP/Computer Services		
5. Subawards/Consortium/Contractual Costs		
6. Equipment or Facility Rental/User Fees		
7. Alterations and Renovations		
8. Other 1		
9. Other 2		
10 . Other 3		
Section G, Direct Costs (A thru F)		553,620.00
Section H, Indirect Costs	Ī	41,089.60
Section I, Total Direct and Indirect Costs (G + H)	Ī	594,709.60
Section J, Fee	[, ""
Section K, Total Costs and Fee (I + J)		594,709.60
	L	3717.37100

OMB Number: 4040-0001 Expiration Date: 10/31/2019

7,574.50

ORGANIZATIONAL DUNS: Enter name of Organization: 5612318300000 National Public Health Enstitute of Liberia Subaward/Consortium 12/31/2020 **Budget Type:** Project Budget Period: 1 Start Date: 01/01/2020 End Date: A. Senior/Key Person Months Requested Fringe **Funds** Cal. Acad. Sum. Suffix Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Base Salary (\$) 0.60 0.00 Mosoka Fallah 24,000.00 0.00 0.00 Project Role: |CC PI 1.50 0.0 2,500.00 Dr. Patorma Bolay 20,000.00 2,500.00 Project Role: | Co-Investigator John Dogba 24,000.00 1.50 3,000.00 0.00 3,000.00 Project Role: |Co Investigator Bode Shobayo 16,596.00 1.50 2,074.50 0.00 2,074.50 Project Role: |Co-Investigator Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file

Number of Personnel	Project Role	Cal.	Months Acad.	Sum.	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctoral Associates						
	Graduate Students						
3	Undergraduate Students	12.00			3,000.00	0.00	3,000.00
1	Secretarial/Clerical	6.00			5,000.00	0,00	5,000.00
4	Lab Technicians	4.00			18,666.67	0.00	18,666.67
2	Hospital Project Coordinator	6.00			6,250.00	0,00	6,250.00
2	Hospital Lab Technicians	1.00			1,666.67	0.00	1,666.67
12	Total Number Other Personnel					Total Other Personnel	34,583.34
				Total S	alary, Wages and Fri	inge Benefits (A+B)	42,157.84

C. Equipment Description			
List items and dollar amount for each	h item exceeding \$5,000		
Equipment item			Funds Requested (\$)
-800 Freezer			25,000.00
Additional Equipment:	Add Attachmen	t	
	Total funds requested for all equipment listed in	the attached file	
	7	Total Equipment	25,000.00
D. Travel			Funds Requested (\$)
1. Domestic Travel Costs (Incl. Can	ada, Mexico and U.S. Possessions)		
2. Foreign Travel Costs			
	т	otal Travel Cost	
E. Participant/Trainee Support C	osts		Funds Requested (\$)
1. Tuition/Fees/Health Insurance			
2. Stipends			
3. Travel			
4. Subsistence			
5. Other			
Number of Participants/Trainee	s Total Participant/Traine	e Support Costs	

1. Materials and Supplies	Funds Requested (\$)
	15,677.66
2. Publication Costs	
3. Consultant Services	
4. ADP/Computer Services	
5. Subawards/Consortium/Contractual Costs	
6. Equipment or Facility Rental/User Fees	
7. Alterations and Renovations	
8. Laboratory Testing	54,907.20
9. Meetings and Conferences	14,970.00
10. Freezer Maintenance	500,00
Total Other Direct Costs	86,054.86
G. Direct Costs	Funds Requested (\$)
Total Direct Costs (A thru F)	153,212.70
Indirect Cost Tune Indirect Cost Rate (%) Indirect Cost Rase (\$)	Funds Requested (\$)
Indirect Cost Type Indirect Cost Rate (%) Indirect Cost Base (\$) Indirect Cost Base (\$)	Funds Requested (\$)
Total Indirect Costs Cognizant Federal Agency (Agency Name, POC Name, and POC Phone Number)	15,321.27 15,321.27
Indirect 10.00	15,321.27
Total Indirect Costs Cognizant Federal Agency (Agency Name, POC Name, and POC Phone Number) I. Total Direct and Indirect Costs Total Direct and Indirect Institutional Costs (G + H)	15, 321.27 15, 321.27 Funds Requested (\$)
Total Indirect Costs Cognizant Federal Agency (Agency Name, POC Name, and POC Phone Number) I. Total Direct and Indirect Costs Total Direct and Indirect Institutional Costs (G + H) J. Fee K. Total Costs and Fee	15, 321.27 15, 321.27 Funds Requested (\$)
Total Indirect Costs Cognizant Federal Agency (Agency Name, POC Name, and POC Phone Number) I. Total Direct and Indirect Costs Total Direct and Indirect Institutional Costs (G + H) J. Fee	15, 321.27 15, 321.27 Funds Requested (\$) 168, 533.97 Funds Requested (\$)
Total Indirect Costs Cognizant Federal Agency (Agency Name, POC Name, and POC Phone Number) I. Total Direct and Indirect Costs Total Direct and Indirect Institutional Costs (G + H) J. Fee K. Total Costs and Fee	15, 321.27 15, 321.27 Funds Requested (\$) 168, 533.97 Funds Requested (\$) Funds Requested (\$)

OMB Number: 4040-0001

Expiration Date: 10/31/2019

ORGANIZA	TIONAL DUNS:	5612318	300000	Enter name of 0	Organization: Nat 1	onal Pu	olia Ne	alth Ins	iitute of Liberia		
Budget Ty _l	oe: Project	⊠ Suba	award/Consortiu	m	Budg	et Perio	d: 2 S	Start Date	: 01/01/2021 Enc	l Date: 12/31/2021	
A. Senior	Key Person										
Prefix	First	Middle	Last	Suffix	Base Salary (\$)	Cal.	Months Acad.	Sum.	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	Mosoka		Fallah		24,000	.00 0.6	0		0.00	0.00	0.00
Project I	Role: Co PI										
Or.	Patorma		Bolay		20,000	.00 1.5	0		2,500.00	0.00	2,500.00
Project I	Role: Co-investi	gater									
Dr.	John		Dogba		24,000	.00 1.5	0		3,000.00	0.00	3,000.00
Project I	Role: Co Investi	galor									
Or.	Бode		Shobayo		16,596	.00 1.5	0		2,074.50	0.00	2,074.50
Project (Role: Co-investi	gator									
Additional S	enior Key Persons			Ad	dd Attachment					ested for all Senior in the attached file	
									Total	Senier/Key Bersen	7 57/ 50

Number of Personnel	Project Role	Cal.	Months Acad.	Sum.	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctoral Associates						
	Graduate Students						
3	Undergraduate Students	12.00			3,000.00	0.00	3,000.00
1	Secretarial/Clerical	6.00			5,000.00	0.00	5,000.00
4	Lab Technicians	4.00			18,666.67	0.00	18,666.67
2	Hospital Project Coordinator	6.00			6,250.00	0.00	6,250.00
2	Hospital Lab Technicians	1.00			1,888.87	0.00	1,666.67
12	Total Number Other Personnel					Total Other Personnel	34,583.34
				Total Sa	lary, Wages and Frir	nge Benefits (A+B)	42,157.84

	and dollar amount for each item exceeding \$5,000 ent item	Funds Requested (\$)
Additional	Equipment: Add Attachment	
	Total funds requested for all equipment listed in the attached file	
	Total Equipment	
D. Travel		Funds Requested (\$)
1. Dome	stic Travel Costs (Incl. Canada, Mexico and U.S. Possessions)	
2. Foreig	n Travel Costs	6,038.50
	Total Travel Cost	6,038.50
E. Partici	pant/Trainee Support Costs	Funds Requested (\$)
1. Tuition	n/Fees/Health Insurance	
2. Stiper	ds	
3. Trave		
4. Subsi	stence	
5. Other		
l N	umber of Participants/Trainees Total Participant/Trainee Support Costs	

F. Other Direct Co	osts			Funds Requested (\$)
1. Materials and Su	upplies			5,200.00
2. Publication Cost	s			
3. Consultant Servi	ices			
4. ADP/Computer S	Services			
5. Subawards/Cons	sortium/Contractual Costs			
6. Equipment or Fa	cility Rental/User Fees			
7. Alterations and F	Renovations			
8. Laboratory Tes	sting			137,827.50
9. Meetings and C	Conferences			10,650.00
O. Freezer Mainte	enande			500,00
			Total Other Direct Costs	154,177.50
i. Direct Costs				Funds Requested (\$)
		Total Dir	rect Costs (A thru F)	202,373.84
I. Indirect Costs Indirect Cost Type	e	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
Indirect		10.00		20,237.38
			Total Indirect Costs	20,237.38
Cognizant Federal Age Agency Name, POC Name POC Phone Number) Total Direct and	e, and			Funds Requested (\$)
Total Direct and		ect and Indirect Institu	tional Costs (G + H)	222,611.22
			,	
. Fee				Funds Requested (\$)
C. Total Costs and	d Fee			Funds Requested (\$)
		Total (Costs and Fee (I + J)	222,611.22
. Budget Justifica	ation			
Only attach one file.)	1276-Budget Justification NFF	ELL PUNAL		
,	TZ10-Budget Justilloation_NFI	HIL_FINAL		

OMB Number: 4040-0001 Expiration Date: 10/31/2019

7,574.50

ORGANIZATIONAL DUNS: Enter name of Organization: 5612318300000 National Public Health Enstitute of Liberia Subaward/Consortium Budget Period: 3 12/31/2022 **Budget Type:** Project Start Date: 01/01/2022 End Date: A. Senior/Key Person Months Requested Fringe **Funds** Cal. Acad. Sum. Suffix Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Base Salary (\$) 0.60 0.00 Mosoka Fallah 24,000.00 0.00 0.00 Project Role: |CC PI 1.50 0.0 2,500.00 Dr. Patorma Bolay 20,000.00 2,500.00 Project Role: | Co-Investigator John Dogba 24,000.00 1.50 3,000.00 0.00 3,000.00 Project Role: |Co Investigator Bode Shobayo 16,596.00 1.50 2,074.50 0.00 2,074.50 Project Role: |Co-Investigator Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file

Number of Personnel	Project Role	Cal.	Months Acad.	Sum.	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
1	Post Doctoral Associates	6.00			5,000.00	0.00	5,000.00
	Graduate Students						
3	Undergraduate Students	12.00			3,000.00	0.00	3,000.00
1	Secretarial/Clerical	6.00			5,000.00	0.00	5,000.00
4	Lab Technicians	4.00			18,666.67	0.00	18,666.67
2	Hospital Project Coordinator	6.00			6,250.00	0.00	6,250.00
2	Hospital Lab Technicians	1.00			1,666.67	0.00	1,666.67
13	Total Number Other Personnel					Total Other Personnel	39,583.34
				Total Sa	lary, Wages and Frin	ige Benefits (A+B)	47,157.84

List items and dollar amount for eac Equipment item	th item exceeding \$5,000	Funds Requested (\$)
Additional Equipment:	Add Attachment	
	Total funds requested for all equipment listed in the attached file	
	Total Equipment	
D. Travel		Funds Requested (\$)
1. Domestic Travel Costs (Incl. Cana	ada, Mexico and U.S. Possessions)	
2. Foreign Travel Costs		7,960.5
	Total Travel Cost	7,960.5
E. Participant/Trainee Support C	osts	Funds Requested (\$)
1. Tuition/Fees/Health Insurance		
2. Stipends		
3. Travel		
4. Subsistence		
5. Other		
Number of Participants/Traines	Total Participant Trainge Support Code	

F. Other Direct Costs	Funds Requested (\$)
1. Materials and Supplies	5,600.00
2. Publication Costs	
3. Consultant Services	
4. ADP/Computer Services	
5. Subawards/Consortium/Contractual Costs	
6. Equipment or Facility Rental/User Fees	
7. Alterations and Renovations	
Laboratory Testing	128,825.50
9. Meetings and Conferences	12,420.00
7. Freezer Maintenance	500.00
Total Other Direct Cost	s 147,345.50
6. Direct Costs	Funds Requested (\$)
Total Direct Costs (A thru F	202,463.84
I. Indirect Costs	
Indirect Cost Type Indirect Cost Rate (%) Indirect Cost Base (\$)	1
Indirect. 10.00	20,246.38
Total Indirect Cost	S 20,246.38
OC Phone Number)	
Total Direct and Indirect Costs	Funds Requested (\$)
Total Direct and Indirect Institutional Costs (G + F	222,/10.22
. Fee	Funds Requested (\$)
a. Total Costs and Fee	Funds Requested (\$)
Total Costs and Fee (I + c	J) 222,710.22
. Budget Justification	
Only attach one file.) 1276-Budget Justification_NFEIL_FINAL.	

OMB Number: 4040-0001 Expiration Date: 10/31/2019

7,574.50

ORGANIZATIONAL DUNS: Enter name of Organization: 5612318300000 National Public Health Enstitute of Liberia Subaward/Consortium Start Date: 12/31/2023 **Budget Type:** Project Budget Period: 4 01/01/2023 End Date: A. Senior/Key Person Months Requested Fringe **Funds** Cal. Acad. Sum. Suffix Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Base Salary (\$) 0.60 0.00 Mosoka Fallah 24,000.00 0.00 0.00 Project Role: |CC PI 1.50 0.0 2,500.00 Dr. Patorma Bolay 20,000.00 2,500.00 Project Role: | Co-Investigator John Dogba 24,000.00 1.50 3,000.00 0.00 3,000.00 Project Role: |Co Investigator Bode Shobayo 16,596.00 1.50 2,074.50 0.00 2,074.50 Project Role: |Co-Investigator Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file

Number of Personnel	Project Role	Cal.	Months Acad.	Sum.	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
1	Post Doctoral Associates	6.00			5,000.00	c.cc	5,000.00
	Graduate Students						
3	Undergraduate Students	12.00			3,000.00	0.00	3,000.00
1	Secretarial/Clerical	6.00			5,000.00	0.00	5,000.00
4	Lab Technicians	4.00			18,666.67	0,00	18,666.67
2	Hospital Project Coordinator	6.00			5,000.00	0.00	5,000.00
2	Hospital Lab Technicians	1.00			1,666.67	0.00	1,666.67
13	Total Number Other Personnel				т	Total Other Personnel	38,333.34
				Total Sa	lary, Wages and Fring	ge Benefits (A+B)	45,907.84

List items and dollar amount for each item Equipment item	exceeding \$5,000	Funds Requested (\$)
Additional Equipment:	Add Attachment	
Tota	l funds requested for all equipment listed in the attache	d file
	Total Equip	ment
D. Travel		Funds Requested (\$)
I. Domestic Travel Costs (Incl. Canada, M	exico and U.S. Possessions)	
2. Foreign Travel Costs		
	Total Travel	Cost
E. Participant/Trainee Support Costs		Funds Requested (\$)
. Tuition/Fees/Health Insurance		
2. Stipends		
3. Travel		
. Subsistence		
5. Other		
Number of Participants/Trainees	Total Participant/Trainee Support (Costs

Other Direct Costs	Funds Requested (\$)
1. Materials and Supplies	15,600.00
2. Publication Costs	
3. Consultant Services	
4. ADP/Computer Services	
5. Subawards/Consortium/Contractual Costs	
5. Equipment or Facility Rental/User Fees	
7. Alterations and Renovations	
Laboratory Testing	95,032.38
Meetings and Conferences	11,100.00
7. Freezer Maintenance	500.00
Total Other Direct Costs	122,232.38
. Direct Costs	Funds Requested (\$)
Total Direct Costs (A thru F)	168,140.22
. Indirect Costs	
Indirect Cost Type Indirect Cost Rate (%) Indirect Cost Base (\$) Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Total Indirect Costs	
ognizant Federal Agency Igency Name, POC Name, and OC Phone Number) Total Direct and Indirect Costs	Funds Requested (\$)
Total Direct and Indirect Institutional Costs (G + H)	184,954.24
. Fee	Funds Requested (\$)
. Total Costs and Fee	Funds Requested (\$)
Total Costs and Fee (I + J)	184,954.24
. Budget Justification	
Only attach one file.) 1276-Budget Justification NPEIL FINAL	

OMB Number: 4040-0001 Expiration Date: 10/31/2019

7,574.50

ORGANIZATIONAL DUNS: Enter name of Organization: 5612318300000 National Public Health Enstitute of Liberia Subaward/Consortium Start Date: 12/31/2024 **Budget Type:** Project Budget Period: 5 01/01/2024 End Date: A. Senior/Key Person Months Requested Fringe **Funds** Cal. Acad. Sum. Suffix Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Base Salary (\$) 0.60 0.00 Mosoka Fallah 24,000.00 0.00 0.00 Project Role: |CC PI 1.50 0.0 2,500.00 Dr. Patorma Bolay 20,000.00 2,500.00 Project Role: | Co-Investigator John Dogba 24,000.00 1.50 3,000.00 0.00 3,000.00 Project Role: |Co Investigator Bode Shobayo 16,596.00 1.50 2,074.50 0.00 2,074.50 Project Role: |Co-Investigator Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file

Number of Personnel	Project Role	Cal.	Months Acad.	Sum.	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
1	Post Doctoral Associates	6.00			5,000.00	c.cc	5,000.00
	Graduate Students						
3	Undergraduate Students	12.00			3,000.00	0.00	3,000.00
1	Secretarial/Clerical	6.00			5,000.00	0.00	5,000.00
4	Lab Technicians	4.00			18,666.67	0.00	18,666.67
2	Hospital Project Coordinator	3.00			2,500.00	0.00	2,500.00
2	Hospital Lab Technicians	1.00			1,666.67	0.00	1,666.67
13	Total Number Other Personnel					Total Other Personnel	35,833.34
				Total Sa	lary, Wages and Frin	ige Benefits (A+B)	43,407.84

List items and dollar amount for each i Equipment item	tem exceeding \$5,000	Funds Requested (\$)
		(4)
Additional Equipment:	Add Attachment	
	Total funds requested for all equipment listed in the attached file	
	Total Equipment	
D. Travel		Funds Requested (\$)
1. Domestic Travel Costs (Incl. Canada	a, Mexico and U.S. Possessions)	
2. Foreign Travel Costs		6,038.5
	Total Travel Cost	6,038.5
E. Participant/Trainee Support Cos	ts	Funds Requested (\$)
Tuition/Fees/Health Insurance		
2. Stipends		
3. Travel		
4. Subsistence		
5. Other		
Number of Participants/Trainees	Total Participant/Trainee Support Costs	

F. Other Direct Costs	Funds Requested (\$)
1. Materials and Supplies	5,200.00
2. Publication Costs	
3. Consultant Services	
4. ADP/Computer Services	
5. Subawards/Consortium/Contractual Costs	
6. Equipment or Facility Rental/User Fees	
7. Alterations and Renovations	
Laboratory Testing	36,821.00
9. Meetings and Conferences	14,150.00
7. Freezer Maintenance	500.00
Total Other Direct Costs	56,671.00
3. Direct Costs	Funds Requested (\$)
Total Direct Costs (A thru F	106,117.34
I. Indirect Costs	
Indirect Cost Type Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect [10.00	10,611.73
Total Indirect Costs	10,611.73
OC Phone Number)	
Total Direct and Indirect Costs	Funds Requested (\$)
Total Direct and Indirect Institutional Costs (G + H) 116,729.07
. Fee	Funds Requested (\$)
(. Total Costs and Fee	Funds Requested (\$)
Total Costs and Fee (I + J	116,729.07
. Budget Justification	
Only attach one file.) 1276-Budget Justification NFBIL FINAL.	

RESEARCH & RELATED BUDGET - Cumulative Budget

	Totals (\$)	
Section A, Senior/Key Person		37,872.50
Section B, Other Personnel		182,916.70
Total Number Other Personnel	63	
Total Salary, Wages and Fringe Benefits (A+B)		220,789.20
Section C, Equipment		25,000.00
Section D, Travel		20,037.50
1. Domestic		
2. Foreign	20,037.50	
Section E, Participant/Trainee Support Costs		
1. Tuition/Fees/Health Insurance		
2. Stipends		
3. Travel		
4. Subsistence		
5. Other		
6. Number of Participants/Trainees		
Section F, Other Direct Costs		566,481.24
Materials and Supplies	47,277.66	
2. Publication Costs		
3. Consultant Services		
4. ADP/Computer Services		
5. Subawards/Consortium/Contractual Costs		
Equipment or Facility Rental/User Fees		
7. Alterations and Renovations		
8. Other 1	453,413.58	
9. Other 2	63,290.00	
10. Other 3	2,500.00	
Section G, Direct Costs (A thru F)		832,307.94
Section H, Indirect Costs		83,230.78
Section I, Total Direct and Indirect Costs (G + H)		915,538.72
Section J, Fee		
Section K, Total Costs and Fee (I + J)		915,538.72

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIONAL DUNS: Enter name of Organization: 000000000000000 Liberia Chimpanzee Rescue & Protection Subaward/Consortium **Budget Type:** Project 01/01/2020 End Date: 12/31/2020 Budget Period: 1 Start Date: A. Senior/Key Person Months Fringe Funds Requested Cal. Acad. Sum. Requested (\$) Prefix First Middle Last Suffix Base Salary (\$) Salary (\$) Benefits (\$) Desmond 135,000.00 6.00 87,500.00 0.00 67,500.00 James Project Role: Co Investigator Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 67,500.00 **B. Other Personnel** Months Requested **Funds** Number of Fringe Project Role Sum. Personnel Çal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates **Graduate Students** Undergraduate Students Secretarial/Clerical Total Number Other Personnel **Total Other Personnel** Total Salary, Wages and Fringe Benefits (A+B) 67,500.00 C. Equipment Description List items and dollar amount for each item exceeding \$5,000 **Equipment item** Funds Requested (\$) Additional Equipment: Add Attachment Total funds requested for all equipment listed in the attached file **Total Equipment**

<u> </u>	Travel			Funds Requested (\$)
1.	Domestic Travel Costs (Incl. Canada, Mexico and	U.S. Possessions)		
2.	Foreign Travel Costs			8,312.00
			Total Travel Cost	8,312.00
Ε.	Participant/Trainee Support Costs			Funds Requested (\$)
1.	Tuition/Fees/Health Insurance			·
2.	Stipends			
3.	Travel			
4.	Subsistence			
5.	Other			
_	Number of Participants/Trainees	Total Participant/T	rainee Support Costs	
F.	Other Direct Costs			Funds Requested (\$)
1.	Materials and Supplies			3,000.00
2.	Publication Costs			
3.	Consultant Services			
4.	ADP/Computer Services			
5.	Subawards/Consortium/Contractual Costs			
6.	Equipment or Facility Rental/User Fees			
7.	Alterations and Renovations			
8.				
9.				
10.				
			Total Other Direct Costs	3,000.00
_	Direct Coats			
u.	Direct Costs	Total Dir	ect Costs (A thru F)	Funds Requested (\$) 78,812.00
		TOTAL DI	ect obsis (A thia i)	78,812.00
<u>H.</u>	Indirect Costs			
	Indirect Cost Type	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
	- 1:	8.00		6,304.96
	Indirect.			

I. Total Direct and Indirect Costs

Total Direct and Indirect Institutional Costs (G + H)

35,116.96

J. Fee

Funds Requested (\$)

K. Total Costs and Fee

Total Costs and Fee (I + J)

85,116.96

L. Budget Justification

(Only attach one file.)

1277 Budget Justification_LCRF_FINAL.p

OMB Number: 4040-0001

Expiration Date: 10/31/2019

ORGANIZATIO	NAL DUNS:	000000000	₀₀₀₀ E	nter name o	f Organization:	Liberi	ia Ching	anzee	Resoue &	Protection		
Budget Type:	Project	⊠ Subawa	ard/Consortium			Budge	t Period	2 9	Start Date:	01/01/2021	End Date: 12/31/202	
A. Senior/Key	/ Person											
Prefix	First	Middle	Last	Suffix	Base Sala	ıry (\$)		Months Acad.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	James		Desmond			5,000.0	6.00			87,500.0	0.00	67,500.00
Project Role:	: Co Investi	galor										
Additional Senio	r Key Persons:				Add Attachment						requested for all Senior sons in the attached file	
											Total Senior/Key Person	67,500.0
B. Other Pers	onnel										_	
Number of Personnel	Projec	t Role				Cal.	Months Acad.	Sum.		equested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctoral	Associates										
	Graduate Stu	dents										
	Undergradua											
	Secretarial/Cl	erical										
	Total Number	Other Personn	iel								Total Other Personnel	
								Total	l Salary, \	Nages and Fr	inge Benefits (A+B)	67,500.0
C. Equipmen	nt Descriptio	n										
		nt for each ite	em exceeding \$	5,000				_		- 4 (4)		
Equipment	item							Fu	inds Reque	sted (\$)		
Additional Equi	pment:				Add Attachment							
· · · · · · · · · · · · · · · · · · ·		Та	ital funde reques	eted for all equ	uipment listed in th	o attach	ad file					
		10	nai iunus reques	ceu ioi aii eqi	•	e attach tal Equi						
					10	tai Equi	Pinetti					

	Travel	Funds Requested (\$)
1.	Domestic Travel Costs (Incl. Canada, Mexico and U.S. Possessions)	
2.	Foreign Travel Costs	8,312.0
	Total Travel Cos	8,312.0
E. I	Participant/Trainee Support Costs	Funds Requested (\$)
1.	Tuition/Fees/Health Insurance	
2.	Stipends	
3.	Travel	
4.	Subsistence	
5.	Other]
	Number of Participants/Trainees Total Participant/Trainee Support Cost	s
_	. Other Direct Costs	Frieds Bassissad (#\
	. Materials and Supplies	Funds Requested (\$)
	. Publication Costs	
	. Consultant Services	
-	. ADP/Computer Services	
	. Subawards/Consortium/Contractual Costs	
6.	. Equipment or Facility Rental/User Fees	
	. Alterations and Renovations	
8.		
9.		
10.		
	Total Other Direct Co	osts
G. I	Direct Costs	Funds Requested (\$)
	Total Direct Costs (A thru	u F) 75,812.00
H. I	Indirect Costs	
ı	Indirect Cost Type Indirect Cost Rate (%) Indirect Cost Base	(\$) Funds Requested (\$)
	Tadirect.	6,064.96
	Total Indirect Co	osts 6,064.96

i. Total Direct and	indirect Costs			Funds Requested (\$)
		Total Direct and Indirect	ct Institutional Costs (G + H)	81,876.96
J. Fee				Funds Requested (\$)
K. Total Costs and	d Fee			Funds Requested (\$)
			Total Costs and Fee (I + J)	81,876.96
L. Budget Justific	ation			
(Only attach one file.)	1277 Budget Tues	ification ICER FINAL A		

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIONAL DUNS: Enter name of Organization: 000000000000000 Liberia Chimpanzee Rescue & Protection Subaward/Consortium **Budget Type:** Project 01/01/2022 End Date: 12/31/2022 **Budget Period: 3** Start Date: A. Senior/Key Person Months Requested Fringe Funds Cal. Acad. Sum. Requested (\$) Prefix First Middle Last Suffix Base Salary (\$) Salary (\$) Benefits (\$) Desmond 135,000.00 6.00 87,500.00 0.00 67,500.00 James Project Role: Co Investigator Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 67,500.00 **B. Other Personnel** Months Requested **Funds** Number of Fringe Project Role Sum. Personnel Çal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates **Graduate Students** Undergraduate Students Secretarial/Clerical Total Number Other Personnel **Total Other Personnel** Total Salary, Wages and Fringe Benefits (A+B) 67,500.00 C. Equipment Description List items and dollar amount for each item exceeding \$5,000 **Equipment item** Funds Requested (\$) Additional Equipment: Add Attachment Total funds requested for all equipment listed in the attached file **Total Equipment**

	Travel	Funds Requested (\$)
1.	Domestic Travel Costs (Incl. Canada, Mexico and U.S. Possessions)	
2.	Foreign Travel Costs	8,312.0
	Total Travel Cos	8,312.0
E. I	Participant/Trainee Support Costs	Funds Requested (\$)
1.	Tuition/Fees/Health Insurance	
2.	Stipends	
3.	Travel	
4.	Subsistence	
5.	Other]
	Number of Participants/Trainees Total Participant/Trainee Support Cost	s
_	. Other Direct Costs	Frieds Bassissad (#\
	. Materials and Supplies	Funds Requested (\$)
	. Publication Costs	
	. Consultant Services	
-	. ADP/Computer Services	
	. Subawards/Consortium/Contractual Costs	
6.	. Equipment or Facility Rental/User Fees	
	. Alterations and Renovations	
8.		
9.		
10.		
	Total Other Direct Co	osts
G. I	Direct Costs	Funds Requested (\$)
	Total Direct Costs (A thru	u F) 75,812.00
H. I	Indirect Costs	
ı	Indirect Cost Type Indirect Cost Rate (%) Indirect Cost Base	(\$) Funds Requested (\$)
	Tadirect.	6,064.96
	Total Indirect Co	osts 6,064.96

i. Total Direct and	indirect Costs			Funds Requested (\$)
		Total Direct and Indirect	ct Institutional Costs (G + H)	81,876.96
J. Fee				Funds Requested (\$)
K. Total Costs and	d Fee			Funds Requested (\$)
			Total Costs and Fee (I + J)	81,876.96
L. Budget Justific	ation			
(Only attach one file.)	1277 Budget Tues	ification ICER FINAL A		

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIONAL DUNS: Enter name of Organization: 000000000000000 Liberia Chimpanzee Rescue & Protection Subaward/Consortium **Budget Type:** Project 01/01/2023 End Date: 12/31/2023 **Budget Period: 4** Start Date: A. Senior/Key Person Months Requested Fringe Funds Cal. Acad. Sum. Requested (\$) Prefix First Middle Last Suffix Base Salary (\$) Salary (\$) Benefits (\$) Desmond 135,000.00 6.00 87,500.00 0.00 67,500.00 James Project Role: Co Investigator Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 67,500.00 **B. Other Personnel** Months Requested **Funds** Number of Fringe Project Role Sum. Personnel Çal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates **Graduate Students** Undergraduate Students Secretarial/Clerical Total Number Other Personnel **Total Other Personnel** Total Salary, Wages and Fringe Benefits (A+B) 67,500.00 C. Equipment Description List items and dollar amount for each item exceeding \$5,000 **Equipment item** Funds Requested (\$) Additional Equipment: Add Attachment Total funds requested for all equipment listed in the attached file **Total Equipment**

	Travel	Funds Requested (\$)
1.	Domestic Travel Costs (Incl. Canada, Mexico and U.S. Possessions)	
2.	Foreign Travel Costs	8,312.0
	Total Travel Cos	8,312.0
E. I	Participant/Trainee Support Costs	Funds Requested (\$)
1.	Tuition/Fees/Health Insurance	
2.	Stipends	
3.	Travel	
4.	Subsistence	
5.	Other]
	Number of Participants/Trainees Total Participant/Trainee Support Cost	s
_	. Other Direct Costs	Frieds Bassissad (#\
	. Materials and Supplies	Funds Requested (\$)
	. Publication Costs	
	. Consultant Services	
-	. ADP/Computer Services	
	. Subawards/Consortium/Contractual Costs	
6.	. Equipment or Facility Rental/User Fees	
	. Alterations and Renovations	
8.		
9.		
10.		
	Total Other Direct Co	osts
G. I	Direct Costs	Funds Requested (\$)
	Total Direct Costs (A thru	u F) 75,812.00
H. I	Indirect Costs	
ı	Indirect Cost Type Indirect Cost Rate (%) Indirect Cost Base	(\$) Funds Requested (\$)
	Tadirect.	6,064.96
	Total Indirect Co	osts 6,064.96

i. Total Direct and	indirect Costs			Funds Requested (\$)
		Total Direct and Indire	ct Institutional Costs (G + H)	81,876.96
J. Fee				Funds Requested (\$)
K. Total Costs and	i Fee			Funds Requested (\$)
			Total Costs and Fee (I + J)	81,876.96
L. Budget Justific	ation			
(Only attach one file.)	1077 Fundamen Turan	iCian ion ICEE FINNI		

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIONAL DUNS: Enter name of Organization: 000000000000000 Liberia Chimpanzee Rescue & Protection Subaward/Consortium **Budget Type:** Project 01/01/2024 End Date: 12/31/2024 Budget Period: 5 Start Date: A. Senior/Key Person Months Requested Fringe Funds Cal. Acad. Sum. Requested (\$) Prefix First Middle Last Suffix Base Salary (\$) Salary (\$) Benefits (\$) Desmond 135,000.00 6.00 87,500.00 0.00 67,500.00 James Project Role: Co Investigator Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 67,500.00 **B. Other Personnel** Months Requested **Funds** Number of Fringe Project Role Sum. Personnel Çal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates **Graduate Students** Undergraduate Students Secretarial/Clerical Total Number Other Personnel **Total Other Personnel** Total Salary, Wages and Fringe Benefits (A+B) 67,500.00 C. Equipment Description List items and dollar amount for each item exceeding \$5,000 **Equipment item** Funds Requested (\$) Additional Equipment: Add Attachment Total funds requested for all equipment listed in the attached file **Total Equipment**

<u> </u>	Travel			Funds Requested (\$)
1.	Domestic Travel Costs (Incl. Canada, Mexico and	U.S. Possessions)		
2.	Foreign Travel Costs			8,312.0
			Total Travel Cost	8,312.0
Ε.	Participant/Trainee Support Costs			Funds Requested (\$)
١.	Tuition/Fees/Health Insurance			·
2.	Stipends		Ī	
3.	Travel		Ī	
1.	Subsistence		Ī	
5.	Other			
_	Number of Participants/Trainees	Total Participant/I	Frainee Support Costs	
F	Other Direct Costs			Funds Requested (\$)
_	Materials and Supplies			Tunus riequesteu (#)
	Publication Costs			
3.	Consultant Services			
4.	ADP/Computer Services			
5.	Subawards/Consortium/Contractual Costs			
6.	Equipment or Facility Rental/User Fees			
7.	Alterations and Renovations			
8.				
9.				
10.				
			Total Other Direct Costs	
G.	Direct Costs			Funds Requested (\$)
		Total Dir	rect Costs (A thru F)	75,812.00
H.	Indirect Costs			
	Indirect Cost Type	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
		8.00		6,064.96
	Indirect.	×.00		

i. Total Direct and	indirect Costs			Funds Requested (\$)
		Total Direct and Indire	ct Institutional Costs (G + H)	81,876.96
J. Fee				Funds Requested (\$)
K. Total Costs and	i Fee			Funds Requested (\$)
			Total Costs and Fee (I + J)	81,876.96
L. Budget Justific	ation			
(Only attach one file.)	1077 Fundamen Turan	iCian ion ICEE FINNI		

RESEARCH & RELATED BUDGET - Cumulative Budget

	Tota	Is (\$)
Section A, Senior/Key Person		337,500.00
Section B, Other Personnel		
Total Number Other Personnel		
Total Salary, Wages and Fringe Benefits (A+B)		337,500.00
Section C, Equipment		
Section D, Travel		41,560.00
1. Domestic		
2. Foreign	41,560.00	
Section E, Participant/Trainee Support Costs		
1. Tuition/Fees/Health Insurance		
2. Stipends		
3. Travel		
4. Subsistence		
5. Other		
6. Number of Participants/Trainees		
Section F, Other Direct Costs		3,000.00
1. Materials and Supplies	3,000.00	
2. Publication Costs		
3. Consultant Services		
4. ADP/Computer Services		
5. Subawards/Consortium/Contractual Costs		
6. Equipment or Facility Rental/User Fees		
7. Alterations and Renovations		
8. Other 1		
9. Other 2		
10 . Other 3		
Section G, Direct Costs (A thru F)		382,060.00
Section H, Indirect Costs		30,564.80
Section I, Total Direct and Indirect Costs (G + H)		412,624.80
Section J, Fee		
Section K, Total Costs and Fee (I + J)		412,624.80

ORGANIZATI	IONAL DUNS:	96390831	350000	Enter name of Org	Enter name of Organization:			1 Nebr	aska Medi	cal Center			
Budget Type	: Project	⊠ Suba	ward/Consor	tium		Budge	et Period	l: 1 S	Start Date:	01/01/2020	End Date:	12/31/2020	
A. Senior/K	ey Person												
Prefix	First	Middle	Last	Suffix	Base Sal	lary (\$)	Cal.	Months Acad.		Requested Salary (\$)		nge its (\$)	Funds Requested (\$)
Dr.	Michael		Wiley		11	12,746.	00 1.20)		11,274.6	50	3,145.61	14,420,21
Project Ro	d e: Co Invest.	igator											
Additional Sen	nior Key Persons	.:		Add /	Attachment					Total Funds Key Per	requested for records in the a	r all Senior ttached file	
											Total Senior/I	Key Person	14,420.2
B. Other Pe	rsonnel												
Number of Personnel	Proje	ct Role				Cal.	Months Acad.	Sum.		equested ialary (\$)	Frin Benefi		Funds Requested (\$)
	Post Doctora	al Associates	\$										
	Graduate St	udents											
	Undergradua												
	Secretarial/0	Clerical											
1	l Training C	oordinator				1.20				8,290.10		2,312.94	10,603.0
1	Total Numbe	r Other Perso	nnel								Total Other	Personnel	10,603.0
								Tota	l Salary, V	Vages and Fr	inge Benef	its (A+B)	25,023.2
	ent Descriptio			: #F 000									
Equipmen	nd dollar amou nt item	int for each	item exceed	ing \$5,000				Fu	inds Reques	sted (\$)			
									7.				
Additional Eq	juipment:			Ad	d Attachment								
			Total funds re	equested for all equipme	ent listed in t	he attaci	hed file						
					Т	otal Equ	ipment						

D.	Travel				Funds Requested (\$)
1.	Domestic	Travel Costs (Incl. Canada, Mexico and U.	S. Possessions)		
2.	Foreign 1	ravel Costs			
				Total Travel Cost	
F	Particina	nt/Trainee Support Costs			Funds Requested (\$)
<u></u> 1.		ees/Health Insurance			Tantas ricquesica (ψ)
2.	Stipends	controduti insurano		L	
3.	Travel				
4.	Subsister	nce		L	
5.	Other				
<u>. </u>		and for the first training	Takal Baskinin and T	ivainaa Cannaat Caata	
	Num	per of Participants/Trainees	rotal Participant/	rainee Support Costs	
F.	Other Di	ect Costs			Funds Requested (\$)
1.	Materials	and Supplies			
2.	Publication	n Costs			
3.	Consulta	nt Services			
4.	ADP/Con	puter Services			
5.	Subawar	ds/Consortium/Contractual Costs			
6.	Equipme	nt or Facility Rental/User Fees			
7.	Alteration	s and Renovations			
8.					
9.					
10.					
				Total Other Direct Costs	
_					
G.	Direct Co	sts	Total Dir	root Coots (A thru: E)	Funds Requested (\$)
			TOTAL DI	rect Costs (A thru F)	25,023.25
<u>H.</u>	Indirect C	osts			
	Indirect C	st Type	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
	Indirect		27.00		6,756.28
				Total Indirect Costs	6,756.28
(Age		eral Agency OC Name, and eer)			

I. Total Direct and Indirect Costs Funds Requested (\$) Total Direct and Indirect Institutional Costs (G + H) 31,779.53 J. Fee Funds Requested (\$) K. Total Costs and Fee Funds Requested (\$) Total Costs and Fee (I + J) 31,779.53 L. Budget Justification View Attachment (Only attach one file.) Delete Attachment

1278 Budget Justification_UNMC_ FINAL

ORGANIZATIO	RGANIZATIONAL DUNS: 9639083350000 Enter nam			Enter name of O	rganization:	Unive	rsity o					
Budget Type:	Project	⊠ Subaw	ard/Consortium	1		Budge	et Perioc	1:29	Start Date:	01/01/2021	End Date: 12/31/202]
A. Senior/Ke	y Person											
Prefix	First	Middle	Last	Suffix	Base Sal	lary (\$)	Cal.	Months Acad.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	Michael		Wiley		11	12,746.	00 1.20			11,612.84	4 3,239.98	14,852.82
Project Role	: Co Investi	galor										
Additional Senio	or Key Persons:			Add	Attachment					Total Funds Key Pers	requested for all Senior sons in the attached file	
B. Other Pers	sonnel									Т	otal Senior/Key Person	14,852.83
Number of Personnel	Projec	t Role				Çal.	Months Acad.	Sum.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctora	l Associates										
	Graduate Stu	idents										
	Undergradua	te Students										
	Secretarial/C	lerical										
1	Training Co	ordinator				1.20				8,290.10	2,312.94	10,603.04
1	Total Number	Other Person	nel								Total Other Personnel	10,603.0
								Total	l Salary, '	Wages and Frii	nge Benefits (A+B)	25,455.8
C. Equipme	nt Descriptio	n										
List items and Equipment		nt for each it	em exceeding	\$5,000				Fu	nds Reque	sted (\$)		
Additional Equ	ipment:			Δ	add Attachment							
		т	otal funds reque	sted for all equipm	nent listed in t	he attacl	ned file					
					т	otal Equ	ipment					

D.	Travel	Funds Requested (\$)
1.	Domestic Travel Costs (Incl. Canada, Mexico and U.S. Possessions)	
2.	Foreign Travel Costs	
	Total Travel Co	st
E . I	Participant/Trainee Support Costs	Funds Requested (\$)
1.	Tuition/Fees/Health Insurance	
2.	Stipends	
3.	Travel	
4.	Subsistence	
5.	Other	
	Number of Participants/Trainees Total Participant/Trainee Support Cost	is
		
F.	Other Direct Costs	Funds Requested (\$)
1.	Materials and Supplies	
2.	Publication Costs	
3.	Consultant Services	
4.	ADP/Computer Services	
5.	Subawards/Consortium/Contractual Costs	
6.	Equipment or Facility Rental/User Fees	
7.	Alterations and Renovations	
8.		
9.		
10.		
	Total Other Direct C	osts
G I	Direct Costs	Funds Requested (\$)
<u>u. </u>	Total Direct Costs (A three	
	·	,
<u>H. I</u>	Indirect Costs	
	Indirect Cost Type Indirect Cost Rate (%) Indirect Cost Base	(\$) Funds Requested (\$)
	Indirect. 27.00	6,873.08
	Total Indirect Co	osts 6,873.08
(Age	ency Name, POC Name, and C Phone Number)	

I. Total Direct and Indirect Costs		Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	32,328.94
J. Fee		Funds Requested (\$)
K. Total Costs and Fee		Funds Requested (\$)
	Total Costs and Fee (I + J)	32,328.94
L. Budget Justification		
(Only attach one file)	ifian in INMO TINAL	

												7
ORGANIZATIO	NAL DUNS:	96390833	350000	Unive	ersity c	i Nebr	aska Medi	dal Center		J		
Budget Type:	Project	⊠ Suba	ward/Consor	tium		Budg	et Period	1: 3 5	Start Date:	01/01/2022	End Date: 12/31/20	122
A. Senior/Ke	y Person											
Prefix	First	Middle	Last	Suffix	Base Sa	lary (\$)	Cal.	Months Acad.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	Michael		Wiley		1:	12,746.	00 1.20)		11,981.2	2 3,337.18	15,298.40
Project Role	: Co Investi	galor										
Additional Cons					add Attachment					Total Funds	requested for all Senior	
Additional Senio	or Key Persons:									_	sons in the attached file	
											Total Senior/Key Person	15,298.40
B. Other Pers	sonnel											
Number of Personnel	Projec	t Role				Cal.	Months Acad.	Sum.		equested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctoral	l Associates										
	Graduate Stu											
	Undergradua											
	Secretarial/C] [
	Training Co	ordinator				1.20				8,290.10	2,312.94	10,603.04
1	Total Number	Other Perso	nnel								Total Other Personnel	10,603.04
								Tota	l Salary, \	Nages and Fri	inge Benefits (A+B)	25,901.44
	nt Descriptio											
List items and Equipment	d dollar amour : item	nt for each i	item exceed	ing \$5,000				Fu	ınds Reque	sted (\$)		
									•			
Additional Equ	ipment:				Add Attachment	t						
			Total funds re	quested for all equi	ipment listed in t	the attac	hed file					
					T	otal Equ	uipment					

D.	Travel	Funds Requested (\$)
1.	Domestic Travel Costs (Incl. Canada, Mexico and U.S. Possessions)	
2.	Foreign Travel Costs	
	Total Travel Cos	st
E.	Participant/Trainee Support Costs	Funds Requested (\$)
1.	Tuition/Fees/Health Insurance	(,)
2.	Stipends	
3.	Travel	
4.	Subsistence	
5.	Other	
	Number of Participants/Trainees Total Participant/Trainee Support Cost	ds
		
F.	Other Direct Costs	Funds Requested (\$)
1.	Materials and Supplies	
2.	Publication Costs	
3.	Consultant Services	
4.	ADP/Computer Services	
5.	Subawards/Consortium/Contractual Costs	
6.	Equipment or Facility Rental/User Fees	
7.	Alterations and Renovations	
8.		
9.		
10.		
	Total Other Direct Co	osts
G I	Direct Costs	Funda Danisated (4)
<u>u. </u>	Total Direct Costs (A thru	Funds Requested (\$) u F) 25,901.44
	(, , , , , , , , , , , , , , , , , , ,	,
H. I	Indirect Costs	
	Indirect Cost Type Indirect Cost Rate (%) Indirect Cost Base	(\$) Funds Requested (\$)
	Indirect 27.00	6,993.39
	Total Indirect Co	osts 6,993.39
(Age	ency Name, POC Name, and C Phone Number)	

I. Total Direct and Indirect Costs		Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	32,894.83
J. Fee		Funds Requested (\$)
K. Total Costs and Fee		Funds Requested (\$)
	Total Costs and Fee (I + J)	32,894.83
L. Budget Justification		
(Only attach one file)	ifian in INMO TINAL	

ORGANIZATI	PRGANIZATIONAL DUNS: 9639083350000 Enter nan			Enter name of	Organization:	Unive	ersity o					
Budget Type:		⊠ Suba	ward/Consort	ilum		Budge	et Period	l: 4 S	Start Date	: [01/01/2023] E	End Date: 12/31/202	3
A. Senior/Ke	ey Person											
Prefix	First	Middle	Last	Suffix	Base Sal	lary (\$)		Months Acad.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	Michael		Wiley			12,746.	00 1.20)		12,320.08	3,437.30	15,757.36
Project Rol	e: Co Investi	galor										
										Total Funds re	equested for all Senior ┌	
Additional Seni	ior Key Persons:	:		LA	dd Attachment						ons in the attached file	
										To	otal Senior/Key Person	15,757.38
B. Other Per	sonnel											
Number of Personnel	Projec	t Role				Cal.	Months Acad.	Sum.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctora	l Associates										
	Graduate Stu	ıdents										
	Undergradua	ite Students										
	Secretarial/C	lerical										
1	Training Co	pordinator				1.20				8,290.10	2,312.94	10,603.04
1	Total Number	Other Person	nnel							7	Total Other Personnel	10,603.04
								Total	l Salary,	Wages and Frin	ge Benefits (A+B)	26,360.40
											_	
C. Equipme	nt Descriptio	n										
	ıd dollar amoui	nt for each i	tem exceedi	ng \$5,000								
Equipmen	t item							Fu	nds Reque	ested (\$)		
Additional Equ	uipment:				Add Attachment							
			Total funds re	quested for all equi	pment listed in t	he attac	hed file		-			
				•		otal Equ						

Domestic Travel Costs (Incl. Canada, Mexico ar	nd U.S. Possessions)	
Foreign Travel Costs		
	Total Travel Cost	
articipant/Trainee Support Costs		Funds Requested (\$)
		1 21120 1104 200102 (4)
Travel	_	
Subsistence	<u> </u>	
Other		
	Total Particinant/Trainge Sunnart Costs	
Number of Participants/Transees	Total Faithcipant Trainee Support Costs	
Other Direct Costs		Funds Requested (\$)
Materials and Supplies		
Publication Costs		
Consultant Services		
ADP/Computer Services		
Subawards/Consortium/Contractual Costs		
Equipment or Facility Rental/User Fees		
Alterations and Renovations		
	Total Other Direct Costs	
irect Costs	Total Direct Costs (A thru F)	Funds Requested (\$) 26,360.40
	Total Direct Oosts (A third 1)	20,300.40
direct Costs		
ndirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
ndirect.	27.00	7,117.31
	Total Indirect Costs	7,117.31
TSTSO DEA SEA III	Number of Participants/Trainees ther Direct Costs Interials and Supplies Intublication Costs Interials Services Indication Costs Interials Services Indication Costs Interials Services Interials Service	tripends travel tripends travel tripends travel tripends travel tripends tripends travel tripends tripends tripends tripends travel tripends tripen

I. Total Direct and Indirect Costs		Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	33,477.71
J. Fee		Funds Requested (\$)
K. Total Costs and Fee		Funds Requested (\$)
	Total Costs and Fee (I + J)	33,477.71
L. Budget Justification		
(Only attach one file)	ifian in INMO TINAL	

ORGANIZATIO	DNAL DUNS:	9639083	350000	Enter name of	Organization:	Unive	rsity o	i Nebr	aska Med	iidal Center		
Budget Type:	Project	⊠ Suba	ward/Consor	tium		Budae	et Period	1:5 9	Start Date	e: 01/01/2024 E	nd Date: 12/31/2024	1
	•											_
A. Senior/Ke	y Person											
Prefix	First	Middle	Last	Suffix	Base Sa	lary (\$)	Cal.	Months Acad.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
⊃r.	Michael		Wiley		1:	12,746.	00 1.20)		12,689.68	3,540.42	16,230.08
Project Role	e: Co Investi	galor										
										Total Funds ra	quested for all Senior ┌	
Additional Seni	or Key Persons:	:			dd Attachment					Key Perso	ns in the attached file	
										Tot	tal Senior/Key Person	16,230.0
B. Other Per	sonnel											
Number of							Months			Requested	Fringe	Funds
Personnel	Projec	t Role				Çal.	Acad.	Sum.		Salary (\$)	Benefits (\$)	Requested (\$)
	Post Doctora	l Associates	3									
	Graduate Stu	udents										
	Undergradua								<u> </u>			
	Secretarial/C	lerical]			
1	Training Co	pordinator				1.20				8,290.10	2,312.94	10,603.0
1	Total Number	Other Perso	nnel							Т	otal Other Personnel	10,603.0
								Tota	l Salary,	Wages and Fring	ge Benefits (A+B)	26,833.1
C. Equipme	nt Descriptio	n										
List items an	d dollar amou	nt for each	item exceed	ing \$5,000								
Equipmen	t item							Fu	ınds Requ	ested (\$)		
									7			
Additional Equ	iipment:				Add Attachment							
			Total funds re	quested for all equi	pment listed in t	the attacl	ned file					
					T	otal Equ	ipment					

D.	Travel				Funds Requested (\$)
1.	Domestic	Travel Costs (Incl. Canada, Mexico and U.S	. Possessions)		
2.	Foreign 1	ravel Costs			
				Total Travel Cost	
F	Particina	nt/Trainee Support Costs			Funds Requested (\$)
<u></u> 1.	•	ees/Health Insurance			Tunus πεφασίευ (ψ)
2.	Stipends	controller insurance		L	
3.	Travel				
4.	Subsiste	nce		L	
5.	Other			-	
<u>. </u>		L	T. 1. 1 D 11 . 10		
	Num	per of Participants/Trainees	Total Participant/T	rainee Support Costs	
F.	Other Di	rect Costs			Funds Requested (\$)
1.	Materials	and Supplies			
2.	Publication	n Costs			
3.	Consulta	nt Services			
4.	ADP/Con	nputer Services			
5.	Subawar	ds/Consortium/Contractual Costs			
6.	Equipme	nt or Facility Rental/User Fees			
7.	Alteration	s and Renovations			
8.					
9.					
10.					
				Total Other Direct Costs	
_	D:+ O-	_1_			
u.	Direct Co	SIS	Total Dir	rect Costs (A thru F)	Funds Requested (\$) 26,833.12
			TOTAL DI	ect costs (A tillu i)	20,033.12
H. I	Indirect (costs			
	Indirect C	ost Type	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
	Indirect		27.00		7,244.94
				Total Indirect Costs	7,244.94
(Age		eral Agency OC Name, and Der)			

I. Total Direct and Indirect Costs		Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	34,078.06
J. Fee		Funds Requested (\$)
K. Total Costs and Fee		Funds Requested (\$)
	Total Costs and Fee (I + J)	34,078.06
L. Budget Justification		
(Only attach one file)	ifing in INMO TINAL	

RESEARCH & RELATED BUDGET - Cumulative Budget

	Tota	ls (\$)		
Section A, Senior/Key Person		76,558.87		
Section B, Other Personnel		53,015.20		
Total Number Other Personnel	5			
Total Salary, Wages and Fringe Benefits (A+B)		129,574.07		
Section C, Equipment				
Section D, Travel				
1. Domestic				
2. Foreign				
Section E, Participant/Trainee Support Costs				
1. Tuition/Fees/Health Insurance				
2. Stipends				
3. Travel				
4. Subsistence				
5. Other				
6. Number of Participants/Trainees				
Section F, Other Direct Costs				
1. Materials and Supplies				
2. Publication Costs				
3. Consultant Services				
4. ADP/Computer Services				
5. Subawards/Consortium/Contractual Costs				
6. Equipment or Facility Rental/User Fees				
7. Alterations and Renovations				
8. Other 1				
9. Other 2				
10 . Other 3				
Section G, Direct Costs (A thru F)		129,574.07		
Section H, Indirect Costs	34,985.00			
Section I, Total Direct and Indirect Costs (G + H)	164,559.07			
Section J, Fee				
Section K, Total Costs and Fee (I + J)		164,559.07		

OMB Number: 4040-0001

28,828.47

Expiration Date: 10/31/2019 **ORGANIZATIONAL DUNS:** Enter name of Organization: 049313944 000 Georgetown University Otr for Global Health Sci and Security Subaward/Consortium 12/31/2020 **Budget Type:** □ Project **Budget Period: 1** 01/01/2020 End Date: Start Date: A. Senior/Key Person Months Requested Fringe **Funds** Cal. Acad. Sum. Suffix Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Base Salary (\$) Standley 108,191.00 1.20 10,819.10 3,170.00 13,989.10 Claire Project Role: |Co Investigator 0.60 Erin Sorrell 114,767.CC 11,476.70 3,362.6 14,839.37 Project Role: | Co-Investigator Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 28,828.47 **B. Other Personnel** Months Requested **Funds** Number of Fringe Project Role Sum. Personnel Cal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates **Graduate Students** Undergraduate Students Secretarial/Clerical

Total Number Other Personnel

Total Salary, Wages and Fringe Benefits (A+B)

Total Other Personnel

C. Equi	pment Desc	ription				
	s and dollar a	amount for each iten	n exceeding \$5,000			Funds Requested (\$)
Additiona	al Equipment:			Add Attachment		
		Tota	al funds requested for all e	quipment listed in the a	nttached file	
					Equipment	
D. Trave	al				_	Funds Requested (\$)
		osts / Incl. Canada. M	Mexico and U.S. Possessi	one)	[runus nequesteu (\$)
	eign Travel Co		VIENICO BIIG O.O. 1 OSSESSI	0113)	[[
. 1016	agii mavei co	313		Total	Travel Cost	8,539.0 8,539.0
E. Parti	cipant/Train	ee Support Costs				Funds Requested (\$)
I. Tuiti	ion/Fees/Healt	h Insurance				
2. Stipe	ends					
. Trav	rel					
. Sub	sistence					
. Othe	er					
	Number of Par	ticipants/Trainees	Tota	l Participant/Trainee Su	pport Costs	
F. Othe	er Direct Cos	ets				Funds Requested (\$)
1. Mate	erials and Sup	plies				150.0
2. Publ	lication Costs					
3. Con:	sultant Service	es				
4. ADP	P/Computer Se	rvices				
5. Suba	awards/Conso	rtium/Contractual Cos	sts			
6. Equi	ipment or Faci	lity Rental/User Fees				
7. Alter	rations and Re	novations				
8. Tele	ecommunicati	ons				200.0
9						
0.						
				Total Othe	er Direct Costs	350.00

G. Direct Costs					Funds Requeste	ed (\$)
		Total Dir	rect Cos	sts (A thru F)	37,	717.47
H. Indirect Costs						
Indirect Cost Type	Indir	ect Cost Rate (%)	Indirect	Cost Base (\$)	Funds Requeste	ed (\$)
Indirect		56.00			20,	933.25
			Total In	direct Costs [20,	933.25
Cognizant Federal Agen (Agency Name, POC Name, POC Phone Number)						
I. Total Direct and I	direct Costs				Funds Requeste	ed (\$)
	Total Direct and	Indirect Institu	itional C	costs (G + H)	58,	650.72
J. Fee					Funds Requeste	ed (\$)
K. Total Costs and	ee			,	Funds Requeste	ed (\$)
		Total (Costs a	nd Fee (I + J)	58,	650.72
L. Budget Justificat	on					
(Only attach one file.)	279 Budget Justification_GU_FINAL.	pdf		Delete Attachme	nt View Attach	nment

OMB Number: 4040-0001 Expiration Date: 10/31/2019

14,702.70

ORGANIZATIONAL DUNS: Enter name of Organization: 049515844 000 Georgetown University Otr for Global Health Sci and Security Subaward/Consortium **Budget Type:** □ Project Budget Period: 2 01/01/2021 End Date: 12/31/2021 Start Date: A. Senior/Key Person Months Requested Fringe **Funds** Cal. Acad. Sum. Suffix Salary (\$) Requested (\$) Prefix First Middle Last Base Salary (\$) Benefits (\$) Standley 108,191.00 0.60 5,518.00 1,616.7 7,134.77 Claire Project Role: |Co Investigator 0.60 Erin Sorrell 114,767.CC 5,853.00 1,714.83 7,567.93 Project Role: | Co-Investigator Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 14,702.70 **B. Other Personnel** Months Requested **Funds** Number of Fringe Project Role Sum. Personnel Cal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates **Graduate Students** Undergraduate Students Secretarial/Clerical **Total Number Other Personnel Total Other Personnel**

Total Salary, Wages and Fringe Benefits (A+B)

C. Equipme	nt Descr	iption						
List items and Equipment		mount for each	item exceed	ling \$5,000			Fun	ds Requested (\$)
Additional Equ	ipment:				Add Attachment			
	•		Total funds re	equested for all e	quipment listed in the a	ttached file		
				- -		Equipment		
). Travel							Fur	nds Requested (\$)
	Travel Co	osts (Incl. Canad	la. Mexico ar	nd U.S. Possessi	ons)			ias ποφασσίου (ψ)
. Foreign T			ia, monico an	,	J.,			
		.			Total	Travel Cost		
. Participa	nt/Traine	ee Support Co	sts				Fur	nds Requested (\$)
. Tuition/Fe	es/Health	n Insurance						
. Stipends								
. Travel								
l. Subsister	nce							
. Other								
Numb	er of Part	icipants/Trainees		Tota	Participant/Trainee Su	pport Costs		
F. Other Dir	ect Cos	ts					Fu	ınds Requested (\$)
1. Materials	and Supp	lies						50.0
2. Publicatio	n Costs							
3. Consultar	nt Service:	s						
4. ADP/Com	puter Ser	vices						
5. Subaward	ls/Consor	tium/Contractual	Costs					
6. Equipmer	nt or Facili	ity Rental/User F	ees					
7. Alteration	s and Rer	novations						
8. Telecomm	unicatio	ns						50.0
9.						_		
0.								
					Total Othe	er Direct Costs		100.0

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	14,802.70
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	56.00	8,215.50
	Total Indirect Costs	8,215.50
Cognizant Federal Agenc (Agency Name, POC Name, ar POC Phone Number)		
I. Total Direct and In-	direct Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	23,018.20
J. Fee		Funds Requested (\$)
K. Total Costs and F	ee	Funds Requested (\$)
	Total Costs and Fee (I + J)	23,018.20
L. Budget Justification	on	
(Only attach one file.)	279 Budget Justification_GU_FINAL.pdf	

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIO	ONAL DUNS:	049515844	1 000	Enter name of Orga	nization:	Georg	etown U	nivers	sity Ctr f	or Global Nea.	ith Sci and	Security	
Budget Type:	Project	⊠ Subaw	/ard/Consortium	1		Budge	et Period	:3 9	Start Date:	01/01/2022	End Date:	12/31/2022	
A. Senior/Ke	y Person												
Prefix	First	Middle	Last	Suffix	Base Sal	агу (\$)	Cal.	Months Acad.	s . Sum.	Requested Salary (\$)		nge fits (\$)	Funds Requested (\$)
Dr.	Claire		Standley			8,191.	00 1.20			11,256.0	1	3,298.01	14,554.01
Project Role	8: Co Investi	galor											
or.	Erin		Sorrell		11	4,767.	00.60			5,970.0	0	1,749.21	7,719.21
Project Role	e: Co-Investi	gator											
B. Other Per	or Key Persons: sonnel				tachment					•	sons in the a		22,273.22
Number of Personnel	Projec	et Role				Cal.	Months Acad.	Sum.		equested Salary (\$)	Frin Benefi		Funds Requested (\$)
	Post Doctora	l Associates											
	Graduate Stu	ıdents											
	Undergradua	ite Students											
	Secretarial/C	lerical											
	Total Number	Other Person	nel								Total Other	Personnel	
								Tota	ıl Salary, \	Nages and Fri	inge Benef	its (A+B)	22,273.22

C.	Equipment Desc	ription						
Lis	t items and dollar Equipment item	amount for each	item exceeding \$5,000				Fui	nds Requested (\$)
Ade	ditional Equipment:				Add Attachment			
			Total funds requested for	all ed	quipment listed in the a	ttached file		
			·			Equipment		
D.	Travel						Fu	nds Requested (\$)
1.	Domestic Travel C	Costs (Incl. Canad	a, Mexico and U.S. Poss	sessio	ons)			
2.	Foreign Travel Co	osts						3,500.0
					Total	Travel Cost		3,500.0
E.	Participant/Train	iee Support Cos	its				Fu	nds Requested (\$)
1.	Tuition/Fees/Heal	th Insurance						
2.	Stipends							
3.	Travel							
4.	Subsistence							
5.	Other							
	Number of Par	rticipants/Trainees	•	Total	Participant/Trainee Su	pport Costs		
F.	Other Direct Cos	sts					F	unds Requested (\$)
1.	Materials and Sup	plies						150.0
2.	Publication Costs							
3.	Consultant Service	es						
4.	ADP/Computer Se	ervices						
5.	Subawards/Consc	ortium/Contractual	Costs					
6.	Equipment or Faci	ility Rental/User Fe	es					
7.	Alterations and Re	enovations						
8.	Telecommunicati	ons						50.0
9.								
10.								
					Total Othe	er Direct Costs		200.0

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	25,973.22
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	56.00	14,415.14
	Total Indirect Costs	14,415.14
Cognizant Federal Agen (Agency Name, POC Name, POC Phone Number)		
I. Total Direct and I	ndirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	40,388.36
J. Fee		Funds Requested (\$)
K. Total Costs and	Fee	Funds Requested (\$)
	Total Costs and Fee (I + J)	40,388.36
L. Budget Justificat	tion	
(Only attach one file.)	1279 Budget Justification_GU_FINAL.pdf	

OMB Number: 4040-0001

15,297.48

Expiration Date: 10/31/2019 **ORGANIZATIONAL DUNS:** Enter name of Organization: 049515844 000 Georgetown University Otr for Global Health Sci and Security Subaward/Consortium **Budget Type:** 12/31/2023 □ Project **Budget Period: 4** 01/01/2023 End Date: Start Date: A. Senior/Key Person Months Requested Fringe **Funds** Cal. Acad. Sum. Suffix Salary (\$) Requested (\$) Prefix First Middle Last Base Salary (\$) Benefits (\$) Standley 108,191.00 0.60 5,741.00 1,682.11 7,423.11 Claire Project Role: |Co Investigator 0.60 Erin Sorrell 114,767.CC 6,090.00 1,784.33 7,874.37 Project Role: | Co-Investigator Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file 15,297.48 Total Senior/Key Person **B. Other Personnel** Months Requested **Funds** Number of Fringe Project Role Sum. Personnel Cal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates **Graduate Students** Undergraduate Students Secretarial/Clerical

Total Number Other Personnel

Total Salary, Wages and Fringe Benefits (A+B)

Total Other Personnel

C. E	quipment Desc	ription				
	items and dollar a Equipment item	amount for each item exc	ceeding \$5,000			Funds Requested (\$)
ے Addi	tional Equipment:			Add Attachment		
		Total fun	nds requested for all ed	uipment listed in the a	nttached file	
			•	-	Equipment	
` т	ravel					Funds Requested (\$)
		Costs (Incl. Canada, Mexic	o and IIS Possessio	one)	[runus nequesteu (\$)
	Foreign Travel Co		o and 0.0. F08368810	1115)	[[
	r oreign maver oo	3.0		Talat	Tuanal Cash	0.00
				lotai	Travel Cost	0.00
E. P	articipant/Train	ee Support Costs				Funds Requested (\$)
١.	Tuition/Fees/Healt	th Insurance				
2.	Stipends					
3.	Travel					
4.	Subsistence					
5.	Other					
	Number of Par	ticipants/Trainees	Total	Participant/Trainee Su	pport Costs	
F. C	Other Direct Cos	sts				Funds Requested (\$)
1.	Materials and Sup	plies				50.00
2.	Publication Costs					
3.	Consultant Service	es				
4.	ADP/Computer Se	ervices				
5.	Subawards/Conso	rtium/Contractual Costs				
6.	Equipment or Faci	lity Rental/User Fees				
7.	Alterations and Re	enovations				
8. [Telecemmunicati	ons				51.00
9. [
10.						
				Total Oth	er Direct Costs	101.00

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	15,398.48
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	56.00	8,546.16
	Total Indirect Costs	8,546.16
Cognizant Federal Agenc (Agency Name, POC Name, a POC Phone Number)		
I. Total Direct and In	direct Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	23,944.64
J. Fee		Funds Requested (\$)
K. Total Costs and F		Funds Requested (\$)
	Total Costs and Fee (I + J)	23,944.64
L. Budget Justificati	on	
(Only attach one file.)	279 Budget Justification_GU_FINAL.pdf	

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIONAL DUNS: Enter name of Organization: 049515844 000 Georgetown University Otr for Global Health Sci and Security Subaward/Consortium **Budget Type:** □ Project **Budget Period: 5** 01/01/2024 End Date: 12/31/2024 Start Date: A. Senior/Key Person Months Requested Fringe **Funds** Cal. Acad. Sum. Suffix Benefits (\$) Requested (\$) Prefix First Middle Last Base Salary (\$) Salary (\$) Standley 108,191.00 1.20 11,711.00 3,431.32 15,142.32 Claire Project Role: |Co Investigator 0.60 6,211.00 Erin Sorrell 114,767.CC 1,819.82 8,030.82 Project Role: | Co-Investigator Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 23,173.14 **B. Other Personnel** Months Requested **Funds** Number of Fringe Project Role Sum. Personnel Cal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates **Graduate Students** Undergraduate Students Secretarial/Clerical **Total Number Other Personnel Total Other Personnel** Total Salary, Wages and Fringe Benefits (A+B) 23,173.14

C. Equipr	nent Desc	ription						
	and dollar a	amount for each	item exceeding	\$5,000			Funds R	equested (\$)
Additional E	Equipment:				Add Attachment			
			Total funds reque	ested for all e	quipment listed in the a	nttached file		
			,			Equipment		
). Travel							Funds B	equested (\$)
	etic Travel C	Costs / Incl. Cana	da, Mexico and U	S Possossi	one)	[runus n	equesieu (a)
	n Travel Co		a, Mexico and C	.O. FUSSUSSII	nis)	[
. roleig	ii iiavei co	3.3			Total	Travel Cost		8,800.00 8,800.00
E. Partici	pant/Train	ee Support Co	sts				Funds R	equested (\$)
		h Insurance						
. Stipen	ds					[
. Travel						[
. Subsis	stence							
. Other								
N	umber of Par	ticipants/Trainees		Total	Participant/Trainee Su	pport Costs		
F. Other	Direct Cos	sts					Funds	Requested (\$)
1. Materi	als and Sup	plies						200.00
2. Publica	ation Costs							
3. Consu	Itant Service	es						
4. ADP/C	omputer Se	rvices						
5. Subaw	/ards/Conso	rtium/Contractua	Costs					
6. Equipr	ment or Faci	lity Rental/User F	ees					
7. Alterat	ions and Re	novations						
8. Telec	ommunicati	ons						200.00
9.								
10.								
					Total Othe	er Direct Costs		400.00

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	32,373.14
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	56.00	17,967.10
	Total Indirect Costs	17,967.10
Cognizant Federal Age (Agency Name, POC Name POC Phone Number)		
I. Total Direct and	Indirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	50,340.24
J. Fee		Funds Requested (\$)
K. Total Costs and		Funds Requested (\$)
	Total Costs and Fee (I + J)	50,340.24
L. Budget Justifica	ition	
(Only attach one file.)	1279 Budget Justification_GU_FINAL.pdf	

RESEARCH & RELATED BUDGET - Cumulative Budget

	Tota	Is (\$)
Section A, Senior/Key Person		104,275.01
Section B, Other Personnel		
Total Number Other Personnel		
Total Salary, Wages and Fringe Benefits (A+B)		104,275.01
Section C, Equipment		
Section D, Travel		20,839.00
1. Domestic		
2. Foreign	20,839.00	
Section E, Participant/Trainee Support Costs		
1. Tuition/Fees/Health Insurance		
2. Stipends		
3. Travel		
4. Subsistence		
5. Other		
6. Number of Participants/Trainees		
Section F, Other Direct Costs		1,151.00
1. Materials and Supplies	600.00	
2. Publication Costs		
3. Consultant Services		
4. ADP/Computer Services		
5. Subawards/Consortium/Contractual Costs		
6. Equipment or Facility Rental/User Fees		
7. Alterations and Renovations		
8. Other 1	551.00	
9. Other 2		
10 . Other 3		
Section G, Direct Costs (A thru F)		126,265.01
Section H, Indirect Costs		70,077.15
Section I, Total Direct and Indirect Costs (G + H)		196,342.16
Section J, Fee		
Section K, Total Costs and Fee (I + J)		196,342.16

BUDGET JUSTIFICATION FOR ECOHEALTH ALLIANCE

EcoHealth Alliance requests a total of \$4,912,818 over all-years of the proposed project to support personnel, travel, equipment, consortium agreements, and applicable indirect costs.

A. Key Personnel

<u>William B. Karesh, D.V.M., Principal Investigator</u> (1.5 calendar months for all years). Dr. Karesh will be responsible for the overall coordination of this project. He will provide overall project oversight, study design development and refinement, data analysis, publication support, and annual stakeholder meeting participation. We request \$35,513 in Y1 with a 5% cost of living increase each subsequent year.

Ellen P. Carlin, D.V.M., Co-Investigator (6.0 calendar months in all years). Dr. Carlin will provide day-to-day project development and strategic management, including through regular in-person meetings and weekly phone and other direct communications with partners. She will also supervise field sampling, data analysis, and data and information dissemination through workshops, conferences, and papers. We request \$73,710 in Y1 with a 5% cost of living increase each subsequent year.

<u>Jonathan Epstein, Ph.D., Co-Investigator</u> (1.0 calendar month in all years). Dr. Epstein will be a technical advisor to the project, advising on data interpretation, targeted animal sampling based on data as they come in over the course of the project, and laboratory techniques. He will also assist with writing and dissemination. We request \$14,241 in Y1 with a 5% cost of living increase each subsequent year.

Anne Laudisoit, Ph.D. Senior Ecologist (1.2 calendar months in all years). Ms. Laudisoit will assist with data organization, analysis, and writing with a focus on ecological strategies to maximize animal sampling data collection and creating an evidence basis through this sampling to infectious pathogen transmission dynamics. We request \$7,550 in Y1 with a 5% cost of living increase each subsequent year.

Noam Ross, Ph.D., Senior Research Scientist, Modeler (0.6 calendar months in all years). Dr. Ross will be a technical advisor to the project, advising on data organization, analysis, and writing with a focus on statistical analytics. We request \$4,587 in Y1 with a 5% cost of living increase each subsequent year.

Emily Hagan, M.P.H., Behavioral Risk Scientist (4.0 calendar months in all years). Ms. Hagan will provide medical anthropology expertise for the questionnaires and analysis, supervise and conduct the IRB processes and trainings on the human subject work for local partners, and assist with data organization and analysis. We request \$22,031 in Y1 with a 5% cost of living increase each subsequent year.

Catherine Machalaba, M.P.H, Policy Advisor (1.0 calendar months in all years), 2 calendar months for OY2). Ms. Machalaba will be a technical advisor to the project, advising on study design and risk reduction. She will conduct a risk reduction workshop in OY2 and will help develop revised biosurveillance and reporting strategies with and for Liberian partners. We request \$6,983 in Y1 with a 5% cost of living increase each subsequent year.

B. Other Personnel

Amanda Andre, LMSW, Operations Assistant (6 calendar months in all years). Ms. Andre will be the administrative lead handling project management responsibilities related to budgeting, expenses, managing of subcontracts, and meeting scheduling and logistics. She will coordinate all meetings and travel and ensure compliance with funding and contractual requirements. We request \$27,853 in Y1 with a 5% cost of living increase each subsequent year.

Fringe Benefits

Fringe benefits are calculated as 35% of base salary p.a. with \$68,134 requested in Y1 calculated from the base salary for all Personnel. In Y2 – OY2, we budget for a 5% per year cost of living allowance increase in all salaries.

C. Equipment

No funds are requested for equipment.

D. Travel

Domestic Travel

Domestic travel is requested for one trip per year for program staff to travel from New York City to Washington, DC to meet with Co-Investigator Carlin and key personnel at Georgetown University; and for Co-Investigator Carlin to travel to New York City from Washington, DC four times per year to collaborate with EcoHealth Alliance program staff in the New York office. Transportation is estimated at \$300 per trip along with the government GSA per diem rates for each city. Additional domestic travel support will facilitate two EcoHealth Alliance staff presenting at two domestic conferences annually. In total, we are requesting \$16,402 in each year of our proposed work.

International Travel

Foreign travel is requested for partner meetings, in-country trainings, and field research. Six EHA employees as well as three partners from UNMC and GU will attend annual meetings. Two to three EHA staff and two partners from UNMC will make a second trip each year for trainings and field research; in OY2, one additional staff scientist will travel to Liberia to conduct a risk reduction workshop. Flights for each of these trips is estimated at \$3,000 and the federal per diem rates of \$200 for lodging in Monrovia, Liberia and \$70 for field work as well as the \$95 for meals in Monrovia, Liberia and \$46 for field work are requested. Additionally, we are requesting travel for staff to present on project findings at international conferences each year with flights estimated at \$1,500 and hotels and meals at the government GSA per diem rates for Vienna, Austria for International Meeting on Emerging Diseases and Surveillance (IMED). Travel costs are increased 5% each year to account for pricing increases based upon past, actual, annual price increases.

E. Participant/Trainee Support Costs

No funds are requested for participant or trainee support costs.

F. Other Direct Costs

Materials and Supplies

Co-Investigator Carlin will need a new computer, equipped with Microsoft and Adobe software for which we request \$3,000, in Y2.

Publication Costs

To facilitate the dissemination of project findings, \$4,000 per year in only Y2-OY2 is requested for open access publication costs in international peer-reviewed journals.

Consultant Services

For the human behavioral risk part of the project, \$1,000 is requested p.a Y1-OY2 for Hummingbird IRB and \$3,500 in Y1 for required Collaborative Institutional Training Initiative training for personnel handling human and non-human animals and samples as per IRB and IACUC requirements.

Subawards/Consortium/Contractual Costs

Subcontracts for the National Public Health Institute of Liberia, Society for the Conservation of Nature-Liberia, Liberia Chimpanzee Rescue and Protection, University of Nebraska Medical Center and Georgetown University are outlined in their individual budget justifications.

H. Indirect Costs

We are requesting the EcoHealth Alliance federally approved indirect cost rate of 32% on all applicable direct costs. The USA Department of Defense's Department of the Navy has approved this rate on 17 July 2019. We have applied our indirect cost rate to the first \$25,000 of the subcontracts only in Y1.

<u>BUDGET JUSTIFICATION FOR LIBERIA CHIMPANZEE RESCUE AND PROTECTION,</u> LIBERIA

Liberia Chimpanzee Rescue & Protection requests a total of \$412,625 over all years of the proposed project to support personnel, travel, equipment, and indirect costs.

A. Key Personnel

<u>James Desmond, D.V.M., Co-Investigator</u> (6 calendar months for Y1-OY2). Dr. Desmond will oversee field sampling and training (along with Michael Garbo), and will assist with study design and analysis and dissemination of findings for which \$67,500 is requested in Y1.

B. Other Personnel

No funds are requested for other personnel.

C. Equipment

No funds are requested for equipment.

D. Travel

International Travel

Foreign travel support will cover one trip p.a. to New York to meet with project collaborators for which flights are estimated at \$3,000 along with the government GSA per diem rates for New York, New York. Travel support will be used for dissemination of project findings at one international conference p.a, with flights estimated at \$2,000 along with the government GSA per diem rates. Combined international travel for Y1 is \$8,312.

E. Participant/Trainee Support Costs

No funds are requested for participant or trainee support costs.

F. Other Direct Costs

Materials and Supplies

We request \$3,000 in Y1 for the purchase of a computer.

H. Indirect Costs

We are requesting the federally agreed indirect cost of 8% on all direct costs.

BUDGET JUSTIFICATION FOR UNIVERSITY OF NEBRASKA MEDICAL CENTER, UNITED STATES

The University of Nebraska Medical Center (UNMC) requests a total of \$164,559 over all years of the proposed project to support personnel and indirect costs.

A. Key Personnel

Michael R. Wiley, Ph.D., Co-Investigator (1.2 calendar month for Y1-OY2). Dr. Wiley will provide oversight of laboratory work including all necessary training (biosafety, biosecurity, and testing techniques, and analysis), quality control, assistance with inventory and ordering, and will also assist with study design, data analysis, and dissemination, for which \$11,275 is requested in Y1, with a 3% increase each subsequent year.

Fringe Benefits

Fringe benefits are calculated as 27.9% of base salary p.a. with \$3,145 requested in Y1 for Key Personnel.

B. Other Personnel

<u>Catherine Pratt, Training Coordinator</u> (1.2 calendar month for Y1- OY2). Ms. Pratt will assist with laboratory training and quality control for which \$8,290 is requested in Y1.

Fringe Benefits

Fringe benefits are calculated as 27.9% of base salary p.a. with \$2,313 requested in Y1 for Other Personnel.

C. Equipment

No funds are requested for equipment.

D. Travel

No funds are requested for travel.

E. Participant/Trainee Support Costs

No funds are requested for participant or trainee support costs.

F. Other Direct Costs

No funds are requested for other direct costs.

H. Indirect Costs

We are requesting the federally agreed indirect cost of 27% on all direct costs.

BUDGET JUSTIFICATION FOR SOCIETY FOR CONSERVATION OF NATURE, LIBERIA

The Society for Conservation of Nature, Liberia (SCNL) requests a total of \$594,710k over all years of the proposed project to support personnel, travel, equipment, and indirect costs.

A. Key Personnel

Michael Garbo, M.S., Co-Investigator (0.6 calendar months per year for all years). As head of SCNL, Mr. Garbo will be responsible for the oversight of all non-human animal sampling activities including preparation, staffing, implementation, and follow-up. He will further oversee the sample transport activity of both animal and human samples, for which SCNL is responsible. We do not request salary for him, since he will be fully covered by other SCNL funding sources.

B. Other Personnel

Annual support is requested for a social scientist (\$550/month), four field technicians (\$550/month each), and two drivers (\$330/month each) to make up the field research team. This team will be responsible for all aspects of animal field sampling, including planning, ordering supplies, implementation, ensuring all samples are safely and securely transferred to LIBR for testing, and any needed follow-up. This team will also administer a survey to the patients whose community they visit, administer a similar questionnaire to up to twenty additional community members, and with consent collect blood samples from these individuals for serological testing SCNL employees at least one nurse who will be deployed for this purpose. Support is requested for two administrative assistants (\$450/month) to assist with procurement, invoicing, scheduling, and field team logistics.

C. Equipment

A field vehicle for field sampling and sample transport is estimated at \$40,000. Liberia does not currently have a VAT. Our conversations with Liberian partners indicate that it is unlikely that VAT will be instated in the near future. If it were, Government agencies and non-profits such as SCNL would be exempt from VAT.

D. Travel

Domestic Travel

Domestic travel support will cover fuel, vehicle maintenance (\$700/month), lodging and per diems for overnight trips (\$50/day) for eight field team members for four, week-long field sampling trips. Cost is calculated at \$32,600 in Y1, Y3, and OY1. In Y2 the sampling trips will be for two-weeks in duration calculated at \$42,000. In OY2, there will only be 1 trip for two-weeks calculated at \$22,800.

In addition to transporting the animal samples that it collects in the field, SCNL will also be responsible for picking up and safely and securely transporting all human samples from the clinical study sites to the Liberian Institute for Biomedical Research via the standing cold chain procedures they follow for the animal samples. They will use their existing vehicles for this purpose. They will visit Redemption Hospital in Monrovia daily as required by sample volume and Phebe Hospital in Bong weekly at an estimated round-trip distance of 250 km total weekly. We request \$13,000 per year in all years to cover fuel and vehicle maintenance for this function.

E. Participant/Trainee Support Costs

No funds are requested for participant or trainee support costs.

F. Other Direct Costs

Materials and Supplies

We request \$400 in Y1 for the purchase of two hand-held tablets to be utilized by the field research team for data collection and organization (animal and human). Tablets will be used to conduct surveys off-line in the field, and to upload the data collected upon returning to SCNL offices. We request \$500 for the purchase of a tarp, spade and 40 pitfall traps for rodent sampling. We request \$400 for the purchase of a centrifuge to enable processing of medium-and large-animal blood samples in preparation for serological testing.

Field consumables including gloves, Tyvek suits, vacutainers, syringes and needles, EDTA collection tubes, non-EDTA collection tubes, cryotubes, TRIzol, and swabs are needed to conduct field sampling. The budget for travel and consumables will enable us to test 3,360 animals over the course of the project (Y1: 160; Y2: 1,200; Y3: 800; OY1: 800; OY2: 400) and will cover a total of 12 sampling events (Y1: 4; Y2: 3; Y3: 2; OY1: 2; OY2: 1).

H. Indirect Costs

We are requesting a de minims rate of 8% on all allowable direct costs.

<u>BUDGET JUSTIFICATION FOR GEORGETOWN UNIVERSITY CENTER FOR GLOBAL</u> HEALTH AND SECURITY, UNITED STATES

The Georgetown University Center for Global Health and Security requests a total of \$196,342 over all years of the proposed project to support personnel, travel, other direct costs, and indirect costs.

A. Key Personnel

Erin Sorrell, Ph.D., Co-Investigator (1.2 calendar months for Y1, .6 calendar months for Y2-OY2). Dr. Sorrell will provide subject matter expertise in support of the execution of the project, specifically related to study design and analysis and dissemination of findings for which \$11,477 is requested in Y1, with a 2% increase each subsequent year. Dr. Sorrell's time will vary over the five years of the project based on involvement in specific tasks.

<u>Claire Standley, Ph.D. Co-Investigator</u> (1.2 calendar months for Y1, Y3, OY2, .6 calendar months for Y1, OY1). Dr. Standley will serve as the GU PI for the award, and will be the lead for all aspects of GU's contribution to the project, notably related to project design and analysis and dissemination of the findings for which \$10,819 is requested in Y1, with a 2% increase each subsequent year. Dr. Standley's time will vary over the five years of the project based on involvement in specific tasks.

Fringe Benefits

Fringe benefits are calculated as 29% of base salary p.a. with \$6,533 requested in Y1 for Key Personnel.

B. Other Personnel

No funds are requested for other personnel.

C. Equipment

No funds are requested for equipment.

D. Travel

International Travel

Foreign travel support will be used to support travel for two GU personnel to attend the kickoff meeting in Y1 and annual meeting in OY2, and for one GU personnel to attend the annual meeting in Y3. Flights are estimated at \$3,000 along with the government GSA per diem rates for Monrovia, Liberia.

E. Participant/Trainee Support Costs

No funds are requested for participant or trainee support costs.

F. Other Direct Costs

Materials and Supplies

We request \$600 over the five years of the project for miscellaneous supplies to support execution of the project, including stationery, printing, and other supplies.

Telecommunications

We request \$500 over the five years of the project to support telecommunication costs (including Skype subscriptions/charge and mobile phone charges) for project communication, including roaming charges while on international travel in Liberia.

H. Indirect Costs

We are requesting the federally agreed indirect cost of 56% on all direct costs.

BUDGET JUSTIFICATION FOR NATIONAL PUBLIC HEALTH INSTITUDE OF LIBERIA, LIBERIA

The National Public Health Institute of Liberia (NPHIL) requests a total of \$910,955 over all years of the proposed project to support personnel, travel, equipment, other direct costs and indirect costs.

A. Key Personnel

Mosoka Fallah, Ph.D., Co-Investigator (.6 calendar month for Y1-OY2). Dr. Fallah will provide overall project oversight for Liberia-based activities. NPHIL is charged with leading all public health and biomedical research in Liberia, and Dr. Fallah assumes that role for this project, leading all elements on the human subjects research side of the project as well as the laboratory diagnostics elements. Dr. Fallah will ensure NPHIL meets project tasks and milestones, will oversee NPHIL's budget, and will assist with dissemination of findings through publications and conference presentations. We do not request salary at this time as Dr. Fallah will be fully covered by other funding sources during the project period.

<u>Fatorma Bolay, Ph.D., Co-Investigator</u> (1.5 calendar month for Y1-OY2). As head of the Liberia Institute for Biomedical Research (LIBR) at NPHIL, Dr. Bolay will provide direct oversight of all laboratory activity for the project, for which \$2,500 is requested starting in Y1.

<u>John Dogba, Ph.D. Candidate, Co-Investigator</u> (1.5 calendar month for Y1-OY2). Dr. Dogba directs the national reference laboratory at NPHIL and will ensure compliance with biosafety and biosecurity project requirements; as a lecturer at the University of Liberia he will also assist with identification and recruitment of students to work in the laboratory, activities for which \$3,000 is requested starting in Y1.

<u>Bode Shobayo, M.S.C., Co-Investigator</u> (1.5 calendar month for Y1-OY2). As a research scientist within NPHIL's medical and public health research division, Dr. Shobayo will participate in training workshops, processing and testing a subset of samples, and reporting recommendations to Dr. Bolay and Dr. Wiley for process refinements and mitigating challenges with the day-to-day laboratory workflow, for which \$2,075 is requested starting in Y1.

B. Other Personnel

<u>Laboratory Scientists/Technicians</u> (4 calendar months for Y1-OY2). Four laboratory scientists and/or technicians—two from NPHIL and two seconded from the Ministry of Agriculture—will process and test all project samples at LIBR. They will participate in all laboratory workshops, provide all bench activity (under the supervision of key personnel), and advise on inventory needs and any problems implementing the laboratory protocol. We request \$18,667 for all four laboratory technicians starting in Y1.

Hospital Project Coordinators (6 calendar months for Y1-OY2). One coordinator will be appointed to each of two human clinical study sites (Redemption Hospital and Phebe Hospital) operating in Y1-Y3. These coordinators will be chosen from existing staff already participating in other febrile illness studies at the hospitals and will be responsible for participating in human subjects research training, ensuring hospital staff are sensitized to our inclusion criteria (and thus able to identify proper candidates), being available for consultation when patients enroll in the study, collecting consent form and questionnaire data from the patients, and ensuring samples are collected, stored, and transported in timely fashion. Similarly, one coordinator will

be appointed to each of two human clinical study sites (hospitals in Nimba and Lofa counties) in the option years, if funded. In an effort to train and engage Liberian nurses in public health surveillance and in research, at least one and possibly both of these sites will be staffed through Nursing for All, a non-profit that builds capacity in the nursing profession in Liberia and is presently operating at Ganta United Methodist Hospital in Nimba, one of the sites at which we would like to implement the study in OY1-2. We request \$26,250 over the proposed five years of the project.

<u>Hospital Laboratory Technicians</u> (1 calendar months for Y1-OY2). Hospital laboratory technicians will assist with initial processing of patient samples (spinning serum, labeling, and storing) prior to transport to NPHIL. We will similarly provide salary support for technicians at the two option year hospitals if funded. We request \$1,667 p.a. for these activities.

<u>Post-doctoral Researcher</u> (6 calendar months for Y3-OY2). Beginning in Y3, we propose to add a post-doctoral researcher to the laboratory team. Liberia does not have a PhD-granting institution, but a number of Liberians are presently undertaking PhD degree programs outside of the country; by Y3 we plan to bring one Liberian individual who has received a PhD in laboratory pathogen research into the project to work with the laboratory scientists on sample processing, testing, and data analysis, for which we request \$5,000 starting in Y3.

Bachelors and Masters Students. We intend to include approximately three students per semester on the project, to include undergraduate and graduate students from the University of Liberia (Monrovia) and Cuttington University (Bong). Their duties will depend on their degree program but will include assignments at the human clinical sites (nursing, medical, public health, anthropology students); animal field collection sites (biology, animal science, ecology, anthropology); and laboratory (molecular biology, microbiology). We will preferentially choose students interested in developing their theses based on the project. Each student will receive a stipend of \$500 per semester.

Administrator/Program Manager (6 months in Y1-OY2). This individual will act as the administrative lead, handling project management responsibilities related to budgeting, expenses, managing of subcontracts, and meeting scheduling and logistics, activities for which we request \$5,000 p.a.

C. Equipment

The existing freezer in which PREDICT samples are stored at LIBR will remain there when the project ends, and will be available for this project's use, but its capacity is limited. LIBR will therefore require increased storage capacity for the specimens generated by this project (2,250 humans, up to 4,500 specimens; 3,840 animals, up to 14,560 specimens). A -80°C freezer is requested for sample storage and is estimated at \$25,000. Liberia does not have a VAT and our conversations with Liberian partners indicate it is unlikely they will instate one in the near future. Government agencies and non-profits would be exempt from any such tax. If absolutely necessary, we would seek unrestricted funding sources to cover any such costs.

D. Travel

We are requesting travel for one Liberian project participant to attend a regional conference and an international conference in Y3 and OY2 to present on project findings, with flights estimated. For the regional conference flights are estimated at \$750 and hotels and meals at the government GSA per diem rates for Accra, Ghana. For the international conference flights are estimated at \$2,500 and hotels and meals at the government GSA per diem rates for Vienna, Austria.

In Y3 we plan to bring one Liberian individual who has received a PhD in laboratory pathogen research into the project to work with the laboratory scientists on sample processing, testing, and data analysis as a post-doctoral associate. We will fund a one-month trip for this individual to the University of Nebraska Medical Center to train in the laboratory of co-Investigator Dr. Michael Wiley. A flight is estimated at \$3,000 and hotels and meals at the government GSA per diem rates for Omaha, Nebraska.

In total over the course of the project, we are requesting \$20,038 in for International Travel.

E. Participant/Trainee Support Costs

No funds are requested for participant or trainee support costs.

F. Other Direct Costs

Materials and Supplies

We will supply the participating hospitals with all consumables required to collect patient samples, including serum tubes, EDTA tubes, cryovials, vacutainer holder, needles, syringes, nitrile gloves, and nasal swabs, for which we request \$2,378 p.a. Some supplies will be purchased in the United States and shipped to Liberia, for which we request \$2,500 p.a. For the human clinical study implementation sites, our request also includes funding for a centrifuge to enable processing of serum at the hospital clinical laboratories (\$400 each), an ultracold freezer to store the samples until picked up for transport (\$4,800 each) and a tablet for data collection and tracking at each site (\$200 each).

Laboratory Testing

Our laboratory request covers three primary types of molecular testing: next-generation sequencing, real-time PCR, and ELISA-based antibody serology. In Y1, we will test 300 existing PREDICT bat and rodent samples, pooled by three, via NGS Ampliseg on LIBR's existing MiSeg machine. We will barcode 5% these, a process that most likely will be done outside of Liberia. In Y2-OY2, we will use a Tagman Array Card system (modified for a 96-well plate to run on LIBR's ABI 7000 sequencer) to test human samples for up to 31 pathogens at three samples per plate, and will run nasopharyngeal samples on singleplex PCR to test for key respiratory pathogens. We will run specific real-time PCR to confirm positives; NGS Ampliseq to further sequence viral-positive human samples (expect not more than 10% to fall into this category) and 10% of negative human samples; and specific antibody ELISAs on convalescent samples from humans who tested positive on TAC plus 20 of their neighbors. For animals in Y2-OY2, we have budgeted for specific antibody ELISAs on all animals, averaging 5 tests each, pooled by 5; NGS on 10% of animal samples pooled by three; singleplex PCR for confirmation of NGS positives (expect ~4%); a new ELISA reader; a new ELISA plate shaker; Mastermix; and miscellaneous consumables. We request \$453,414 over the five years of the proposed project. Of this amount, \$152,400 is for next-generation sequencing, \$4,000 is for barcoding, and the remainder supports the PCR and ELISA testing, which are and will continue to be mainstays of the laboratory.

Meetings and Conferences

We request support for an annual meeting each year for 45 people including personnel from all partner institutions (EHA, NPHIL, SCNL, LCRP, UNMC, GU) as well as local stakeholders. Travel costs for United States-based participants to attend the annual meeting are covered in the EcoHealth Alliance budget. We estimate that for the three-day meeting, eight Liberian partners traveling from outside Monrovia will require transportation, meals and accommodation to be covered, and for Y3, when the annual meeting will function as a broader regional technical

meeting, we will also fund two attendees from elsewhere in West Africa (likely Guinea) working on similar studies. Additionally, the meetings will require a room rental, lunch for all participants, and printing of materials and supplies. Overall costs are estimated at \$9,550 p.a.

We will conduct a series of workshops across the study period, as outlined in the technical proposal and in more detail in Attachment 3. Workshop 1a will cover the overall research study protocol, will occur at the Y1 kickoff meeting, and will include all project participants. Workshop 2a will cover the human study protocol and human subjects research, will occur mid-Y1 and again toward the end of Y3, and will include Tasks 2 and 4 personnel and students. Workshops 3a and 3b will cover biosafety, biosecurity, and laboratory techniques training, will occur twice during Y1 (at the kickoff meeting and again in the middle of the year) and during Y3, and will include all Task 3 personnel. Workshop 4a will cover the animal sampling protocol and animal subjects research, will occur at the kickoff meeting and during Y3, and will include all Task 4 personnel and students. Workshop 5a will cover analysis of laboratory data (including bioinformatics), will occur during Y2 as the laboratories ramp up their sample testing, and will include Task 3 personnel. Workshop 6a will cover risk reduction analysis and opportunities, will occur during OY2, and all personnel including many from ministries not directly involved in the project will be invited to attend. Across the workshops, the number of participants will vary from 10-20 people for whom we will require catering (lunch) for all participants, room rental, and some materials and supplies. Over the five proposed years of the project, \$12,440 is requested to support these workshop trainings.

Two NPHIL personnel will travel to each of the five study communities for two-day, one-night trips to share study findings with community members and discuss risk reduction opportunities in OY1-2. Lodging, meals, and printed materials and supplies are estimated at \$310 per visit.

Freezer Maintenance

Support of \$500 p.a is requested to cover the cost of freezer maintenance (the newly-purchased freezer and LIBR's existing freezer) to ensure they are properly maintained, calibrated and in full working order at all times.

H. Indirect Costs

We are requesting the federally agreed indirect cost of 10% on all direct costs.

UNCLASSIFIED



Reducing the threat from high-risk pathogens causing febrile illness in Liberia

PI: William B. Karesh, EcoHealth Alliance, BTRP-TA.6 CC HDTRA1-14-24-FRCWMD-BAA WMD GRANT # 12819625

Objective: Work with government and NGO partners in Liberia reduce the threat from high consequence zoonotic pathogens associated with acute febrile illness (AFI) via integrated human-animal pathogen surveillance and diagnostic approach.

Method: Collect clinical samples from febrile patients to investigate etiologies via PCR, next-generation sequencing, and ELISA serology in Liberia. Follow up with interviews to assess human contact with animals and identify evidence of same pathogens in the humans' environments; develop and implement risk reduction interventions.

Status of effort: Collaborative team in place, preliminary data on circulating viral pathogens in key wildlife species and preliminary data on human-animal interface risks collected

Personnel Supported: Liberians--17 Researchers (4 clinical study technicians/nurses, 8 animal field technicians, 4 lab scientists, 1 post-doc), ≥3 Liberian students (undergrad and Masters) per semester educated in field and lab techniques

Publications and Meetings: ~10 presentations in Liberia and globally, >5 peer-review articles are expected to be published



Major Goals and Milestones:

- Study human pathogens in four unique counties to determine causative agent of acute fever (Y1-OY2)
- Undertake field sampling of key animal species and assess transmission risk to humans (Y1-OY2)
- Develop basic and advanced laboratory diagnostic skills and capacity (Y1-OY2)

Funding Profile Y1:995,517 Y2:\$989,251 Y3:\$996,113 OY1:\$962,716 OY2:\$969,218

Contact information PI: Dr. William B. Karesh, karesh@ecohealthalliance.org, 212-380-4463



Statement of Work

Project Title: Reducing the threat from high-risk pathogens causing febrile illness in Liberia *Document Date:* July 26, 2019

Objective: This project will build Liberian capacity for threat reduction through an integrated human-animal surveillance approach to high consequence zoonotic pathogens associated with human acute febrile illness (AFI) including Ebola virus, Lassa virus, and other emerging infections. We will identify and characterize the etiological agents of infectious AFI in Liberia, particularly among patients with a history of animal contact. Many AFI causative agents may go undetected empirically by common rapid diagnostic tests or by existing surveillance platforms. We will work to mitigate this challenge through scientific discovery, hypothesis testing, and capacity building while leveraging significant U.S. government and other investment in workforce building and laboratory infrastructure. Training provided to local partners in critical biosecurity and biosafety skillsets will include: sample transport and laboratory biosafety and biosecurity; human and animal sampling approaches; performance of both routine and advanced molecular diagnostic assays; cold-chain transport implementation; and data analysis and reporting. As many emerging diseases have been inadequately studied in Liberia, this project will provide fundamental baseline knowledge of pathogens circulating and potentially causing human illness. Its outcomes will suggest opportunities for improved clinical training, tailored case definitions, and other methods to improve identification rates for especially dangerous pathogens at the index case level and prior to widespread transmission. The desired endpoint is a broad, sustainable surveillance program that enhances public and global health security.

Scope: The grantee proposes a five-year multi-disciplinary study incorporating the epidemiology, ecology, and microbiology of AFI in Liberia. The grantee team shall focus on the following major **goals** and milestones:

1. Identify causative agents of AFI in Liberia

- Establish an evidence-based research platform for assessing and addressing highconsequence pathogens in Liberia (Y1)
- Enroll human patients and undertake sampling (Y1-3 & OY1-2)
- Undertake sample processing and testing (Y1-3 & OY1-2)

2. Identify evidence for zoonotic transmission of high-consequence AFI pathogens

- Establish an evidence-based research platform for assessing and addressing high-consequence pathogens in Liberia (Y1)
- Undertake sample processing and testing (Y1-3 & OY1-2)
- Undertake preliminary animal sampling (Y1)
- Visit communities: human-animal interface assessment, animal sampling, and human serology (Y2-3 & OY1-2)
- Analyze data (Y2-3 & OY1-2)

3. Identify risk factors for zoonotic AFI in humans

- Establish an evidence-based research platform for assessing and addressing high-consequence pathogens in Liberia (Y1)
- Undertake preliminary animal sampling (Y1)
- Visit communities: human-animal interface assessment, animal sampling, and human serology (Y2-3 & OY1-2)

- Analyze data (Y2-3 & OY1-2)
- Disseminate information to stakeholders (Y2-3 & OY1-2)

Background: Limited detection and diagnostic capacity by definition results in a limited ability of clinicians and public health professionals to accurately identify infectious agents. Febrile illness can be caused by pathogens other than malaria and typhoid that may include dozens of pathogens unassessed by health providers, including hemorrhagic fever viruses; bacterial Select Agents such as Burkholderia mallei/pseudomallei, Yersinia pestis, and Coxiella burnetti; and any number of as-yet unknown pathogens. Because the incidence of such agents has not been assessed in Liberia, febrile illness thus presents an unquantified and undifferentiated burden to Liberian health and the health care system and continues to do so. Liberia's public health authorities do not assess incidence of febrile illness. Some studies are just beginning to assess this. Other published studies have reported on causative agents of infectious fever in other lowand middle-income countries (LMIC), including in West Africa. In low resource settings, and particularly where malaria is endemic, patients presenting with febrile illness may be treated presumptively for malaria and may not receive an accurate diagnosis. Co-infections may also be common, particularly with malaria parasites. Where studies have sought to investigate the source of febrile illness, high-risk pathogens of proliferation concern such as Brucella, dengue virus, and viral hemorrhagic fevers have been observed. The specific challenge for Liberian health authorities is that pathogens that result in a burden of febrile illness in the population—and the zoonotic transmission pathways that may drive it have not been systematically nor comprehensively identified.

Preliminary Data: This project will leverage more than four years of human and animal data collected during the USAID PREDICT Ebola Host Project in Liberia and in neighboring countries. To date, our team in Liberia has enrolled 585 people and sampled 5387 wild and domestic animals. That project has focused on determining the animal reservoir of Zaire ebolavirus and human behavior/activities to evaluate risk factors for spillover to people. Our research team, which included U.S. and Liberian partners, made the first discovery of the virus in a bat in West Africa. Partner discoveries have included a virus new to science, Bombali ebolavirus, in a bat in Sierra Leone. Anthropological investigation of the risk factors associated with zoonotic spillover events were also extensively addressed; data are still being collated and analyzed, but preliminary evaluation reveals trends in animal contact that vary by country, gender, age, and occupation. The data suggest that in the general Liberian population, some communities are nearly evenly split (up to 60%/40%) with members that have and do not have animal contact as defined by the survey; this informs our own study design in that it provides a sound statistical basis testing the questions at the root of our hypotheses, including whether animal contact is a risk factor for certain zoonotic febrile infections.

Most of the work of the Ebola Host Project is presently being prepared for publication. Key references available include:

- EcoHealth Alliance. 2019. *EcoHealth Alliance Scientists Discover the Deadly Zaire Ebola Virus in West African Bat* [press release]. Retrieved from: https://www.ecohealthalliance.org/2019/01/ecohealth-alliance-scientists-discover-the-deadly-zaire-ebola-virus-in-west-african-bat.
- Goldstein T, Anthony SJ, Gbakima A, et al. The discovery of Bombali virus adds further support for bats as hosts of ebolaviruses. *Nat Microbiol* 2018;3:1084-1089.

Tasks/Scientific Goals: (Format: Year #(s).Task #. Sub-task#)

TASK 1

1.1: Establish an evidence-based research platform for assessing and addressing high-consequence pathogens in Liberia

The grantee shall oversee refinement and finalization of human and animal study protocols and data collection instruments. This stage incorporates planning and training in the protection of human subjects and animal subjects; training in laboratory biosafety, biosecurity, and safe disposal of samples or sampling materials after laboratory work (which will adhere to guidelines in the BMBL 5th edition, sections $III - VI^{25}$); laboratory diagnostic techniques; and any necessary revisions to original sampling and testing approach based on DTRA feedback and discussion at the kick-off meeting. We will refine our human subjects data collection tools, piloting our instruments within our research network to assure validity and reliability of the questionnaires. A database will be created for secure data entry and data storage of human subjects data. MOH will assign personnel to train clinical staff and oversee study in clinics in Monrovia and Bong. NPHIL and CVL will assign personnel to laboratory. EHA and Liberian partners will host kick-off meeting in Monrovia, Liberia to which all partners will be invited. Each study partner will present on its roles and specific desired outcomes to support its agency's priorities. In addition, we will invite other researchers undertaking febrile illness and related research in-country, such as the U.S. Centers for Disease Control and Prevention (AFI study), the Walter Reed Army Institute of Research (Joint West Africa Research Group), and the Henry Jackson Foundation (sepsis study). Human subjects research and lab training workshops will occur during kick-off.

- 1.1.1 Refine and finalize human and animal study protocols and data collection instruments
- 1.1.2 Secure and finalize all research permits (human and animal) including IRB, IACUC, and national approvals in Liberia
- 1.1.3 Assign MOH, NPHIL, and CVL staff to field and laboratory positions
- 1.1.4 Host kick-off meeting in Liberia
- 1.1.5 Conduct Workshop 1a: overall research protocol (concurrent with Task 1.1.4)

TASK 2

1.2 - O2.2: Enroll human patients and undertake sampling

We will enroll febrile patients at two hospitals in Y1-3 and two hospitals in Y4-5 to collect blood and respiratory samples and transport them to the Liberia Institute for Biomedical Research (LIBR) for testing. Cross-sectional sampling will be used to provide a representative sample of a relatively urban or relatively rural population (depending on site) of individuals with fever. Longitudinal sampling of target populations (not individuals) across up to 2.5 years per clinical study site will maximize the opportunity for detection and possibly reveal seasonal trends in infection or other time-related changes in trends. Sampling will be based on available volume in the clinical sites but is designed to assure detection of rare pathogens and answering questions about the relative proportion of febrile illness caused by each; we are targeting 1,500 patients at the first two hospitals total, and 1,500 at the second set of sites in the option years. We will review historical and concurrent surveillance reports for the study counties and for neighboring counties as comparators. MOH will provide a locally hired on-site project coordinator to work with the hospital team and oversee the study protocol (train clinicians and nurses; be alerted when febrile patients arrive; work with hospital staff to oversee informed consent, enrollment, sample collection, and interviews). will train study staff in human subjects research and patient

recruitment; biosafety, safe and secure sample collection, handling, packaging, and transport; and implementation of the study protocol. Training will provide the principles for safe and ethical human subjects research; and project-specific teachings to ensure staff understand, practice, and can implement the study protocol (enrollment determination, informed consent, and questionnaire administration (demographic information, animal ownership), sample acquisition, data entry, and sample packaging and readying for transport).

- 1.2.1, 3.2.1 Conduct Workshop 2a: IRB/human subjects research
- 1.2.2-O2.2.2 Locally-hired project coordinator reports to hospital at each study site
- 1.2.3-O2.2.3 Enroll patients (continuous)

TASK 3

1.3 - O2.3: Undertake sample processing and testing

LIBR reception personnel will be briefed on the study protocol and will notify the project supervisor on receipt of the samples, at which point study-specific inventory and storage procedures will be followed. LIBR has an ABI 7000 Sequence Detection System in operation on which the laboratory scientists and technicians are well trained; a MiSeq system for NGS that is available but requires staff training; and ELISA platforms for serology. NPHIL will budget for and be responsible for ordering needed consumables throughout the project, and UNMC will provide assistance, training, and oversight. LIBR staff are already trained in real-time PCR and ELISA platforms; UNMC will refresh these skills and provide additional training via two oneweek didactic and hands-on workshops Y1; another dedicated workshop in Y3; and in other years if needed via visits to the laboratory. These will cover execution of specific pathogen tests, advanced techniques (NGS), and results interpretation (including NGS bioinformatics); sample inventory management; and biorisk management. UNMC will provide oversight and mentorship through their at least twice-yearly working visits to Monrovia and the laboratory as well as video and teleconference. UNMC will leverage its additional DTRA work at LIBR (under funding consideration) to assist with skill-building among laboratory scientists and technicians there. UNMC will assess competence at each visit via a standardized evaluation form to use as a basis for targeted future training.

- 1.3.1-O2.3.1 Provide necessary equipment and consumables to NPHIL laboratory (continuous)
- 1.3.2, 3.3.2 Conduct Workshop 3a: laboratory biosafety and biosecurity, sample disposition
- 1.3.3, 3.3.3 Conduct Workshop 3b: laboratory sample testing techniques
- 1.3.4-O2.3.4 Provide continuous on-the-job training in laboratory techniques
- 1.3.5 Submit annual report (Y1)
- 2.3.6 Host workshop on results interpretation/bioinformatics
- 3.3.7 Host regional technical ad networking workshop

TASK 4

1.4 – 3.4 Undertake preliminary animal sampling

While laboratory training is beginning, preliminary field animal sampling will begin in Y1 with sampling in communities selected based on previous cases of AFI from historical hospital admissions trends, including some communities from which the study site hospitals draw patients. We will review a sampling of hospital records from Monrovia and Bong in search of geographic trends in AFI presentations going back three years, and begin randomized sampling

of peridomestic and wild animals in four communities identified as part of this process and continue every three months. In five-day/five-night trips we will target approximately 50 bats, 50 rodents, 50 livestock (including chickens if poultry-transmitted infection is suspected), and 10 dogs per sampling event, allowing for approximately 640 animals sampled in Y1 to include blood and oral/nasopharyngeal specimens, and feces and urine when possible. Our teams are trained in species identification, and we will also plan to barcode approximately 5% of individual bats and rodents in Y1 to improve species determination and team training. All animals will be non-lethally sampled with strict adherence to U.S. IACUC-approved protocols following those currently used by EHA scientists globally (Attachment 3) and using bat and rodent sampling protocols we developed for the PREDICT project (Attachment 3). All personnel undertaking animal sampling will be will be trained to ensure competency with a combination of didactic and practical training. SCNL will transfer samples to LIBR consistent with PREDICT protocols (Attachment 3).

- 1.4.1, 3.4.1 Conduct Workshop 4b: IRB/human subjects research (for animal teams)
- 1.4.2 Review hospital records in search of geographic trends in acute febrile illness presentations
- 1.4.3 Sample in communities identified as part of this process and continue every three months

TASK 5

1.5 - O2.5: Visit communities: human-animal interface assessment, animal sampling, and human serology

Animal sampling will continue in Y2, expanding to communities of enrolled patients, sampling in and around study enrollees' homes and surrounding areas; we plan to reach three communities in Y2. This task predominantly supports Hypothesis 3. It is designed to: a) assess the risk interface between people and animals; b) strategically target and sample animal species for the pathogens/antibodies they are most likely to have based on what is already known about pathogen-host proclivity; and c) enable follow-up serology on patients and their community neighbors. We will sample five communities in the catchment areas of Redemption and Phebe Hospital, targeting 400 animals per community, and the patient plus 20 neighbors per community for human interviews and blood sampling. In option years, we will target three communities with the same numbers of animal and human subjects per community.

- 2.5.1-O2.5.2 Review study patient records for geographic trends in AFI presentations
- 2.5.2-O2.5.3 Undertake sampling in and around study enrollees' homes
- 2.5.3-O2.5.4 Undertake sampling from broader patients' communities
- 2.5.4-O2.5.5 Administer human-animal interface assessment
- 2.5.5-O2.5.6 Collect human samples for serology

TASK6

2.6 - **O2.6**: Analyze data

We will compare any diagnoses established at the clinical sites to laboratory results; and compare clinical study site diagnoses and laboratory results to national weekly and monthly county surveillance records. We will estimate population in catchment areas (from where the patient population comes) to develop prevalence estimates of each detected pathogen. We will compare phylogenetic sequence data from humans and animals to identify possible shared strains and infer transmission. Using the questionnaire data comparisons of exposure variables across

varying demographics measures in study sites will be conducted to characterize high risk behaviors and statistical analysis will be employed to identify differences between groups with a 95% probability of detecting a difference. As appropriate, multivariate analysis will be utilized to evaluate the relationship between the positive biological findings and key measures of contact to evaluate the factors that influence and may have led to AFI pathogen exposure. The pathogen and human interface data collected in this study; characterization of zoonotic potential through phylogenetic analyses undertaken in this and other studies (such as PREDICT); and additional data such as available spatial, ecological, and environmental data will inform models designed to help tease correlation from causation. The data will thus provide the foundation of an OY2 risk reduction workshop. We will also compare diagnostic results for endemic agents to reports for these diagnoses in the preceding years to allow for control for any changed practices (even if subconscious) in our target counties based on the project team's presence; this will also allow for a controlled comparison of the impact on incidence of any differential diagnosis or testing interventions we may implement in OY1 and OY2. We will develop recommendations for adapted differential diagnostic protocols and testing practices.

2.6.1-O2.6.1 Undertake data analysis

TASK 7

2.7-O2.7: Disseminate information to stakeholders

We will host the annual stakeholders meeting to which we will invite all project partners as well as others doing related research in country. We will discuss preliminary data and analyses and use these to inform any needed modifications to forward sampling strategy. We will review protocols for biosafety, specimen transport, and animal handling at each annual meeting. We will provide support travel for at least one (1) Liberian scientist to present at an international conference. We will share samples as appropriate with other in-country projects to ensure synergies. We will compile and summarize research results and share with all partners and other in-country researchers as appropriate and use it to develop an annual report for DTRA. In Y3, we will broaden annual stakeholders meeting to include regional partners from Guinea and possibly other adjacent countries; share information about ongoing research; plan cross-border study for OY1. We will broaden outreach in Y3 and OY2 to communities that have engaged in sampling to share results and discuss preliminary risk mitigation strategies. Project data will provide the foundation of an OY2 risk reduction workshop at the annual meeting to engage multi-sectoral Liberian participants to review statistical evaluation of diagnostic data, identify key risk interfaces, assess economic options for prevention and control, and develop threat reduction measures. Workshop products include 1) development of priorities for refined PCR and serological tests based on study findings, 2) recommendations for an updated national surveillance and reporting strategy and plan, 3) inclusion of stakeholders (e.g., National Disaster Management Authority, the Forestry Development Authority, the Ministry of Finance) to consider options for risk and impact reduction and generate policy recommendations. We will work with MOH and MOA to develop written educational products designed for laypersons to explain project results, community impact, and risk mitigation, and thank community members for their participation.

- 2.7.1-O2.7.1 Host annual stakeholders meeting
- 2.7.2-O2.7.2 Present to DTRA at Annual Technical Review
- 2.7.3-O2.7.3 Submit annual report
- 2.7.4-O2.7.4 Share specimens if available and appropriate with other in-country researchers

Reducing the threat from high-risk pathogens causing febrile illness in Liberia

Pl: William B. Karesh

Thrust Area 6 - Cooperative Counter Weapons of Mass Destruction Research with Global Partners
Broad Agency Announcement HDTRA1-14-24-FRCWMDBAA

2.7.5, O2.7.5 Support Liberian scientist to present at international conference

3.7.6 Host regional technical and networking workshop

3.7.7-O2.7.7 Prepare/submit up to two (2) peer-reviewed manuscripts

3.7.8, O2.7.8 Engage sampled communities for follow-up education

O2.7.9 Conduct Workshop 6a: risk reduction workshop

Cost estimate: Y1: \$995,517.56 Y2: \$989,251.55 Y3: \$996,113.74 OY1: \$962,716.26

OY2: \$969,218.86

Performance Schedule:

Task	Y1	Y2	Y3	OY1	OY2
Task 1: Establish evidence-based research initiative for high-con					012
1.1 Refine and finalize human and animal study protocols	isequei.			Liberta	Т
1.2 Secure and finalize all research permits (human and animal)		+	+	+	+
1.3 Assign MOH, NPHIL, and CVL staff to field and lab positions		+			
1.4 Host kick-off meeting in Liberia					
1.5 Conduct Workshop 1a: overall research protocol		+	+		
Task 2: Enroll human patients and undertake sampling	l				
2.1 Conduct Workshop 2a: IRB/human subjects research					
2.2 Local project coordinator reports to hospital at each study site					
2.3 Enroll patients (continuous)					
Task 3: Undertake sample processing and testing		•		_	
3.1 Provide equipment and consumables to LIBR					
3.2 Conduct Workshop 3a: biosafety/biosecurity, sample disp.					
3.3 Conduct Workshop 3b: laboratory sample testing techniques					
3.4 Provide on-the-job training in lab techniques (continuous)					
3.5 Submit Y1 annual report					
3.6 Conduct Workshop 5a: results interpretation, bioinformatics					
3.7 Host regional technical and networking workshop					
Task 4: Preliminary animal sampling		•	•	•	
4.1 Conduct Workshop 4a: IACUC/animal subjects research					
4.2 Review hospital records for geo. trends in AFI presentations					
4.3 Sample animals in select communities (preliminary)					
Task 5: Visit communities: interface assessment, animal sampling	ıg, hum	an sero	logy		
5.1 Review study patient records for geographic AFI trends					
5.2 Administer human-animal interface assessment					
5.3 Undertake animal sampling in/around study enrollees' homes					
5.4 Undertake animal sampling from patients' communities					
5.5 Collect human samples for serology					
Task 6: Analyze data					
6.1 Undertake data analysis					
Task 7: Disseminate research results to stakeholders					
7.1 Host annual Stakeholders meeting					
7.2 Present to DTRA at Annual Technical Review					
7.3 Submit annual report					
7.4 Share specimens if appropriate w/ other in-country researchers					
7.5 Support Liberian scientist to international conference					
7.6 Host regional technical and networking workshop					
7.7 Prepare/submit up to two (2) peer-reviewed manuscripts					
7.8 Engage sampled communities for follow-up education					
7.9 Conduct Workshop 6a: risk reduction workshop					

OMB Number: 4040-0001 Expiration Date: 10/31/2019

CE 101 (D.D.)	3. DATE RECEIVED BY STATE State Application Identifier						
SF 424 (R&R)							
1. TYPE OF SUBMISSION	4. a. Federal Identifier						
Pre-application Application Changed/Corrected Application	b. Agency Routing Identifier GRANCI2819625						
2. DATE SUBMITTED Applicant Identifier	7						
	c. Previous Grants.gov Tracking ID						
5. APPLICANT INFORMATION	Organizational DUNS: 0770900860000						
Legal Name: EcoRealth Alliance							
Department: Division:							
Street1: 460 W 34th St							
Street2: [17th Floor							
City: New York County / Par	ish: 🔀						
State: NY: New York	Province:						
Country: USA: UNITED STATES	ZIP / Postal Code: 10001-2320						
Person to be contacted on matters involving this application							
Prefix: Dr. First Name: Fillen	Middle Name:						
Last Name: Carlin	Suffix:						
Position/Title: Senior Health and Policy Specialist							
Street1: 460 W 34th St							
Street2: 17th Floor							
City: New York County / Pa	rish: NY						
State: NY: New York	Province:						
Country: USA: UNITED STATES	ZIP / Postal Code: [10001 2320						
Phone Number: 202-633-4997 Fax Number: 212	-380-4465						
Email: carlin@ecchealthalliance.org							
6. EMPLOYER IDENTIFICATION (EIN) or (TIN): 311726494							
7. TYPE OF APPLICANT: M: Nonprofit with 501C3 IRS	S Status (Other than Institution of Higher Education)						
Other (Specify):							
Small Business Organization Type Women Owned Soc	ially and Economically Disadvantaged						
	appropriate box(es).						
New Resubmission A. Increase	Award B. Decrease Award C. Increase Duration D. Decrease Duration						
is this application being submitted to other agencies? Yes No	Is this application being submitted to other agencies? Yes No What other Agencies?						
	ALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: 12.351						
Defense Threat Reduction Agency	Scientific Research - Combating Weapons of Mass Destruction						
11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT:							
Reducing the threat from high-risk pathogens causing f	ebrile illness in Liberia						
12. PROPOSED PROJECT: 13. CONGRESSIONAL DISTRIC	T OF APPLICANT						
Start Date Ending Date							
01/01/2020 12/31/2024 NY-010							

14. PROJECT DIRECTOR/PRINCIPAL INVESTIGATOR CONTACT INFORMAT	TION
Prefix: Dr. First Name: William	Middle Name:
Last Name: Karesh	Suffix:
Position/Title: Executive Vice President of Health and Policy	
Organization Name: Ecollealth Alliance	
Department: Division:	
Street1: 460 W 34th St	
Street2: 17th Floor	
City: New York County / Parish:	
State: NY: New York	Province:
Country: USA: UNITED STATES	ZIP / Postal Code: [10001-2320
Phone Number: 212-380-4463 Fax Number: 212-380-4	465
Email: karesh@ecohealthalliance.org	
	PPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER ROCESS?
a. Total Federal Funds Requested 4,912,818.06 a. YES	THIS PREAPPLICATION/APPLICATION WAS MADE
b. Total Non-Federal Funds	AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON:
c. Total Federal & Non-Federal Funds	DATE:
b. NO	PROGRAM IS NOT COVERED BY E.O. 12372; OR
d. Estimated Program Income 0.00	PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW
⊠ I agree	
'The list of certifications and assurances, or an Internet site where you may obtain this list, is co 18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory Docume	entation
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'The list of certifications and assurances, or an Internet site where you may obtain this list, is co 18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory Docume 19. Authorized Representative Prefix: Dr. First Name: Aleksei	Add Attachment Middle Name:
**The list of certifications and assurances, or an Internet site where you may obtain this list, is considered. 18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory Docume 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Ohmora	Add Attachment
'The list of certifications and assurances, or an Internet sile where you may obtain this list, is considered. 18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory Docume 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Chaura Position/Title: Authorized Organizational Representative	Add Attachment Middle Name:
'The list of certifications and assurances, or an Internet site where you may obtain this list, is consistent of Lobbying Activities) or other Explanatory Docume 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Ohmora Position/Title: Authorized Organizational Representative Organization: Ecoflealth Alliance	Add Attachment Middle Name:
'The list of certifications and assurances, or an Internet sile where you may obtain this list, is considered. 18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory Docume 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Chmura Position/Title: Authorized Organizational Representative	Add Attachment Middle Name:
'The list of certifications and assurances, or an Internet site where you may obtain this list, is consistent of Lobbying Activities) or other Explanatory Docume 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Ohmora Position/Title: Authorized Organizational Representative Organization: Ecoflealth Alliance	Add Attachment Middle Name:
The list of certifications and assurances, or an Internet site where you may obtain this list, is considered. 18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory Docume 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Chaura Position/Title: Authorized Organizational Representative Organization: Ecolleaith Alliance Department: Division:	Add Attachment Middle Name:
**The list of certifications and assurances, or an Internet sile where you may obtain this list, is considered. 18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory Docume 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Chmura Position/Title: Authorized Organizational Representative Organization: Ecofleaith Alliance Department: Division: Street1: 460 W 34th St	Add Attachment Middle Name:
The list of certifications and assurances, or an Internet site where you may obtain this list, is considered. 18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory Docume 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Chapta Position/Title: Authorized Organizational Representative Organization: Ecolleaith Alliance Department: Division: Street1: 460 W 34th St Street2: 17th Floor City: New York County / Parish: State: NY: New York	Add Attachment Middle Name: Suffix: Province:
The list of certifications and assurances, or an Internet site where you may obtain this list, is considered. 18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory Docume 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Chmura Position/Title: Authorized Organizational Representative Organization: Ecolleaith Alliance Department: Division: Street1: 460 % 34th St Street2: 17th Floor City: New York County / Parish:	Add Attachment Middle Name: Suffix:
The list of certifications and assurances, or an Internet sile where you may obtain this list, is considered. 18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory Docume 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Chmura Position/Title: Authorized Organizational Representative Organization: Ecoflealth Alliance Department: Division: Street1: 460 W 34th St Street2: 17th Floor City: New York Country: New York Country: New York	Add Attachment Middle Name: Suffix: Province: ZIP / Postal Code: 10001-2320
The list of certifications and assurances, or an Internet site where you may obtain this list, is considered. 18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory Docume 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Chaura Position/Title: Authorized Organizational Representative Organization: Ecofleaith Alliance Department: Division: Street1: 460 % 34th St Street2: 17th Floor City: New York County / Parish: State: NY: New York Country: USA: UNITED STATES	Add Attachment Middle Name: Suffix: Province: ZIP / Postal Code: 10001-2320
The list of certifications and assurances, or an Internet sile where you may obtain this list, is considered. 18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory Docume. 19. Authorized Representative. Prefix: Dr. First Name: Aleksei Last Name: Chmura Position/Title: Authorized Organizational Representative. Organization: Ecofleaith Alliance. Department: Division: Street1: 460 % 34th St. Street2: 17th Floor City: New York County / Parish: State: NY: New York Country: USA: UNITED STATES Phone Number: 212-380-4473 Fax Number: 212-380-4473	Add Attachment Middle Name: Suffix: Province: ZIP / Postal Code: 10001-2320
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory Docume 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Chmura Position/Title: Authorized Organizational Representative Organization: Ecofleaith Alliance Department: Division: Street1: 460 W 34th St Street2: 17th Floor City: New York Country: USA: UNITED STATES Phone Number: 212-380-4473 Email: chmura@ccehealthalliance.org	Add Attachment Middle Name: Suffix: Province: ZIP / Postal Code: 10001-2320
The list of certifications and assurances, or an Internet site where you may obtain this list, is considered. 18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory Docume 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Chaura Position/Title: Authorized Organizational Representative Organization: Ecofleaith Alliance Department: Division: Street1: 460 W 34th St Street2: 17th Floor City: New York County / Parish: State: NY: New York Country: USA: UNITED STATES Phone Number: 212-380-4473 Fax Number: 212-380-4 Email: chaura@ecoheaIthalliance.org Signature of Authorized Representative	Add Attachment Middle Name: Suffix: Province: ZIP / Postal Code: 10001-2320 Date Signed
The list of certifications and assurances, or an Internet site where you may obtain this list, is considered. 18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory Docume 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Chaura Position/Title: Authorized Organizational Representative Organization: Ecofleaith Alliance Department: Division: Street1: 460 W 34th St Street2: 17th Floor City: New York County / Parish: State: NY: New York Country: USA: UNITED STATES Phone Number: 212-380-4473 Fax Number: 212-380-4 Email: chaura@ecoheaIthalliance.org Signature of Authorized Representative	Add Attachment Middle Name: Suffix: Province: ZIP / Postal Code: 10001-2320 Date Signed

RESEARCH & RELATED Other Project Information

OMB Number: 4040-0001 Expiration Date: 10/31/2019

1. Are Human Subjects Involved?
1.a. If YES to Human Subjects
Is the Project Exempt from Federal regulations?
If yes, check appropriate exemption number.
If no, is the IRB review Pending? Yes No
IRB Approval Date: 01/06/2020
Human Subject Assurance Number:
2. Are Vertebrate Animals Used? Yes No
2.a. If YES to Vertebrate Animals
Is the IACUC review Pending? Yes No
IACUC Approval Date: 01/06/2020
Animal Welfare Assurance Number: A4059
3. Is proprietary/privileged information included in the application?
4.a. Does this Project Have an Actual or Potential Impact - positive or negative - on the environment?
4.b. If yes, please explain:
4.c. If this project has an actual or potential impact on the environment, has an exemption been authorized or an environmental assessment (EA) or environmental impact statement (EIS) been performed? Yes No
4.d. If yes, please explain:
5. Is the research performance site designated, or eligible to be designated, as a historic place?
5.a. If yes, please explain:
6. Does this project involve activities outside of the United States or partnerships with international collaborators? Yes No
6.a. If yes, identify countries: Liberia
6.b. Optional Explanation:
7. Project Summary/Abstract [1235-DTRA Liberia 2019 Project Summar Delete Attachment] View Attachment
8. Project Narrative 1226-DTRA Liberia 2019 Project Narrat Delete Attachment View Attachment
9. Bibliography & References Cited 1237-DTRA Liberia 2019 References FIN Delete Attachment View Attachment
10. Facilities & Other Resources [1238 Facilities Description.pdf] Delete Attachment View Attachment
11. Equipment Add Attachment
12. Other Attachments Add Attachments

OMB Number: 4040-0001 Expiration Date: 10/31/2019

RESEARCH & RELATED Senior/Key Person Profile (Expanded)

PROFILE President Divertor/Principal Laura	otigatar
Prefix: Dr. * First Name: William	Middle Name:
* Last Name: Raresh	Suffix:
Position/Title: Executive Vice President of Health and Policy Departmen	
Organization Name: EcoHealth Alliance	Division:
* Street1: 480 W 3411: St	
Street2: 17th Floor	
* City: New York County/ Parish:	
*State: NY: New York	Province:
* Country: USA: UNITED STATES	* Zip / Postal Code: 10001-2320
* Phone Number: 212 380 4463 Fax Number: 212 380 4465	
* E-Mail: karesh@ecohealthalliance.org	
Credential, e.g., agency login:	
* Project Role: PD/PI Other Project Role Category	ory:
Degree Type: DVM	
Degree Year: 1982	
*Attach Biographical Sketch 1240-Karesh_BioSketch.pdf	Delete Attachment View Attachment
Attach Current & Pending Support 1241-Karesh C&F.pdf	Delete Attachment View Attachment
PROFILE - Senior/Key Person 1	
Prefix: Dr. * First Name: Ellen	Middle Name:
* Last Name: Carlin	Suffix:
Position/Title: Senior Health and Policy Specialist Departmen	
Organization Name: Ecoffealth Alliance	Division:
* Street1: 460 w 34th st	
Street2: 17th Floor	
* City: New York County/ Parish:	
*State: NY: New York	Province:
* Country: USA: UNITED STATES	* Zip / Postal Code: 10001-2320
* Phone Number: 202 633 4997 Fax Number: 212 380 4465	
* E-Mail: carlin@ecohealthalliance.org	
Credential, e.g., agency login:	
* Project Role: Co-Investigator Other Project Role Category	ory:
Degree Type: DVM	
Degree Year: 2007	
Attach Biographical Sketch 1242-Carlin_BioSketch.pdf	Delete Attachment View Attachment
Attach Current & Pending Support 1243-Carlin_Cap.pdf	Delete Attachment View Attachment

PROFILE - Senior/Key Pers	son 2
Prefix: [∋r. * First Name: Jonathan	Middle Name:
* Last Name: Epstein	Suffix:
Position/Title: Vice President for Science and Outreach Depar	tment:
Organization Name: Ecolicalth Alliance	Division:
*Street1: 460 w 34th St	
Street2: 17th Floor	
* City: New York County/ Parish:	
*State: NY: New York	Province:
* Country: USA: UNITED STATES	* Zip / Postal Code: 10001-2320
* Phone Number: 212 380 4467 Fax Number: 212 380 446	5
* E-Mail: epstein@ecohealthalliance.org	
Credential, e.g., agency login:	
* Project Role: Co-Investigator Other Project Role C	ategory:
Degree Type: PhD	
Degree Year: 2017	
Attach Biographical Sketch 1244-Epstein BioSketch.pdf	Delete Attachment View Attachment
Attach Current & Pending Support 1245-Epstein_C&F.pdf	Delete Attachment View Attachment
PROFILE - Senior/Key Pers	son <u>3</u>
	Son <u>3</u> Middle Name:
Prefix: Dr . * First Name: Mosoka	
Prefix: Dr. * First Name: Mosoka * Last Name: Fallab	Middle Name:
Prefix: Dr. * First Name: Mosoka * Last Name: Fallah Position/Title: Deputy Director General Depar	Middle Name: Suffix:
Prefix: Dr. * First Name: Mosoka * Last Name: Fallab	Middle Name: Suffix: tment:
Prefix: Dr. * First Name: Mosoka * Last Name: Fallah Position/Title: Deputy Director General Depar Organization Name: National Public Health Institute of Liberia	Middle Name: Suffix: tment:
Prefix: Dr. * First Name: Mosoka * Last Name: Fallah Position/Title: Deputy Director General Depar Organization Name: National Public Health Institute of Liberia * Street1: Congo Town Back Rd Street2:	Middle Name: Suffix: tment:
Prefix: Dr. * First Name: Mosoka * Last Name: Fallah Position/Title: Deputy Director General Depar Organization Name: National Public Health Institute of Liberia * Street1: Congo Town Back Rd Street2: City: Monrovia County/ Parish:	Middle Name: Suffix: tment:
Prefix: Dr. * First Name: Mosoka * Last Name: Fallah Position/Title: Deputy Director General Depar Organization Name: National Public Health Institute of Liberia * Street1: Congo Town Back Rd Street2: * City: Monrovia County/ Parish: * State:	Middle Name: Suffix: Timent: Division:
Prefix: Dr. * First Name: Mosoka * Last Name: Fallah Position/Title: Deputy Director General Depar Organization Name: National Public Health Institute of Liberia * Street1: Congo Town Back Rd Street2:	Middle Name: Suffix: Timent: Division: Province:

1246 Fallah_BioSketch.pdf

Degree Type:

Degree Year:

PED

2011

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		PROFILE - Senior/K	ey Person 4				
Prefix: on.	* First Name: Neam			Middle Name	3:		
* Last Name: Ro				Suffix			
Position/Title: Se	enior Research Scientist, Mo	odeler	Department				
	me: EcoRealth Alliance			Div	vision:		
* Street1: 460 %	W 34th St						
Street2: 17th	Floor						
* City: New	York	County/ Parish:					
* State: NY:	New York			Province:			
* Country: USA:	UNITED STATES			* Zip / Postal C	ode: 10001-2320		
* Phone Number:	212 380 4471	Fax Number: 212 38	30 4465				
* E-Mail: ross@e	ecohealthalliance.org						
Credential, e.g.,	, agency login:						
* Project Role:	Other (Specify)	Other Project	Role Catego	ory: Senior Re:	search Scientis	t, Modeler	
Degree Type:	PhD						
Degree Year:	2015]					
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		PROFILE - Senior/K	ey Person 5				
Prefix: ⊡r .	* First Name: Claire			Middle Name	»:		
* Last Name: St				Suffix	с:		
_	sistant Research Professor		Department	Center for C	Global Health S	cien	
	me: Georgetown University			Div	vision:		
* Street1: 3900	Reservoir Road, N.W.						
Street2:							
	ington	County/ Parish:					
* Ctoto:	District of Columbia			Province:			
==				* Zin / Postal C	ode: 20007 2194		
* Country: USA:	UNITED STATES						
* Country: USA:	UNITED STATES :202-290-0451	Fax Number:			<u> </u>		
* Country: USA:		Fax Number:					

Other Project Role Category:

1250 Standley_BioSketch.pdf

Project Role:

Degree Type:

Degree Year:

Co Investigator

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PED

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		PRC	FILE - Senior/Ke	ev Person 6				
Prefix: Ms.	* First Name	e:Catherine	TILL - Selliol/Re		Middle Na			
* Last Name: Ma		Catherine				uffix:		
	licy Advisor and R			Departmen		JIIA.		
	ne: EcoRealth Allia		151		<u></u>	Division:		
* Street1: 460 %						DIVISION.		
Street2: 17th			County/ Parish:					
* City: New Y			County/ Parish:					
	New York				Province:			
	UNITED STATES				Zip / Posta	al Code: 10001-2320 		
	212 380 4472		Number: 212 38	30 4465				
	laba@ecohealthallia	ance.org						
Credential, e.g.,	agency login:							J
* Project Role:	Other (Specify)		Other Project	Role Categ	ory: Policy	Advisor and Resea	rch Scientist	
Degree Type:	MPE							
Degree Year:	2009							
Attach Biogr	raphical Sketch	1252-Machalab	a_Biosketch.j	pdf		Delete Attachment	View Attachment	
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		PRC	FILE - Senior/Ke					
D-ofine -	* Eiret Nome		FILE - Jemonia	ey reison <u>r</u>				
Prefix: Dr.	* First Name	X Michael			Middle Na			
* Last Name: Mi				Damantman		uffix:		
	sistant Professor			Departmen	College o	f Public Health		
	ne: University of N	ebraska Medica	l Center			Division:		
* Street1: 4400	Emile St.							
Street2:								
* City: Omalia			County/ Parish:					
	Nebraska				Province:	. [
	UNITED STATES				* Zip / Posta	al Code: 68198 0600		
* Phone Number:	215-870-0731	Fax I	Number:					
* E-Mail: mike.w	viley@unmc.edu							

Other Project Role Category:

1254 Wiley_BioSketch.pdf

Project Role:

Degree Type:

Degree Year:

Co Investigator

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PED

2012 Attach Biographical Sketch

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Frefx Test September S			PROFILE - Senior/	Key Person 8				
Position/Title: Eshavioral Xisk Program Xanager	Prefix: Ms.	* First Name	≞: Emily		Middle Nan	ne:		
Organization Name: Ecoticulist: Alliance Division *Street!: 400 M 344h 50 Street!: 400 M 344h 50 Street!: 400 M 344h 50 *City: Naw York	* Last Name: Ha	ıgan			Suff	fix:		
**Street1: 456 W 345 E 5: Street2: 17th Floor **City: New York	Position/Title: 36		ıram Manager	Department:				
Street2: 17th Floor *City: New York	Organization Nar	me: Ecoffcalth Allia	nce			Division:		
Country	* Street1: 460	w 34th St						
* State: NY: New York Province: **Country: USA: UNITED STATES * Zip / Postal Code: 10001-2320 **Phone Number: 212 386 4491 Fax Number: 212 389 4465 **E-Mail: hagan@cohealthalllance.org Credential, e.g., agency login: **Project Role: Coher (Specify) Other Project Role Category: Behavioral Risk Scientist Degree Type: MRE Degree Year: 2013 Attach Biographical Sketch 1256-liagan_Biosketch.pdf Delete Attachment View Attachment Attach Current & Pending Support 1257-Ragan_SSP.pdf Delete Attachment View Attachment **PROFILE - Senior/Key Person 9** Prefix: The Senior Research of Suffix: Department: Department: Department: Department: Department: Department: Conganization Name: Inherial Chimpanzee Rescue and Protection: Division: **Street2: Congo Town, Back Rd Street2: Province: Province: **Country: IBB: LIBERIA * Zip / Postal Code: **Phone Number: 4 231776147565 Fax Number: **Country: IBB: LIBERIA * Zip / Postal Code: **Phone Number: 4 231776147565 Fax Number: **C-Mail: 10esnool/3gna11.com	Street2: 17th	Floor						
**Country: DSA: DNITED STATES	* City: New	York	County/ Paris	h:				
Project Role: Green (Specify) Other Project Role Category: Behavioral Risk Scientist Project Role: Green (Specify) Other Project Role Category: Behavioral Risk Scientist Degree Type: MRE Degree Type: MRE Degree Year: 2013 Attach Biographical Sketch 1256-Hagan_Blocketch.pdf Delete Attachment View Attachment Attach Current & Pending Support 1257-Hagan_Carp.pdf Delete Attachment View Attachment PROFILE - Senior/Key Person 9 Preffix Dr. *First Name: Games Middle Name: * Last Name: Descond Suffix: Organization Name: [hiberial Chimpanzee Resoute and Protection Division: * Street: Gongo Town Back Rd Street: Congo Town Back Rd Street: Congo Town Back Rd * Street: Liberata Chimpanzee Resoute and Protection Province: * Country: Libe: Liberata Chimpanzee Ras Number: * Country: Libe: Liberata Chimpanzee Ras Number: * Phone Number: # 221776147365 Fax Number: * E-Mail: joesnot@gnall.com	* State: NY:	New York			Province:			
Project Role: onher (Specify) Other Project Role Category: Behavioral Risk Scientist *Project Role: onher (Specify) Other Project Role Category: Behavioral Risk Scientist Degree Type: wine Degree Type: wine Degree Year: 2013 Attach Biographical Sketch 1256-Hagan_Blosketch.pdf Delete Attachment View Attachment Attach Current & Pending Support 1257-Hagan_Carp.pdf Delete Attachment View Attachment **PROFILE - Senior/Key Person 9 **Prefix: pr. **First Name: cames Middle Name: Suffix: Department: Organization Name: [hiberial Chimpanzee Resolution and Protection Division: Street: Congo Town Back Rd Street: Congo Town Back Rd Street: Congo Town Back Rd **Street: Congo Town Back Rd	* Country: USA:	UNITED STATES			* Zip / Postal ·	Code: 10001-2320		
Credential, e.g., agency login: * Project Role: Other (Specify) Other Project Role Category: Behavioral Risk Scientist Degree Type: MFE Degree Year: 2013 Attach Biographical Sketch 1256-Hagan_Blosketch.pdf Delete Attachment View Attachment Attach Current & Pending Support 1257-Hagan_C4F.pdf Delete Attachment View	* Phone Number	212 380 4491	Fax Number: 212	380 4465				
*Project Role: Scher (Specify) Other Project Role Category: Behavioral Risk Scientist Degree Type: MRE Degree Year: 2013 Attach Biographical Sketch 1256-Bagan_Blooketch.pdf Delete Attachment View Attachment Attach Current & Pending Support 1257-Bagan_SkP.pdf Delete Attachment View Attachment View Attachment View Attachment View Attachment Support Profix Dr. *First Name: Cames Middle Name: Suffix: Department: Organization Name: [Liberia Chimpanzee Rescue and Protection Department: Organization Name: [Liberia Chimpanzee Rescue and Protection Division: Street1: Gongo Town Back Rd Street2: Province: Province: Province: Province: State: Province: Province: State: Province: Province: State: Province: Pro	* E-Mail: hagan:	ecohealthalliance.	.org]			
Degree Type: WPE Degree Year: 2013 Attach Biographical Sketch 1256-Bagan_Blosketch.pdf Delete Attachment View Attachment Attach Current & Pending Support 1257-Bagan_CWP.pdf Delete Attachment View Attachment PROFILE - Senior/Key Person 9 Prefix: Dr. * First Name: Cames Middle Name: * Last Name: Destrond Suffix: Position/Title: Department: Organization Name: Fiberial Chimpanzee Rescue and Protection Division: * Street1: Congo Town Back Rd Street2: * City: Moncovia County/ Parish: * State: Province: * County: EBR: LIBERIA * Zij776147565 Fax Number: * Phone Number: + 231776147565 Fax Number: * E-Mail: Joesnool@gnail.com	Credential, e.g.	, agency login:						
PROFILE - Senior/Key Person 9 Prefix: [Dr. * First Name: James Middle Name: * Last Name: Descend Suffix: Position/Title: Department: Organization Name: [Internal Chimpanzee Resorte and Protection * Street1: Gongo Town Back Rd Street2: * City: Monrovia County/ Parish: * State: Province: * County: LBR: LIBERIA * Zip / Postal Code: * Phone Number: + 231776147565 Fax Number: * E-Mail: Joesno019gna11.con	* Project Role:	Other (Specify)	Other Proje	ct Role Categor	ry: Behavior	al Risk Scientis	il.	
Attach Biographical Sketch 1256-Hagan_Blocketch.pdf Delete Attachment View Attachment Attach Current & Pending Support 1257-Hagan_CAP.pdf Delete Attachment View Attachment PROFILE - Senior/Key Person 9 Prefix: [pr. * First Name: James Middle Name:	Degree Type:	MPE						
PROFILE - Senior/Key Person 9 Prefix: Dr. * First Name: Dames Middle Name: Suffix: Department: Division: Street: Congo Town Back Rd Street2: * City: Monrovia County/ Parish: * State: Province: Province: Province: * Zip / Postal Code: * Phone Number: \$\frac{1}{2}\$ 231776147565 Fax Number: \$\frac{1}{2}\$ E-Mail: jdesno019gna11.com	Degree Year:	2013						
PROFILE - Senior/Key Person 9 Prefix: Dr. * First Name: James Middle Name: * Last Name: Descond Suffix: Position/Title: Department: Organization Name: Liberia Chimpanzee Rescue and Protection Division: * Street1: Congo Town Back Rd Street2: * City: Monrovia County/ Parish: * State: Province: * Country: LBR: LIBERTA * Zip / Postal Code: * Phone Number: + 231776147565 Fax Number: * E-Mail: jdesmo018gnail.com	Attach Biog	raphical Sketch	1256-Hagan_Biosketch.pdf			Delete Attachment	View Attachment	
Prefix: Dr. * First Name: James Middle Name: * Last Name: Desmond Suffix: Position/Title: Department: Organization Name: Liberia Chimpanzee Rescue and Protection Division: * Street1: Congo Town Back Rd Street2: * City: Monrovia County/ Parish: * State: Province: * Country: LBR: LIBERTA * Zip / Postal Code: * Phone Number: + 231776147565 Fax Number: * E-Mail: jdesmo01@gmail.com	Attach Curre	ent & Pending Support	1257-Hagan_C&P.pdf			Delete Attachment	View Attachment	
Prefix: Dr. * First Name: James Middle Name: * Last Name: Desmond Suffix: Position/Title: Department: Organization Name: Liberia Chimpanzee Rescue and Protection Division: * Street1: Congo Town Back Rd Street2: * City: Monrovia County/ Parish: * State: Province: * Country: LBR: LIBERTA * Zip / Postal Code: * Phone Number: + 231776147565 Fax Number: * E-Mail: jdesmo01@gmail.com								
Prefix: Dr. * First Name: James Middle Name: * Last Name: Descrond Suffix: Position/Title: Department: Organization Name: Liberia Chimpanzee Rescue and Protection Division: * Street1: Congo Town Back Rd Street2: * City: Monrovia County/ Parish: * State: Province: * Country: LBR: LIBERTA * Zip / Postal Code: * Phone Number: + 231776147565 Fax Number: * E-Mail: jdesno01@gnail.com		_						
* Last Name: Desmond Suffix: Position/Title: Department: Organization Name: Liberia Chimpanzee Rescue and Protection Division: * Street1: Congo Town Back Rd Street2: * City: Moncovia County/ Parish: * State: Province: * Country: LER: LIBERIA * Zip / Postal Code: * Phone Number: + 231776147565 Fax Number: * E-Mail: jdesmo0l@gmail.com			PROFILE - Senior/	Key Person 9				
Position/Title: Organization Name: Liberia Chimpanzee Rescue and Protection * Street1: Congo Town Back Rd Street2: * City: Monrovia County/ Parish: * State: Province: * Country: LBR: LIBERIA * Zip / Postal Code: * Phone Number: + 231776147565 Fax Number: * E-Mail: jdesmo01@gmail.com	Prefix: [pr.	* First Name	3: James		Middle Nam	ne:		
Organization Name: Liberia Chimpanzee Rescue and Protection. * Street1: Congo Town Back Rd Street2: * City: Monrovia County/ Parish: * State: Province: * Country: LBR: LIBERIA * Zip / Postal Code: * Phone Number: + 231776147565 Fax Number: * E-Mail: jdesmo01@gmail.com	* Last Name: De	smond			Suff	fix:]	
* Street1: Congo Town Back Rd Street2: * City: Monrovia	Position/Title:			Department:				
Street2: City: Moncovia County/ Parish: * State: Province: * Country: I.BR: I.IBERTA * Zip / Postal Code: * Phone Number: + 231776147565 Fax Number: * E-Mail: jdesmo01@gmail.com	Organization Nar	ກ e: Liberia Chimpan:	zee Rescue and Protection)ivision:		
* City: Montrovia County/ Parish: Province: * State: Province: * Country: LER: LIBERTA * Zip / Postal Code: * Phone Number: + 231776147565 Fax Number: * E-Mail: jdesmo01@gmail.com	* Street1: Cong	o Town Back Rd						
* State: Province:	Street2:							
* Country: I.BR: I.IBERTA	* City: Morre	ovia	County/ Paris	h:				
* Phone Number: + 231776147565	* State:				Province:			
* E-Mail: jdesmo01@gmail.com	* Country: LBR:	LIBERTA			* Zip / Postal	Code:		
	* Phone Number	+ 231776147565	Fax Number:					
Credential, e.g., agency login:		o01%umail.com			7			
	* E-Mail: jdesmo							
			Other Proje	ct Role Categor	rv:			_

1258 Desmond_BioSketch.pdf

Degree Type:

Degree Year:

DVM

8008 Attach Biographical Sketch

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	PROFILE - Senior/Ke	ey Person 10	,			
Prefix: Dr. * First Name: Anno	e 		Middle N			
* Last Name: Laudisoit			s	uffix: Ph.D.		
Position/Title: Senior Scientist		Department:				
Organization Name: Ecoficalth Alliance				Division:		
*Street1: 460 w 34th St						
Street2: 17th Floor						
* City: New York	County/ Parish:					
* State: NY: New York			Province:			
* Country: USA: UNITED STATES			* Zip / Post	al Code: 10001-2320		
* Phone Number: 6468684715	Fax Number:					
* E-Mail: [laudisoit@ecohealthalliance.c	org					
Credential, e.g., agency login:						
* Project Role: Cther (Specify)	Other Project	Role Catego	r y: Senior	Scientist		
Degree Type:						
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* Last Name: Sorrell Position/Title: Organization Name: Georgetown Universit * Street1: 3900 Reservoir Rd, N.W. Street2: * City: Washington D.C.	y Y	ey Person 11	S Microbio:	ame: uffix: Ph.C. ogy and Immunolog	эу	
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* Last Name: Sorrell Position/Title: Organization Name: Georgetown Universit * Street1: 2900 Reservoir Rd, N.W. Street2: * City: Washington D.C. * State: DC: District of Columbia * Country: USA: UNITED STATES * Phone Number: 2026878392 * E-Mail: Erin.Sorrell@georgetown.edu	County/ Parish:	Department:	Province: * Zip / Post	ame: uffix: Ph.D. cgy and Immunolog Division:	эу	
* Last Name: Sorrell Position/Title: Organization Name: Georgetown Universit * Street1: 3900 Reservoir Rd, N.W. Street2: * City: Washington D.C. * State: DC: District of Columbia * Country: USA: UNITED STATES * Phone Number: 2026878392 * E-Mail: Erin.Sorrell@georgetown.edu Credential, e.g., agency login:	County/ Parish:	Department:	Province: * Zip / Post	ame: uffix: Ph.D. cgy and Immunolog Division:	эу	

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	e: National Public			- Сранинони		Division:		
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Street2:								
* City: Monro	via	c.	ounty/ Parish:					
* State:					Province:			
* Country: LBR:	LIBERIA				* Zip / Posta	l Code:		
* Phone Number:	+231886553011	Fax Nui	mber:					
* E-Mai l: directo	or.libr@gmail.com		<u> </u>			•		
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* Project Role:	Co-Investigator	-	Other Project Ro	ole Catego	ry:			<u></u>
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Prefix:	* First Name	Bode			Middle Na	me:		
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Position/Title: Dep	_			epartment:				
	e: National Public	Health Institut	e of Liberia			Division:		
* Street1: Canga	Town Back Rd							
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* City: Monro	via	C ₁	ounty/ Parish:					
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	oayo@gmail.com							1
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* Project Role:	Other (Specify)		Other Project Ro	ole Catego	ry: Senior 1	Research Scienti	st	
Degree Type:	M.S							
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PROFILE - Senior/Key Person 14	
	dle Name:
* Last Name: uogba	Suffix:
Position/Title: Director, National Public Health Reference La Department	
Organization Name: National Public Health Institute of Liberia	Division:
*Street1: Congo Town Back Rd	
Street2:	
* City: Monrovia County/ Parish:	
* State: Provir	
	/ Postal Code:
* Phone Number: +231886553011	
* E-Mail: dogba484@gmail.com	
Credential, e.g., agency login:	
* Project Role: Co-Investigator Other Project Role Category:	
Degree Type: MPH	
Degree Year: 2010	
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PROFILE - Senior/Key Person 15	
Prefix: Dr. * First Name: Milchael Mid	dle Name:
* Last Name: Garbo	Suffix:
Position/Title: Executive Director Department:	
Organization Name: Society for the Conservation of Nature of Liberia	Division:
*Street1: Tubman Blvd	
Street2:	
* City: Monrovia County/ Parish:	
* State: Provin	nce:
* Country: LBR: LIBERTA * Zip /	Postal Code:
* Phone Number: +231886553011 Fax Number:	
*E-Mail: scnlliberia@yahoo.com	
Credential, e.g., agency login:	
* Project Role: Co Investigator Other Project Role Category:	
* Project Role: Co Investigator Other Project Role Category:	
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William B. Karesh

EcoHealth Alliance, 460 W. 34th St, New York City, NY 10001, USA

E-mail: karesh@ecohealthalliance.org

Professional Preparation

Clemson University	Biology	BS	1977
Univ. of Georgia	Veterinary Medicine	DVM	1982
Zool. Society of San Diego	Residency – Wildlife Health		1982 -1984

Appointments

. 4- 1	
Life Member, Council on Foreign Relations	2016 - present
Emerging Pandemic Threats Partner Liaison, USAID EPT PREDICT-2	2014 - present
Advisor, WHO Expert Panel on MERS-CoV	2013 - present
Expert, WHO International Health Regulation Roster of Experts	2013 - present
Executive Vice President for Health & Policy, EcoHealth Alliance	2010 - present
President, Working Group on Wildlife Diseases, OIE, France	2008 - present
Co-Chair, Wildlife Health Specialist Group, IUCN, Switzerland	2001 - present
Chief Technical Officer, USAID EPT PREDICT	2009 - 2014
Chief of Party, USAID Global Avian Influenza Network for Surveillance	2006 - 2009
Vice President & Director, Global Health Programs, Wildlife Cons. Society	2001 - 2010

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- Karesh WB, Reed P. (2005) Ebola and Great Apes in Central Africa: Current Status and Future Needs, **Societe de Pathologie Exotique Bulletin** 98:237-238.
- Rouquet P, Froment JM, Bermejo M, Kilbourn A, <u>Karesh WB</u>, Reed P, Kumulungui B, Yaba P, Deilcat A, Rollin PE, Leroy EM. (2005). Wild Animal Mortality Monitoring and Human Ebola Outbreaks, Gabon and Republic of Congo, 2001-2003. **Emerging Infectious Diseases** 11:283-290
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- Morse SS, Mazet JAK, Woolhouse M, Parrish CR, Carroll D, <u>Karesh WB</u>, *Zambrana-Torrelio C*, Lipkin WI, Daszak P. (2012) Prediction and prevention of the next pandemic zoonosis. **The Lancet** 380:1956-1965.
- <u>Karesh WB</u>. (2008) Wildlife health as an indicator of climate change. Institute of Medicine, Global Climate Change and Extreme Weather Events: Understanding the Contributions to Infectious Disease Emergence: Workshop Summary. Washington, DC: **The National Academies Press** 2008:192-213.
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Current and Pending Support (See GPG Section II.D.8 for guidance on information to include on this form.)

information may delay consideration of this proposal.	investigator and other senior pers	onnel. Failure to provide this
	Other agencies (including NSF) to	which this proposal has
Investigator: William Karesh		
	Submission Planned in Near Futur	e ☐ *Transfer of Support
Project/Proposal Title:		
Reducing the Threat from high-risk pathogens causing	g febrile illness in Liberia (current p	roposal)
Source of Support: DTRA		
	ard Period Covered: 01/01/2020-1	2/31/2024
Location of Project: United States, Liberia	ard 1 enou Covered; 0 1/0 1/2020-1	2/3 1/2024
Person-Months Per Year Committed to the	Cal: 1.5 Acad:	Sumr:
	Submission Planned in Near Future	
Project/Proposal Title:	Submission Flanned in Near Futur	e 🔲 Transfer of Support
Understanding the Risk of Bat-Bourne Zoonotic Diseas	se Emergence in Western Asia	
Officerstanding the Mak of Bat-Bourne 200flotte Bisea.	se Emergence in Western Asia	
Source of Support: DTRA		
	ard Period Covered: 10/02/2017-1	0/01/2022
Location of Project: Global		
Person-Months Per Year Committed to the	Cal: 1.56 Acad:	Sumr:
	Submission Planned in Near Future	
Project/Proposal Title:		
Ground Truth Network		
Source of Support: DHS		
	ard Period Covered: 09/30/2016-0	9/29/2021
	ard Period Covered: 09/30/2016-0	9/29/2021
Total Award Amount: \$2,231,114.13 Total Award Amount: \$2,231,114.13 Location of Project: United States Person-Months Per Year Committed to the	Cal: 1.56 Acad:	Sumr:
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Current and Pending Support (See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.	S
Other agencies (including NSF) to which this proposal has	
Investigator: William Karesh	
Support: Current Pending Submission Planned in Near Future *Transfer of Support	t
Project/Proposal Title:	
Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania	
Source of Support: DTRA	
Total Award Amount: \$4,848,483 Total Award Period Covered: 10/01/2019-07/31/2024	
Location of Project: United States, Tanzania	
Person-Months Per Year Committed to the Cal: 1.0 Acad: Sumr:	
Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support	t
Project/Proposal Title:	`
Reducing the threat of Rift Valley Fever through Ecology, Epidemiology and Socio-Economics	
Reducing the threat of Kitt Valley Fever through Ecology, Epiderhology and Socio-Economics	
Course of Current, DTDA	
Source of Support: DTRA	
Total Award Amount: \$4,988,526.00 Total Award Period Covered: 06/01/2019-05/31/2024	
Location of Project: United States, South Africa	
Person-Months Per Year Committed to the Cal: 2.0 Acad: Sumr:	
Support: Current Pending Submission Planned in Near Future *Transfer of Support	t
Project/Proposal Title:	
Understanding filovirus diversity in bat reservoirs and implications for human outbreaks in West Africa	
Source of Support: NIH	
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Total Award Amount: \$7,307,869.00 Total Award Period Covered: 03/01/2020-02/28/25	
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Michael F Garbo

Society for the Conservation of Nature of Liberia, Tubman Blvd, Monrovia, Liberia E-mail: scnlliberia@yahoo.com

Professional Preparation

University of Liberia	General Forestry	B.S.	2008
University of Liberia	Regional Planning	M.S.	2018

Appointments

Executive Director, Society for the Conservation of Nature of Liberia	2011 - present
Project Manager, SCNL, Gola Forest National Park in Liberia	2013 - present
Consultant, Establishment of the Grebo-Krahn National Park, Liberia	2016 - present

Fatorma K. Bolay

National Public Health Institute of Liberia, Congo Town Back Rd., Monrovia, Liberia E- mail: director.libr@gmail.com

Professional Preparation

Cuttington University General Sciences		B.S.	1975	
University of Bridgeport	Parasitology	M.S.	1980	
Johns Hopkins University	Immuno, and Infect. Dis	PhD	1989	

Appointments

ripponitionito	
Director, Public Health & Med. Res., National Public Health Inst. of Liberia	2016 - present
Chairman, National Research Ethics Board	2009 - present
Director, Liberia Institute for Biomedical Research	2006 - 2016
Medical Consultant, WHO Liberia	1997
Member, WHO Expert Committee on Malaria and Trop. Dis. Control	1996
Emergency Health Ops. Coordinator, WHO Liberia	1992 - 1993
Disease Prevention and Control Officer, WHO Country Team, Liberia	1991 - 1996
Deputy Research Coordinator, Liberian Institute for Biomedical Research	1989 - 1991
Chief Medical Entomologist, Liberian Institute for Biomedical Research	1989 - 1991
Scientist, Newborn Screen. Lab, Dept. of Health and Med. Hygiene	1989
Teaching Assistant, Dept of Immuo and Infect. Dis., Johns Hopkins Uni.	1988 - 1989
Medical Entomologist, Liberian Institute for Biomedical Research	1986 - 1987

Publications

Grubaugh ND, Sharma S, Krajacich BJ, Fakoli LS, <u>Bolay FK</u>, Diclaro JW, Johnson WE, Ebel GD, Foy BD, Brackney DE, (2015) Xenosurveillance: A novel mosquito-based approach for examining the human-pathogen landscape **PLoS Neglected Tropica Diseases** 9(3) <u>Bolay FK</u>, Trpis M. Evaluation of Bacillus thuringiensis var isrealensis (Bti) and Tilapia nilotica (fish) against Rice Field Mosquito. **Israel Journal of Entomology Vol XXIII**. 77-82.

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Professional Preparation

Cornell University, USA	Animal Science	B.S.	2001
University of Maryland College Park, USA	Animal Science/Virology	MSc	2005
University of Maryland College Park, USA	Animal Science/Virology	PhD	2008

Appointments

Appointments	
Assistant Research Professor, Georgetown University	2016 - present
Professorial Lecturer, The George Washington University	2014 - 2018
Senior Research Scientist, The George Washington University	2014 - 2016
Adjunct Assistant Professor, Georgetown University	2013 - 2016
Senior Analyst, US Department of State	2013 - 2014
AAAS Science and Technology Policy Fellow, US Department of State	2011 - 2013
Postdoctoral Fellowship, Erasmus Medical Center	2010 - 2011
Postdoctoral Fellowship, University of Maryland College Park	2009 - 2010

- Sorrell EM, El Azhari M, Maswdeh N, Kornblet S, Standley C, Katz R, Ablan I, Fischer JE (2015) Mapping of Networks to Detect Priority Zoonoses in Jordan. Frontiers in Public Health 3:219.
- <u>Sorrell EM</u>, Schrauwen EJA, Linster M, De Graaf M, S. Herfst S, Fouchier RAM. (2011) Predicting "Airborne" Influenza Viruses: (Trans-) mission Impossible? **Current Opinions in Virology** 1(6):635-42.
- <u>Sorrell EM</u>, Song H, Pena L, Perez DR. (2010) A 27-amino-acid deletion in the neuraminidase stalk supports replication of an avian H2N2 influenza A virus in the respiratory tract of chickens. **Journal of Virology** 84(22):11831-40.
- <u>Sorrell EM</u>, Angel MG, Hickman D, Ye J, Pena L, Ramirez-Nieto GC, Kimble B, Araya Y, Perez DR. (2009) Fitness of pandemic H1N1 and seasonal influenza A viruses during co-infection. **PLoS Currents Influenza** 1
- <u>Sorrell EM</u>, Wan H, Array Y, Song H, Perez DR. (2009) Minimal molecular constraints for respiratory droplet transmission of an avian-human H9N2 influenza A virus. **Proceedings of the National Academy of Sciences** 106(18):7565-70.
- Wan H, Sorrell EM, Song H, Hossain MJ, Ramirez-Nieto GC, Monne I, Stevens J, Cattoli G, Capua I, Chen L, Donis RO, Busch J, Paulson JC, Brockwell C, Webby R, Blanco J, Al-Natour MQ, Perez DR. (2008) Replication and transmission of H9N2 influenza viruses in ferrets: Evaluation of pandemic potential. **PLoS ONE** 3(8):e2923.
- <u>Sorrell EM</u>, Perez DR. (2007) Adaptation of influenza A/mallard/potsdam/178-4/83, H2N2 virus in Japanese quail leads to infection and transmission in chickens. **Avian Diseases** 51(S1):264-8.
- <u>Sorrell EM</u>, Ramirez-Nieto G, Gomez-Osorio I, Perez DR. (2007) Genesis of pandemic influenza. **Cytogenetic and Genome Research** 2007;117(1-4):394-402.

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Professional Preparation

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Cuttington University	Biology & Chemistry	B.Ş.	2008
Cuttington University	Public Health	MPH	2010
University of Ibadan	Vet. Pub. Health & Prev. Med.	PhD	Ехр.
Appointments			
Director National Public He	ealth Reference Laboratory		2017 - present
National One Health Techi	nical Advisor Liberia, USAID		2016 - 2017
Consultant, The Ministry of Health, Global Fund Program Coordination Unit			2016
Lab. Senior Tech. Advisor,	Management Sci. for Health, USAID)/Liberia	2016
Consultant, Nat. Leprosy a	ind TB Control Program, Liberia		2016
Consultant, National AIDS	Commission/UNAIDS Liberia		2015
Director, Min. of Health, Di	ag. and Lab. Srvcs, Global Fund Pro	ject, Liberia	2014 - 2016
Quality Manager, Ministry	of Health Diagnostics and Laboratory	/ Services	2009 - 2014
Program Manager, Youth I	Empowerment Services Liberia Inc.		2008 - 2013
Sentinel Site Supervisor D	iagnostic, The Mentor Initiative, PMI/	USAID	2008 - 2009
	_ . T		

Publications

Research Laboratory Technician, Cuttington University

Laboratory Technician, Benson Hospital

The Laboratory Health System and Its Response To The Ebola Virus Disease (EVD) Outbreak In Liberia. Kennedy SB, Wasunna CL, **Dogba JB**, Sahr P, Eastman CB, Bolay FK, Mason GT, Kieh MWS. African Journal of Laboratory Medicine (AJLM). 2016 Oct;5(3):509.

2005 - 2008

2003 - 2004

Pre-Ebola Virus Disease (Evd) Laboratory System & Related Challenges in Liberia. Kennedy SB, **Dogba JB**, Wasunna CL, Sahr P, Eastman CB, Bolay FK, Mason GT, Kieh MWS. African Journal of Laboratory Medicine (AJLM). 2016 Oct;5(3):508.

The rubber plantation environment and Lassa fever epidemics in Liberia, 2008-2012: A spatial regression. Olugasa BO, **Dogba JB**, Nykoi JD, Ogunro BN, Odigie EA,Ojo JF, Taiwo T, Kamara A, Mulbah CK and Fasunla A. Spat Spatiotemporal Epidemiol. 2014;11:163-174.

Mapping of Lassa fever cases in post-conflict Liberia, 2008-2012: A descriptive and categorical analysis of age, gender and seasonal pattern. Olugasa BO, **Dogba JB**. Ann Afr Med. 2015; 14(2):120-122.

Mapping of Mycobacterium tuberculosis cases in post-conflict Liberia, 2008-2012: A descriptive and categorical analysis of age, gender and seasonal pattern. **Dogba JB**, Cadmus SIB, Olugasa BO. Afr J Med Med Sci. 2014; 43(supplement 1):117-124.

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Professional Preparation

Fed. Uni. of Agriculture, Nigeria	Microbiology	B.S.	2010
Fed. Uni. of Agriculture, Nigeria	Med. Microbio & Pub	. Health M.S.	2014

Appointments

Deputy Director, National Public Health Institute of Liberia	2017 - present
Research Scientist, National Public Health Institute of Liberia	2017 - present

- Shobayo BI, Chea SKP, Freeman BM, Mawolo J, *Fallah MP*, Nyenswah, Tolbert. G. (2019).

 Prevalence and Risk Factors of Hepatitis B Infection in Patients (>18) Attended at Seventh-Day Adventist Cooper Hospital, Sinkor, Liberia, Jan. Dec. 2016. **Open Access Library Journal**. In Press
- Olaboopo AO, <u>Shobayo BI</u>, Ogiogwa J, Ojo DA. (2015). Occurrence of Pathogens in Patients with Indwelling Urinary Catheter at Federal Medical Centre, Abeokuta, South-west Nigeria. **Stem cell.** 6(3):6-11.
- Shobayo BI, Ojo DA, Agboola DA. (2015). Antibacterial Activity of Pterocarpus osun on Multi– Drug Resistant (MDR) Escherichia coli from Wound Infections in Abeokuta, South – West Nigeria. Open Access Library Journal. 2:e1434.
- Shobayo BI, Ojo DA, Olaboopo AO, Agboola DA, Omemu AM, Akingbade OA. (2014).

 Antibacterial activity of Moringa oleifera on Multi-drug resistant isolates from wound infections in Abeokuta, South West Nigeria. **New York Science Journal**. 7(12):15-19.
- Akingbade OA, Damola AB, <u>Shobayo BI</u>, Nwanze JC, Okonko IO. (2014). Multi-Drug Resistant (MDR) Escherichia coli among Children Suffering from Diarrhea Infections in Abeokuta, Ogun State. **Researcher**. 6(8):11-17.
- Akingbade OA, Okerentugba PO, Awoderu OB, <u>Shobayo BI</u>. (2014). Prevalence of Samonella sp and Shigella sp among Children with Diarrhoea in Abeokuta, Ogun State, Nigeria. **Academia Arena**. 6(9):13-16.

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Professional Preparation

College of Mount Saint Vincent, NY	Biology	B.S.	1999
Cornell University	Veterinary Medicine	D.V.M.	2007

Appointments

Appointments	
Senior Health and Policy Specialist, EcoHealth Alliance	2016 - present
Principal Investigator, Building Resilience to Biothreats policy initiative (EHA)	2017 - 2019
Co-Director/Senior Advisor, Blue Ribbon Study Panel on Biodefense	2014 - present
Courtesy Lecturer, Cornell University College of Veterinary Medicine	2017 - present
Adjunct Research Scientist, Columbia University Earth Institute NCDP	2016 - present
Principal, Carlin Communications	2011 - 2017
Senior Professional Staff, House Committee on Homeland Security	2007 - 2013
Assistant Editor, Cambridge University Press	1999 - 2002

- Standley C, Carlin EP, Sorrell E, Barry AM, Bile E, Diakite AS, Keita MS, Koivogui L, Mane S, Martel LD, Katz R. (2019) Assessing health systems in Guinea for prevention and control of priority zoonotic diseases: A One Health approach. **One Health**; (7):100093.
- Yu JH, Durrant KL, Lui S, <u>Carlin EP</u>, Wang C, Rodriguez J, Bratthauer A, Walsh T, Valitutto MT, Fine L, Murray S, Fleischer RC. (2019) First report of a novel Hepatozoon sp. identified in giant pandas (*Ailuropoda melanoleuca*). **EcoHealth**
- <u>Carlin EP</u>, Giller N, Katz R. (2016) Estimating the size of the U.S. population at risk of severe adverse events from replicating smallpox vaccine. **Public Health Nursing** 34(3):200-9.
- Babcock SL, Doehne JR, <u>Carlin EP</u>. (2014) Trends in veterinary medical board state disciplinary actions, 2005–2011. **Journal of the American Veterinary Medical Association** 244(12):1397-1402.
- Risks and benefits of tertiary sewage effluent as drinking water for livestock in California. White paper commissioned by WateReuse. Feb 2014. (Editor, co-author)
- Paul M, King L, <u>Carlin EP</u>. (2010) Zoonoses of people and their pets: a US perspective on significant pet-associated parasitic diseases. **Trends in Parasitology** 26(4):153-4.
- Pathogens in rural and agricultural water and watersheds 2010: state of knowledge and future directions. Grant report (USDA NIFA Contract no. 2009-65102-05842);October 2010. (Editor, co-author)
- Bowman DD, Little SE, Lorentzen L, Shields J, Sullivan MP, <u>Carlin EP</u>. (2009) Prevalence and geographic distribution of *Dirofilaria immitis*, *Borrelia burgdorferi*, *Ehrlichia canis*, and *Anaplasma phagocytophilum* in dogs in the United States: Results of a national clinic-based serologic survey. **Veterinary Parasitology** *160*(1-2):138-148.
- <u>Carlin EP</u>, Bowman DD, Scarlett JM, Garret J, Lorentzen L. (2006) Prevalence of *Giardia* in symptomatic dogs and cats throughout the United States as determined by the IDEXX SNAP *Giardia* test. **Veterinary Therapeutics: Research in Applied Veterinary Medicine** *7*(3):199-206.

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Professional Preparation

Salisbury University, MD	Molecular Biology	B.S.	2006
Virginia Tech, VA	Molecular Virology	Ph.D.	2012
USAMRIID, MD	Pathogen Discovery	Postdoc	2015

Appointments

Research Assistant Professor, University Nebraska Medical Center, USAMRIID	2015 - 2018
Assistant Professor, University Nebraska Medical Center, USAMRIID	2018 - 2019
Assistant Professor, University Nebraska Medical Center	2019 - present

- Cai Y, Yú S, Jangra RK, Postnikova EN, Wada J, Tesh RB, Whelan SPJ, Lauck M, <u>Wiley MR</u>, Finch CL, Radoshitzky SR, O'Connor DH, Palacios G, Chandran K, Chiu CY, Kuhn JH. (2019) Human, nonhuman primate, and bat cells are broadly susceptible to Tibrovirus particle cell entry. **Frontiers in Microbiology** 10:856.
- Mbala-Kingebeni P, Pratt CB, <u>Wiley MR</u>, et. al. (2018) Ebola virus disease outbreak in Équateur Province, Democratic Republic of the Congo: A retrospective genomic characterisation. **The Lancet Infectious Diseases** 19(6):641-647.
- Mbala-Kingebeni P, Aziza A, Di Paola N, <u>Wiley MR</u>, et. al. (2019) Medical countermeasures during the 2018 Ebola virus disease outbreak in the North Kivu and Ituri Provinces of the Democratic Republic of the Congo: A rapid genomic assessment. **The Lancet Infectious Diseases** 19(6):648-657.
- Kim WK, No JS, Lee D, Jung J, Park H, Yi Y, Kim JA, Lee SH, Kim Y, Park S, Cho S, Lee GY, Song DH, Gu SH, Park K, Kim HC, <u>Wiley MR</u>, Chain PSG, Jeong ST, Klein TA, Palacios G, Song JW. (2019) Active targeted surveillance to identify sites of emergence of Hantavirus. **Clinical Infectious Diseases**
- Jansen van Vuren P, Ladner JT, Grobbelaar AA, <u>Wiley MR</u>, Lovett S, Allam M, Ismail A, le Roux C, Weyer J, Moolla N, Storm N, Kgaladi J, Sanchez-Lockhart M, Conteh O, Palacios G, Paweska JT. (2019) Phylodynamic analysis of Ebola virus disease transmission in Sierra Leone. **Viruses** 11(1):71.
- Bruhn M, Schindler D, Kemter FS, <u>Wiley MR</u>, Chase K, Koroleva GI, Palacios G, Sozhamannan S, Waldminghaus T. (2018) Functionality of two origins of replication in Vibrio cholerae strains with a single chromosome. **Frontiers in Microbiology** 9:2932.
- Jansen van Vuren P, Allam M, <u>Wiley MR</u>, Ismail A, Storm N, Birkhead M, Markotter W, Palacios G, Paweska JT. (2018) A novel adenovirus isolated from the Egyptian fruit bat in South Africa is closely related to recent isolates from China. **Scientific Reports** 8(1):9584.
- Pawęska JT, Jansen van Vuren P, Kemp A, Storm N, Grobbelaar AA, Wiley MR, Palacios G, Markotter W. (2018) Marburg Virus infection in Egyptian Rousette Bats, South Africa, 2013-2014. **Emerging Infectious Diseases** 24(6):1134-1137.
- Mate SE, Wiley MR, Ladner JT, Dokubo EK, Fakoli L, Fallah M, Nyenswah TG, DiClaro JW, Deboer JT, Williams DE, Bolay F, Palacios G. (2018) Cross-border transmission of Ebola virus was the cause of a resurgent outbreak in Liberia in April 2016. **Clinical Infectious Diseases** 67(7):1147-1149
- Espy N, Pérez-Sautu U, Ramírez de Arellano E, Negredo A, Wiley MR, Bavari S, Díaz Menendez M, Paz Sánchez-Seco M, Palacios G. (2018) Ribavirin has a demonstrable effect on Crimean-Congo Hemorrhagic fever viral populations and viral load during patient treatment. **The Journal of Infectious Diseases**

Catherine C. Machalaba

EcoHealth Alliance, 460 W. 34th St. New York, NY 10001, USA

E-mail: machalaba@ecohealthalliance.org

Professional Preparation

Biology	B.A.	2008
Public Health	M.P.H.	2009
Environ. Health	Ph.D	2014 - present
ance		2018 - present
		2017 - present
oup, American Public Hea	Ith Association	2016 - present
Project Science Officer/IPO Lead, Future Earth oneHEALTH Project		2013 - present
e Health Specialist Group	•	2010 - present
	Public Health Environ. Health ance oup, American Public Hea Future Earth oneHEALTH	Public Health M.P.H. Environ. Health Ph.D ance pup, American Public Health Association

Program Coordinator for Health and Policy, EcoHealth Alliance 2010 - 2017
Fellow, Veterans Engineering Recourse Center, VA Boston Healthcare System 2009 - 2010

Field Agent and Educator, Vermont Department of Health 2005

- Smith KM, <u>Machalaba C</u>, Seifman R, Feferholtz Y, *Karesh WB*. (2019) Infectious disease and economics: The case for considering multisectoral impacts. **One Health** 7:100080.
- Berthe FCJ, Bouley T, *Karesh WB*, Le Gall FG, <u>Machalaba CC</u>, Plante CA, Seifman RM. (2018) Operational framework for strengthening human, animal and environmental public health systems at their interface. Washington, D.C.: World Bank Group.
- <u>Machalaba C</u>, Salerno RH, Barton Behrevesh C, Benigno S, Berthe FCJ, Chungong S, Duale S, Echalar R, *Karesh WB*, Ormel HJ, Pelican K, Rahman M, Rasmuson M, Scribner S, Stratton J, Suryantoro L, Wannous C. (2018) Institutionalizing One Health: From Assessment to Action. Health Security 16(S1):S37-S43.
- Schar D, Yamey G, <u>Machalaba C</u>, <u>Karesh WB</u>. (2018) A framework for stimulating economic investments to prevent emerging diseases. **Bulletin of the World Health Organization** 96(2):138-140.
- Rostal MK, *Ross N*, <u>Machalaba C</u>, Cordel C, Paweska JT, *Karesh WB*. (2018) Benefits of a One Health approach: An example using Rift Valley fever. **One Health** 5:34-36.
- <u>Machalaba C</u>, Smith K, Awada L, Berry K, Berthe F, Bouley TA, Bruce M, Cortiñas Abrahantes J, El Turabi A, Feferholtz Y, Flynn L, Fournié G, *Andre A*, Grace D, Jonas O, Kimani T, Le Gall F, Miranda JJ, Peyre M, Pinto J, *Ross N*, Ruegg S, Salerno RH, Seifman R, Zambrana-Torrelio C, *Karesh WB*. (2017) One Health economics to confront disease threats.
 Transactions of the Royal Society of Tropical Medicine and Hygiene 111(6):235-237.
- Machalaba C, Karesh WB. (2017) Emerging infectious disease risk: Shared drivers with environmental change. **OIE Scientific and Technical Review** 36(2):435-444.
- Baum SE, Machalaba C, Salerno RH, Daszak P, Karesh WB. (2016) Evaluating One Health: Are we demonstrating effectiveness? **One Health** 3:5-10.
- Kelley TR, *Karesh WB*, Kreuder Johnson C, Gilardi KVK, Anthony SJ, Goldstein T, Olson SH, <u>Machalaba C</u>, PREDICT Consortium, Mazet JAK. (2017) One Health proof of concept: Bringing a transdisciplinary approach to surveillance for zoonotic viruses at the human-wild animal interface. **Preventive Veterinary Medicine** 137:112–118.
- Machalaba CC, Elwood SE, Forcella S, Smith KM, Hamilton K, Jebara KB, Swayne DE, Webby RJ, Mumford E, Mazet JAK, Gaidet N, Daszak P, *Karesh WB*. (2015) Global avian influenza surveillance in wild birds: A strategy to capture viral diversity. **Emerging Infectious Diseases** 21(4):e141415.

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Liberia Chimpanzee Rescue and Protection, LIBR, Charlesville, Liberia E-mail: jdesmo01@gmail.com

Professional Preparation

College of the Holy Cross, MA	Chemistry	B.A.	1993
Tufts School of Vet. Med., MA	Biomedical Sciences	M.S.	2008
Tufts School of Vet. Med., MA	Veterinary Medicine	D.V.M.	2008

Appointments

Director, Liberia Chimpanzee Rescue and Protection	2016 - present
Country Coordinator PREDICT Liberia, EcoHealth Alliance	2015 - present
Field Veterinarian, EcoHealth Alliance	2009 - present
Consultant, Smithsonian Institution	2014 - 2016
Consultant, Jane Goodall Institute; Vets without Borders	2011 - 2014

- Ge XY, Yang WH, Pan H, Zhou JH, Han X, Zhu GJ, <u>Desmond JS</u>, Daszak P, Shi ZL, Zhang YZ (2016). Fugong virus, a novel hantavirus harbored by the small oriental vole (*Eothenomys eleusis*) in China. **Virology Journal** 13:27.
- Haider N, Rahman MS, Khan SU, Mikolon A, Osmani MG, Gurley ES, Shanta IS, Paul SK, Macfarlane-Berry L, Islam A, <u>Desmond J</u>, <u>Epstein JH</u>, Priestly RA, Kersh GJ, Rahman MZ, Daszak P, Luby S, Massung RF, Zeidner N. (2015) Serological evidence of Coxiella burnetiid infection in cattle and goats in Bangladesh. **EcoHealth** 12:354-358
- Mazet JAK, Wei Q, Zhao GP, Cummings DAT, <u>Desmond JS</u>, Rosenthal J, King CH, Cao WC, Chmura AA, *Hagan EA*, Zhang SY, Xiao XM, Zu JG, Shi ZL, Feng F, Liu XP, Pan WQ, Zhu GJ, Zuo LY, Daszak P. (2015) Joint China-US call for employing a transdisciplinary approach to emerging infectious diseases. **EcoHealth** 12:555-559.
- Hu B, Chmura AA, Li JL, Zhu GJ, <u>Desmond JS</u>, Zhang YZ, Zhang W, *Epstein JH*, Daszak P, Shi ZL. (2014) Detection of diverse novel astroviruses from small mammals in China. **Journal of General Virology** 95:2442-2449.

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NSF REU Research Intern, University of Akron, Polymer Department

Researcher, Hiram College Cellular and Molecular Lab

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Professional Preparation

Hiram College, OH	Biology, Biomedical Humanities	B.S.	2008
Columbia University, NY	Epidemiology	M.P.H.	2013
Appointments			
Research Scientist, EcoHea	lth Alliance		2016 - present
PREDICT Bangladesh Country Liaison, EcoHealth Alliance		2016 - present	
Research Coordinator, Ecol	Health Alliance		2015 - 2016
Research Assistant, EcoHea	alth Alliance		2013 - 2015
Team Manager, Beth Israel	Deaconess Medical Center		2011 - 2012
Research Assistant, Beth Is	rael Deaconess Medical Center		2008 - 2012
Teaching Assistant, Hiram C	College Organic Chemistry Departme	ent	2007 - 2008

Publications

Wang N, Li S, Yang X, Huang H, Zhang Y, Guo H, Luo C, Miller M, Zhu G, Chmura AA, <u>Hagan</u> <u>E</u>, Zhou J, Zhang Y, Wang L, Daszak P, Shi Z (2018). Serological evidence of bat SARS-related coronavirus infection in humans, China. **Virologica Sinica**, 33(1):104-107.

2007 - 2007

2006 - 2007

- Miller M, <u>Hagan E</u> (2017). Integrated biological–behavioural surveillance in pandemic-threat warning systems. **Bulletin of the World Health Organization** 95(1):62.
- Mazet JAK, Wei Q, Zhao G, Cummings D, *Desmond JA*, Rosenthal J, King CH, Cao, Wuchun, Chmura A, <u>Hagan EA</u>, Zhang S, Xiao X, Xu JA, Zhengli S, Liu X, Pan W, Zhu GA, Zuo L, Daszak P (2015) Joint China–US Call for an Interdisciplinary Approach to Emerging Infectious Diseases. **EcoHealth** 12(50).
- Schmitz JE, Ma ZM, <u>Hagan EA</u>, Wilks AB, Furr KL, Linde CH, Zahn RC, Brenchley JM, Miller CJ, Permar SR (2012) Memory CD4+ Tlymphocytes in the gastrointestinal tract area major reservoir of simian immunodeficiency virus in chronic nonpathogenic infection of African green monkeys. **Journal of Virology** 86(20):11380-5.
- Finstad S, Zhang G, Jin C, Linde C, <u>Hagan EA</u>, de la Rosa M, Zahn RC, Wang X, Reimann K, Gaufin T, Apetrei C, Pandrea I, Miller CJ, McCune J, Picker LJ, Lifson J, Piatak M, Alter G, Veazey RS, Barouch D, Hessell AJ, Burton DR, Nimmerjahn F, Alexander F, Alam SM, Haynes B, Gelman R, Brusic V, Letvin N, Schmitz JE (2010). Effect of Fc gamma-r receptor polymorphisms in rhesus macaques on SIVmac251 setpoint viremia. **AIDS Research and Human Retroviruses** 26(10):A20-A20
- Niewiarowski PH, Lopez S, Ge L, <u>Hagan E</u>, Dhinojwala A (2008) Sticky gecko feet: The role of temperature and humidity. **PLoS ONE** 3(5): e2192

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Professional Preparation

University of Liberia	Biology/Chemistry	B.S.	2001
University of Liberia	Medicine	M.D.	2004
Kent State University, OH	Eval. and Measurement	M.A.	2006
University of Kentucky, KY	Immunology	Ph.D.	2011
Harvard University, MA	Global Health	MPH	2012

Appointments

1 1	
Part-Time Lecturer, Harvard Medical School	2018 - present
Deputy Director General, National Public Health Institute of Liberia	2017 - present
Co-Team Leader- WHO Working Group of Personal Protective Equipment	2017 - present
Visiting Scientist, Harvard Chan School of Public Health	2015 - 2018
Consultant, The Lutheran Malaria Initiative, Synod, Missouri	2013 - 2015
Lead Public Health Consultant, African Development Associates (ADEAS)	2012 - present
Research Intern, MD Division of Global Psychiatry, MA General Hospital	2012 - 2013

Publications

PREVAIL III Study Group, Sneller MC, Reilly C, Badio M, Bishop RJ, Eghrari AO, Moses SJ, Johnson KL, Gayedyu-Dennis D, Hensley LE, Higgs ES, Nath A, Tuznik K, Varughese J, Jensen KS, Dighero-Kemp B, Neaton JD, Lane HC, <u>Fallah MP</u>. (2019) A Longitudinal study of Ebola sequelae in Liberia. **The New England Journal of Medicine** 380(10):924-934.

Richardson ET, <u>Fallah MP</u>. (2019) The genesis of the Ebola virus outbreak in west Africa. **The Lancet Infectious Diseases** 19(4):348-349.

<u>Fallah MP</u>, Skrip LA. (2019) Ebola therapies: An unconventionally calculated risk. **Lancet** 393(10174):850-852.

Kelly JD, Weiser SD, Wilson B, Cooper JB, Glayweon M, Sneller MC, Drew C, Steward WT, Reilly C, Johnson K, <u>Fallah MP</u>. (2019) Ebola virus disease-related stigma among survivors Declined in Liberia over an 18-month, post-outbreak period: An observational cohort study. **PLoS Neglected Tropical Diseases** 13(2):e0007185.

Dokubo EK, Wendland A, Mate SE, Ladner JT, Hamblion EL, Raftery P, Blackley DJ... <u>Fallah MP</u>. (2018) Persistence of Ebola virus after the end of widespread transmission in Liberia: An outbreak report. **The Lancet Infectious Diseases** (9):1015-1024.

<u>Fallah MP</u>, Skrip LA, Enders J. (2018) Preventing rural to urban spread of Ebola: Lessons from Liberia. **The Lancet** 392(10144):279-280.

<u>Fallah MP</u>, Skrip LA, Raftery P, Kullie M, Borbor W, Laney AS, et al. (2017) Bolstering Community cooperation in Ebola resurgence protocols: Combining field blood draw and point-of-care diagnosis. **PLoS Medicine** 14(1):e1002227.

Moon S, Sridhar D, Pate MA, Jha AK, Clinton C, Delaunay S, Edwin V, Fallah M, Fidler DP, Garrett L, Goosby E, Gostin LO, Heymann DL, Lee K, Leung GM, Morrison S, Saavedra J, Tanner M, Leigh JA, Hawkins B, Woskie LR, Piot P. (2015). Will Ebola change the game? Ten essential reforms before the next pandemic. The report of the Harvard-LSHTM Independent Panel on the Global Response to Ebola. Lancet 386(10009):2204-2221.

Wolfe CM, Hamblion EL, Schulte J, Williams P, Koryon A, Enders J, Sanor V, Wapoe Y, Kwayon D, Blackey D, Laney AS, Weston EJ, Dokubo EK, Davies-Wayne G, Wendland A, Daw VTS, Badini M, Clement P, Mahmoud N, Williams D, Gasasira A, Nyenswah TG, Fallah M. (2017) Ebola virus disease contact tracing activities, lessons learned and best practices during the Duport Road outbreak in Monrovia, Liberia, November 2015. PLOS Neglected Tropical Diseases. 11(6):e0005597.

Jonathan H. Epstein

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E-mail: epstein@ecohealthalliance.org

Professional Preparation

Brandeis University, MA	Biology	B.A.	1996
Tufts University Sch. Vet. Med., MA	Wildlife Med.	D.V.M.	2002
Tufts University Sch. Vet. Med., MA	Zoonotic Diseases	Cert.	2002
Tufts University Sch. Vet. Med., MA	Epidemiology	MPH	2002
Kingston University, UK	Disease Ecology	Ph.D.	2017

Appointments

Extern, Div. of Viral and Ricksettsial Diseases, CDC	2002
Senior Research Scientist, EcoHealth Alliance	2003 - 2009
Adjunct Clinical Associate, Tufts University Cummings School of Vet. Med.	2003 - present
Laboratory Research Fellow (External), Center for Infection and Immunity	2006 - 2011
Associate Vice President, Conservation Medicine Program, EcoHealth Alliance	2009 - 2016
Executive Director, Consortium for Conservation Medicine, EcoHealth Alliance	2009 - 2016
Adj. Associate Professor, Columbia University Mailman School of Public Health	2016 - present
Vice President for Science and Outreach, EcoHealth Alliance	2016 - present

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Claire J Standley

Center for Global Health Science & Security, Georgetown University, Washington DC, USA E-mail: Claire.standley@georgetown.edu

Professional Preparation

University of Cambridge, UK	Zoology	B.A.	2006
University of Oxford, UK Biodiversity	, Conservation, Management	MSc	2007
University of Nottingham, UK	Genetics	PhD	2011

Appointments

Assistant Research Professor, Georgetown University	2016 - present
Professorial Lecturer, The George Washington University	2014 - present
Senior Research Scientist, The George Washington University	2014 - 2016
AAAS Science and Technology Policy Fellow, US Dept. of State	2012 - 2014
Postdoctoral Research Associate, Princeton University	2010 - 2012

- Katz R, <u>Standley CJ</u>. (2019) Regional approaches for enhancing global health security. **BMC Public Health**, 19(3):473.
- <u>Standley CJ</u>, Muhayangabo R, Bah MS, Barry AM, Bile E, Fischer JE, Heegaard W, Koivogui L, Lakiss SK, *Sorrell EM*, VanSteelandt A, Dahourou AG, Martel LD (2019) Creating a national specimen referral system in Guinea: Lessons from initial development and implementation. **Frontiers in Public Health** 7:83.
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Noam Ross

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E-mail: ross@ecohealthalliance.org

Professional Preparation

Brown University	Environmental Science	B.S.	2006
University of California-Davis	Ecology	Ph.D.	2015
Appointments			
Senior Research Scientist Ecologi	st, EcoHealth Alliance		2016 - present
Disease Ecologist, EcoHealth Allia	ance		2015 - 2016
Graduate Researcher, University of	of California-Davis		2010 - 2015
Senior Analyst, Environmental Stra	ategy and Markets, GreenOrd	ler	2007 - 2009
Analyst, Environmental Strategy a	nd Markets, GreenOrder		2006 - 2007
Contract Researcher: Energy Effic		/lart	2006

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- Boettiger C*, Ross N*, Hastings A. (2013) Early warning signals: The charted and uncharted territories. **Theoretical Ecology** 6(3):255-64. (*Co-equal authors)

Anne Laudisoit

EcoHealth Alliance, 460 W. 34th St. New York, NY 10001

E-mail: laudisoit@ecohealthalliance.org

Professional Preparation

University of Liege, Belgium	Biological Sciences	Ms.C	2001
University of Liege, Belgium	Parasitology	D.E.A	2003
University of Antwerp and Liege	Plague Epidemiology	Ph.D.	2009

Appointments

Senior Scientist, EcoHealth Alliance, New York, United States	2017 - present
Postdoctoral Research Associate, Global Health Institute, CIFOR	2014 - 2016
Volunteer biologist, Marine Mangrove Park, DRCongo	2015 - present
Post-Doctoral Fellow, University of Liverpool, United Kingdom	2010 - 2013
Post-Doctoral Fellow, Veterinary and Agrochemical Research Center, Belgium	2009 - 2010

- Deom JM., Sala R., <u>Laudisoit A.</u> (2019) **The Ili River Delta: Holocene Hydrogeological Evolution and Human Colonization.** *In: Yang L., Bork HR., Fang X., Mischke S. (eds)* Socio-Environmental Dynamics along the Historical Silk Road. Springer, Cham. P67-94.
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Current and Pending Support (See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personne information may delay consideration of this proposal.	el. Failure to provide this		
Other agencies (including NSF) to which this proposal has			
Investigator: Catherine C. Machalaba			
Support:	☐ *Transfer of Support		
Project/Proposal Title:			
Reducing the threat of Rift Valley Fever through Ecology, Epidemiology and Socio-Economic	cs control of the con		
Source of Support: DTRA			
Total Award Amount: \$4,912,818.06 Total Award Period Covered: 01/01/2020-12/31	/2024		
Location of Project: New York, NY, USA and South Africa			
Person-Months Per Year Committed to the Cal: 2.0 Acad:	Sumr:		
Support:			
Project/Proposal Title:			
Source of Support: Belmont Forum/NOAA			
Total Award Amount: \$1,300,000.00 Total Award Period Covered: 1/01/20 – 12/31/2	2		
Location of Project: New York, NY, USA			
Person-Months Per Year Committed to the Cal: 1.0 Acad:	Sumr:		
Support:			
Project/Proposal Title:			
Emerging Pandemic Threats PREDICT-2			
Source of Support: USAID			
Total Award Amount: \$100,000,000.00 Total Award Period Covered: 10/1/2014-9/30/19	9		
Location of Project: Global			
Person-Months Per Year Committed to the Cal: 3.5 Acad:	Sumr:		
Support:	☐ *Transfer of Support		
Project/Proposal Title:			
READY			
Source of Support: USAID			
Total Award Amount: \$143,605 Total Award Period Covered: 09/25/2018 – 09/3	30/2021		
Location of Project: New York, NY, USA	30,2021		
Person-Months Per Year Committed to the Cal: 1.0 Acad:	Sumr:		
Support: Current Pending Submission Planned in Near Future	*Transfer of Support		
Project/Proposal Title:			
Source of Support:			
Total Award Amount: Total Award Period Covered:			
Location of Project:			
Person-Months Per Year Committed to the Cal: Acad:	Sumr:		
*If this project has previously been funded by another agency, please list and furnish information	ation for immediately pre-		
ceding funding period.			

Current and Pending Support (See GPG Section II.D.8 for guidance on information to include on this form.)

		•	el. Failure to provide this
information may delay consideration of this proposal.	Other agencies (includi	ng NSF) to whi	ch this proposal has
Investigator: Claire Standley	, ,		, ,
Support: ☐ Current ☐ Pending ☐	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title:			
Reducing the Threat from high-risk pathogens causing	ig febrile illness in Liberia	a (current propo	osal)
Source of Support: DTRA			
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• • •	ward Period Covered: 01	10112020-12131	12024
Location of Project: Liberia Person-Months Per Year Committed to the	Cal: 1.2	Acad:	Sumr:
Support: ☐ Current ☐ Pending ☐ Project/Proposal Title:	Submission Planned in	ivear Future	☐ *Transfer of Support
Strengthening Health Security Systems in Libya: Adv	ancing Laboratory Bioris	k Assessments	and Implementing Vali-
dated Waste Management Systems in Libya's Public	Health and Veterinary L	aboratories	
Source of Support: U.S. Department of State			
	vard Period Covered: 12	/18/2017-12/31	-2019
Location of Project: Jordan/Libya	.		
Person-Months Per Year Committed to the	Cal: 1.5	Acad:	Sumr:
Project.			
Support:	Submission Planned in	Near Future	
Project/Proposal Title:	arre leatitutione Handlin	a Lliah Canaan	ususa Dathawana in Ma
Developing Laboratory Risk Assessment Tools to Se rocco	cure institutions Handlin	g High Conseq	uence Patnogens in Mo-
Source of Support: U.S. Department of State			
Total Award Amount: \$136,066 Total A	vard Period Covered: 12	/01/2018-12/31	/2019
Location of Project: Morocco			
Ecoaution of Project. Microcod			
Person-Months Per Year Committed to the	Cal: 2.4	Acad:	Sumr:
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	sion Planned in		
Project/Proposal Title: Community and Hospital Event Based	Surveillance To	ools for CDC	
Source of Support: CDC			
Total Award Amount: \$55,550 Total Award Peri	ad Cayarad: 31	1/2010 00/30	12010
Location of Project: USA	ou covereu. Si	1/2019 - 09/30/	2019
Person-Months Per Year Committed to the	Cal: 0.7	Acad:	Sumr:
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Project/Proposal Title:	non r lannea in	rical ratare	
One Health Next Generation Source of Support: USAID			
Total Award Amount: 998,571 Total Award Per	od Covered: 10)/01/2019 — 9/3	0/2024
Location of Project: Multiple (South-east Asia and Africa)			
Person-Months Per Year Committed to the	Cal: 1.8	Acad:	Sumr:
Project.	. 5		
Support:	sion Planned in	Near Future	
Creating Tools and Building Capacity for Global Implementation	on of the Interna	ational Health F	Regulations (IHR 2005)
Source of Support: Defense Threat Reduction Agency, US De	epartment of De	efense	
Total Award Amount: \$591,102 Total Award Per	od Covered: 09	9/30/2016-09/30)/2019
Location of Project: Middle East			
Person-Months Per Year Committed to the	Cal: 1.8	Acad:	Sumr:
Project.			
	sion Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title:			
Source of Support:			
Total Award Amount: Total Award Peri	od Covered:		
Location of Project:			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
*If this project has previously been funded by another agency	please list and	furnish informa	ation for immediately pre-
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USE ADDITIONAL SHEETS AS NECESSARY



Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for eac information may delay consideration of this proposal.		senior personn	el. Failure to provide this
mormator may delay consideration of this proposal.	Other agencies (includ	ling NSF) to wh	ich this proposal has
Investigator: Emily Hagan)	,	, ,
Support: Current Pending	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title:			
Reducing the Threat from high-risk pathogens causing	ng febrile illness in Liberi	a (current prop	osal)
Source of Support: DTRA			
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Location of Project: United States, Liberia	Cal. 4.0	A a a al.	S
Person-Months Per Year Committed to the	Cal: 4.0	Acad:	Sumr:
Support:	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title:			
Emerging Pandemic Threats PREDICT-2			
Source of Support: USAID			
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Location of Project: Global	waru r enou covereu. n	5/ 1/2014-5/00/2	.010
Person-Months Per Year Committed to the	Cal: 12	Acad:	Sumr:
Support: Current Pending	Submission Planned in		*Transfer of Support
Project/Proposal Title:			
Understanding filovirus diversity in bat reservoirs and	d implications for human	outbreaks in W	/est Africa
,	•		
Source of Support: NIH			
Total Award Amount: \$7,307,869.00 Total A	ward Period Covered: 03	3/01/2020-02/28	3/25
Location of Project: Global			
Person-Months Per Year Committed to the	Cal: 2.0	Acad:	Sumr:
Support:	Submission Planned in	Near Future	*Transfer of Support
Project/Proposal Title:			
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*If this project has previously been funded by anothe	r agency, please list and	d furnish informa	ation for immediately pre-
ceding funding period.			

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USE ADDITIONAL SHEETS AS NECESSARY



Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.			
Investigator: Michael Wiley	Other agencies (includi	ing NSF) to wh	ich this proposal has
Support:	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title:			^
Reducing the Threat from high-risk pathogen	s causing febrile illness in Liberia	a (current prop	osal)
Source of Support: DTRA			
Total Award Amount: \$4,912,818.06	Total Award Period Covered: 01	/01/2020-12/31	1/2024
Location of Project: United States, Liberia			
Person-Months Per Year Committed to the	Cal: 1.2	Acad:	Sumr:
Support:	oxtimes Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title:			
Next Generation Sequencing Capacity Buildi	ng in Liberia Focused on Viral H	emorrhagic Fe	ver Biopreparedness
Source of Support: DTRA			
Total Award Amount: \$2,250,000.00	Total Award Period Covered: 01	/01/2020-12/3	1/2025
Location of Project: Liberia			
Person-Months Per Year Committed to the	Cal: 3.5	Acad:	Sumr:
Support:	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title:			
Source of Support:			
Total Award Amount:	Total Award Period Covered:		
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Project/Proposal Title:			
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Location of Project:			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
Support:	☐ Submission Planned in	Near Future	☐ *Transfer of Support
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*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

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Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

formation may delay consideration of this proposal.
Other agencies (including NSF) to which this proposal has
vestigator: Jonathan Epstein
upport: Current Pending Submission Planned in Near Future *Transfer of Support roject/Proposal Title:
educing the Threat from high-risk pathogens causing febrile illness in Liberia (current proposal)
TO THE DEPARTMENT OF THE PARTMENT OF THE PARTM
ource of Support: DTRA otal Award Amount: \$4,912,818.06 Total Award Period Covered: 01/01/2020-12/31/2024
ocation of Project: Liberia
erson-Months Per Year Committed to the Cal: 1.0 Acad: Sumr:
upport: Current Pending Submission Planned in Near Future *Transfer of Support
roject/Proposal Title:
iosurveillance for henipaviruses and filoviruses in hunting communities and on farms in Peninsular Malaysia
ource of Support: DTRA CBEP
otal Award Amount: \$4,065,665.38 Total Award Period Covered: 05/1/2017-04/30/2020
ocation of Project: United States, Malaysia
erson-Months Per Year Committed to the Cal: 3.72 Acad: Sumr:
upport: Current Pending Submission Planned in Near Future *Transfer of Support
roject/Proposal Title:
coHealthNet 2.0: A One health approach to disease ecology research & education
ource of Support: NSF
ource or support. Nor
otal Award Amount: \$499,897,00 Total Award Pariod Covered: 09/01/2016-08/31/2021
otal Award Amount: \$499,897.00 Total Award Period Covered: 09/01/2016-08/31/2021
ocation of Project: United States
ocation of Project: United States erson-Months Per Year Committed to the Cal: 0.72 Acad: Sumr:
ocation of Project: United States
erson-Months Per Year Committed to the Cal: 0.72 Acad: Sumr: upport: Current Pending Submission Planned in Near Future **Transfer of Support**
ocation of Project: United States erson-Months Per Year Committed to the Cal: 0.72 Acad: Sumr: upport: Current Pending Submission Planned in Near Future *Transfer of Support roject/Proposal Title: merging Pandemic Threats PREDICT-2
ocation of Project: United States erson-Months Per Year Committed to the Cal: 0.72 Acad: Sumr: upport: Current Pending Submission Planned in Near Future *Transfer of Support roject/Proposal Title: merging Pandemic Threats PREDICT-2 ource of Support: USAID
ocation of Project: United States erson-Months Per Year Committed to the Cal: 0.72 Acad: Sumr: upport:
ocation of Project: United States erson-Months Per Year Committed to the Cal: 0.72 Acad: Sumr: upport:
coation of Project: United States erson-Months Per Year Committed to the Cal: 0.72 Acad: Sumr: upport:
cocation of Project: United States erson-Months Per Year Committed to the Cal: 0.72 Acad: Sumr: upport:
coation of Project: United States erson-Months Per Year Committed to the Cal: 0.72 Acad: Sumr: upport:
cocation of Project: United States erson-Months Per Year Committed to the
cocation of Project: United States erson-Months Per Year Committed to the
cocation of Project: United States erson-Months Per Year Committed to the
cocation of Project: United States erson-Months Per Year Committed to the upport: Current Pending Submission Planned in Near Future *Transfer of Support roject/Proposal Title: merging Pandemic Threats PREDICT-2 ource of Support: USAID otal Award Amount: \$100,000,000.00 Total Award Period Covered: 10/1/2014-9/30/2019 ocation of Project: Global erson-Months Per Year Committed to the Cal: 1.56 Acad: Sumr: upport: Current Pending Submission Planned in Near Future *Transfer of Support roject/Proposal Title: Inderstanding the Risk of Bat-Bourne Zoonotic Disease Emergence in Western Asia ource of Support: DTRA otal Award Amount: \$4,391,443.65 Total Award Period Covered: 10/2/2017-10/1/2022

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

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The following information should be provided for each information may delay consideration of this proposal.	n investigator and other	senior personne	el. Failure to provide this
mornial data of the proposal.	Other agencies (includi	ing NSE) to whi	ich this proposal has
Investigator: Jonathan Epstein	Canon agorroros (monas.		
Support: Current Pending	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title:			
Understanding filovirus diversity in bat reservoirs and	implications for human	outbreaks in W	est Africa
Source of Support: NIH			
Total Award Amount: \$7,307,869.00 Total Av	ward Period Covered: 03	/01/2020-02/28	3/2025
Location of Project: Global			
Person-Months Per Year Committed to the	Cal: 2.0	Acad:	Sumr:
Support:	Submission Planned in	Near Future	
Project/Proposal Title:			
Source of Support:			
	ward Period Covered:		
Location of Project:			
Person-Months Per Year Committed to the	Cal: 2.0	Acad:	Sumr:
Support:	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title:			
Source of Support:			
Total Award Amount: Total Av	ward Period Covered:		
Location of Project:			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
Support:	Submission Planned in		☐ *Transfer of Support
Project/Proposal Title:			
Trojoozi roposta rido.			
Source of Support:			
• •	ward Period Covered:		
	ward Period Covered:		
Location of Project:			_
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
Support:	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title:			
Source of Support:			
Total Award Amount: Total Av	ward Period Covered:		
Location of Project:			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
*If this project has previously been funded by another		furnish informa	
ceding funding period.			, ·

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each information may delay consideration of this proposal.		nel. Failure to provide this
Investigator: Ellen Carlin	Other agencies (including NSF) to wh	nich this proposal has
Support: ☐ Current ☐ Pending ☐ Project/Proposal Title:	Submission Planned in Near Future	☐ *Transfer of Support
Reducing the Threat from high-risk pathogens causing	ng febrile illness in Liberia (current prop	oosal)
Source of Support: DTRA		
Total Award Amount: \$4,912,818.06 Total Av Location of Project: Liberia	ward Period Covered: 01/01/2020-12/3	1/2024
Person-Months Per Year Committed to the	Cal: 6.0 Acad:	Sumr:
Support: Current Pending Project/Proposal Title: Emerging Pandemic Threats PREDICT-2	Submission Planned in Near Future	☐ *Transfer of Support
Source of Support: USAID	ward Period Covered: 10/1/2014-9/30/2	2019
Person-Months Per Year Committed to the	Cal: 6.0 Acad:	Sumr:
Support:	Submission Planned in Near Future	□ *Transfer of Support
Potential	g	,practitio ot r arractitio
Source of Support: USAID		
Total Award Amount: \$143,605 Total Av	ward Period Covered: 09/25/2018-09/3	0-2021
Total Award Amount: \$143,605 Total Av Location of Project:		
Total Award Amount: \$143,605 Total Av	ward Period Covered: 09/25/2018-09/3 Cal: 2.0 Acad: Submission Planned in Near Future	0-2021 Sumr: *Transfer of Support
Total Award Amount: \$143,605 Total Avacation of Project: Person-Months Per Year Committed to the Support: Current Pending Project/Proposal Title: Ground Truth Network Source of Support: DHS	Cal: 2.0 Acad:	Sumr:
Total Award Amount: \$143,605 Location of Project: Person-Months Per Year Committed to the Support:	Cal: 2.0 Acad: Submission Planned in Near Future	Sumr:
Total Award Amount: \$143,605 Total Avacation of Project: Person-Months Per Year Committed to the Support: Current Pending Project/Proposal Title: Ground Truth Network Source of Support: DHS Total Award Amount: \$2,231,114.13 Total Avacation of Project: United States Person-Months Per Year Committed to the	Cal: 2.0 Acad: Submission Planned in Near Future ward Period Covered: 9/30/2016-9/29/2 Cal: 2.0 Acad:	Sumr: *Transfer of Support
Total Award Amount: \$143,605 Location of Project: Person-Months Per Year Committed to the Support:	Cal: 2.0 Acad: Submission Planned in Near Future ward Period Covered: 9/30/2016-9/29/2	Sumr:
Total Award Amount: \$143,605 Total Avacation of Project: Person-Months Per Year Committed to the Support: Current Pending Project/Proposal Title: Ground Truth Network Source of Support: DHS Total Award Amount: \$2,231,114.13 Total Avacation of Project: United States Person-Months Per Year Committed to the Support: Current Pending Project/Proposal Title:	Cal: 2.0 Acad: Submission Planned in Near Future ward Period Covered: 9/30/2016-9/29/2 Cal: 2.0 Acad:	Sumr: *Transfer of Support
Total Award Amount: \$143,605 Total Avacation of Project: Person-Months Per Year Committed to the Support: Current Pending Project/Proposal Title: Ground Truth Network Source of Support: DHS Total Award Amount: \$2,231,114.13 Total Avacation of Project: United States Person-Months Per Year Committed to the Support: Current Pending Project/Proposal Title: Source of Support:	Cal: 2.0 Acad: Submission Planned in Near Future ward Period Covered: 9/30/2016-9/29/2 Cal: 2.0 Acad:	Sumr: *Transfer of Support
Total Award Amount: \$143,605 Location of Project: Person-Months Per Year Committed to the Support: Current Pending Project/Proposal Title: Ground Truth Network Source of Support: DHS Total Award Amount: \$2,231,114.13 Location of Project: United States Person-Months Per Year Committed to the Support: Current Pending Project/Proposal Title: Source of Support: Total Award Amount: To	Cal: 2.0 Acad: Submission Planned in Near Future ward Period Covered: 9/30/2016-9/29/2 Cal: 2.0 Acad: Submission Planned in Near Future ward Period Covered:	Sumr: *Transfer of Support 2021 Sumr: *Transfer of Support
Total Award Amount: \$143,605 Location of Project: Person-Months Per Year Committed to the Support: Current Pending Project/Proposal Title: Ground Truth Network Source of Support: DHS Total Award Amount: \$2,231,114.13 Location of Project: United States Person-Months Per Year Committed to the Support: Current Pending Project/Proposal Title: Source of Support: Total Award Amount: Total Avard Award Amount:	Cal: 2.0 Acad: Submission Planned in Near Future ward Period Covered: 9/30/2016-9/29/2 Cal: 2.0 Acad: Submission Planned in Near Future ward Period Covered: Cal: Acad:	Sumr: *Transfer of Support

NSF Form 1239 (10/99)



Current and Pending Support (See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.
Other agencies (including NSF) to which this proposal has Investigator: Noam Ross
Support:
Source of Support: DTRA Total Award Amount: \$4,912,818.06 Total Award Period Covered: 01/01/2020-12/31/2024
Location of Project: United States, Liberia
Person-Months Per Year Committed to the Cal: 0.6 Acad: Sumr:
Support:
Understanding the Risk of Bat Coronavirus Emergence
Source of Support: NIAID Total Award Amount: \$3,086,735 Total Award Period Covered: 6/01/2014-05/31/2019
Location of Project: Global
Person-Months Per Year Committed to the Cal: 1.0 Acad: Sumr:
Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:
Emerging Pandemic Threats PREDICT-2
Source of Support: USAID
Total Award Amount: \$100,000,000 Total Award Period Covered: 10/1/2014-9/30/2019
Location of Project: Global
Person-Months Per Year Committed to the Cal: 1.0 Acad: Sumr:
Support:
Project/Proposal Title:
Understanding Rift Valley Fever in Republic of South Africa
Source of Support: DTRA
Total Award Amount: \$4,936,359 Total Award Period Covered: 5/17/2014-5/16/2019
Location of Project: United States, South Africa
Person-Months Per Year Committed to the Cal: 1.0 Acad: Sumr:
Support:
Project/Proposal Title:
Expanding Software Peer Review
Source of Support: Sloan Foundation
Total Award Amount: \$300,000 Total Award Period Covered: 09/01/2019-08/31/2021
Location of Project: United States
Person-Months Per Year Committed to the Cal: 3.0 Acad: Sumr:
*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.
country remaining portions

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each information may delay consideration of this proposal.		onnel. Failure to provide this	
information may delay consideration of this proposal.	Other agencies (including NSF) to	which this proposal has	
Investigator:	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	The second secon	
Support:	Submission Planned in Near Futur	e	
Project/Proposal Title:			
Drivers of Nipah virus spillover across Bangladesh			
O (O (ANAID			
Source of Support: NIAID			
· · · · /	ward Period Covered: 06/1/2019-12	2/31/2023	
Location of Project: United States, Bangladesh		_	
Person-Months Per Year Committed to the	Cal: 2.0 Acad:	Sumr:	
	Submission Planned in Near Futur	e 🔲 *Transfer of Support	
Project/Proposal Title:			
Reducing the Threat of Rift Valley Fever through Eco	ology, Epidemiology and Socio-Eco	nomics	
Communication of the Communica			
Source of Support: DTRA		4.4400.4	
	ward Period Covered: 6/1/2019-5/3	1/1024	
Location of Project: United States, South Africa	0-1-4-0	0	
Person-Months Per Year Committed to the Support: ☐ Current ☒ Pending ☐	Cal: 1.0 Acad: Submission Planned in Near Futur	Sumr:	
Support:	Submission Flanned in Near Futur	re	
REPEL: Rapid Evaluation of Pathogens to prevent E	nidomics in Livestock		
NEFEE. Naplu Evaluation of Fathogens to prevent E	pidernics in Livestock		
Source of Support: DHS S&T			
	ward Period Covered: 8/01/2019- 0	7/31/2021	
Location of Project: United States			
Person-Months Per Year Committed to the	Cal: 3.0 Acad:	Sumr:	
	Submission Planned in Near Futur	.	
Project/Proposal Title:		.,	
Understanding filovirus diversity in bat reservoirs and implications for human outbreaks in West Africa			
Source of Support: NIH			
Total Award Amount: \$7,307,869.00 Total Av	ward Period Covered: 03/01/2020-0	02/28/2025	
Location of Project: Global			
Person-Months Per Year Committed to the	Cal: 2.0 Acad:	Sumr:	
Support:	Submission Planned in Near Futur	e 🔲 *Transfer of Support	
Project/Proposal Title:			
Sauras of Currents			
Source of Support:	would Barried Covered		
	ward Period Covered:		
Location of Project:	Col: Anad	Sumr	
Person-Months Per Year Committed to the *If this project has previously been funded by another	Cal: Acad:	Sumr:	
ceding funding period.	agency, piease list and furnish little	ormation for infinediately pre-	

NSF Form 1239 (10/99)



Current and Pending Support
(See GPG Section II.D.8 for guidance on information to include on this form.)

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The following information should be provided for eac information may delay consideration of this proposal.		senior personne	el. Failure to provide this
Investigator: Mosoka Fallah	Other agencies (includi	ng NSF) to whi	ch this proposal has
Support: ☐ Current ☐ Pending ☐ Project/Proposal Title:	Submission Planned in	Near Future	☐ *Transfer of Support
Reducing the Threat from high-risk pathogens causing	ng febrile illness in Liberia	a (current propo	osal)
Source of Support: DTRA			
Total Award Amount: \$4,912,818.06 Total Av Location of Project: United States, Liberia	ward Period Covered: 01	I/01/2020-12/3 ⁻	1/2024
Person-Months Per Year Committed to the	Cal: 0.6	Acad:	Sumr:
Support:	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title: Partnership for Research on	Ebola Virus (PREVAIL) I	II	.,
Source of Support: NIH/NIAID			
· · · · ·	ward Period Covered: 04	1/30/2015-5/31/	2025
Location of Project: Liberia			
Person-Months Per Year Committed to the	Cal:10.0	Acad:	Sumr:
Support: ☐ Current ☐ Pending ☐	Submission Planned in	Near Future	
Project/Proposal Title:	limatiana farkumana		ant Africa
Understanding filovirus diversity in bat reservoirs and	i implications for numan	outbreaks in w	est Amca
Source of Support: NIH			
• •	ward Period Covered: 03	3/01/2020-02/28	3/25
Location of Project: Global			
Person-Months Per Year Committed to the	Cal: 2.0	Acad:	Sumr:
Support: Current Pending	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title:			
Source of Support:			
	ward Period Covered:		
Location of Project:	•		•
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
Support:	Submission Planned in	Near Future	☐ *Transfer of Support
Froject/Froposal Title.			
Source of Support:			
	ward Period Covered:		
Location of Project:			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
*If this project has previously been funded by anothe	r agency, please list and	furnish informa	ition for immediately pre-
cedina fundina period.	• • •		

NSF Form 1239 (10/99)



(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.			
information may delay sonsideration or this p	Other agencies (includi	ina NSF) to whi	ch this proposal has
Investigator: John Dogba		,	
Support:	☐ Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title:			
Reducing the Threat from high-risk pathoger	ns causing febrile illness in Liberi	a (current propo	osal)
Source of Support: DTRA			
Total Award Amount: \$4,912,818.06	Total Award Period Covered: 01	/01/2020 — 12/3	31/2024
Location of Project: Liberia			
Person-Months Per Year Committed to the	Cal: 1.5	Acad:	Sumr:
Support:	☐ Submission Planned in	Near Future	☐ *Transfer of Support
Source of Support: United States Center for			
Total Award Amount: \$900,000.00	Total Award Period Covered: 01	/01/2019 – 12/3	31/2021
Location of Project: Liberia			
Person-Months Per Year Committed to the	Cal: 12.0	Acad:	Sumr:
Support:	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title:			
Source of Support:			
Total Award Amount:	Total Award Period Covered:		
Location of Project:			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
Support:	☐ Submission Planned in	Near Future	
Project/Proposal Title:			
Source of Support:			
Total Award Amount:	Total Award Period Covered:		
Location of Project:			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
Support: Current Pending			
Project/Proposal Title:			
-			
Source of Support:			
Total Award Amount:	Total Award Period Covered:		
Location of Project:			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
*If this project has previously been funded b	· · · · · · · · · · · · · · · · · · ·		
ceding funding period.	, <u> </u>		

NSF Form 1239 (10/99)



Current and Pending Support (See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each in information may delay consideration of this proposal.	vestigator and other	senior personn	el. Failure to provide this
0	ther agencies (includ	ding NSF) to wh	ich this proposal has
Investigator: Anne Laudisoit			
Support:	bmission Planned in	Near Future	☐ *Transfer of Support
Reducing the Threat from high-risk pathogens causing f	ebrile illness in Liber	ia (current propo	osal)
Source of Support: DTRA			
Total Award Amount: \$4,912,818.06 Total Awar	d Period Covered: 0	1/01/2020-12/31	/2024
Location of Project: United States, Liberia			
Person-Months Per Year Committed to the	Cal: 1.2	Acad:	Sumr:
Support: ☐ Current ☐ Pending ☐ Su Project/Proposal Title:	bmission Planned in	Near Future	☐ *Transfer of Support
Emerging Pandemic Threats PREDICT 2 Source of Support: USAID			
` ,	d Period Covered: 1	0/01/2014-09/3	0/2019
Location of Project: Global	a i onoa covorca. I	0,01,201,00,0	0/2010
Person-Months Per Year Committed to the	Cal: 8.0	Acad:	Sumr:
	bmission Planned in		*Transfer of Support
Project/Proposal Title:			
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Source of Support:			
Total Award Amount: Total Awar	d Period Covered:		
Location of Project: Global			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
Support:	bmission Planned in	Near Future	
Project/Proposal Title:			
Source of Support:			
Total Award Amount: Total Awar	d Period Covered:		
Location of Project:			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
Support: Current Pending Su	bmission Planned in	Near Future	
Project/Proposal Title:			
Source of Support:			
	d Period Covered:		
Location of Project:			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
*If this project has previously been funded by another according funding period	gency, please list and	d turnish informa	ation for immediately pre-
ceding funding period.			

NSF Form 1239 (10/99)



Current and Pending Support (See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for eac information may delay consideration of this proposal.		senior personne	el. Failure to provide this
The manufacture of the proposed	Other agencies (includi	ing NSF) to whi	ch this proposal has
Investigator: Michael Garbo			
Support: Current Pending	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title:			
Reducing the Threat from high-risk pathogens causing	ng febrile illness in Liberia	a (current propo	osal)
Source of Support: DTRA			
• • • • • • • • • • • • • • • • • • • •	ward Period Covered: 01	/01/2020-12/31	/2024
Location of Project: Liberia			
Person-Months Per Year Committed to the	Cal: 0.6	Acad:	Sumr:
Support: ☐ Current ☐ Pending ☐ Project/Proposal Title:	Submission Planned in	Near Future	☐ *Transfer of Support
Understanding filovirus diversity in bat reservoirs and	d implications for human	outbreaks in W	est Africa
	,		
Source of Support: NIH			
	ward Period Covered: 03	3/01/2020-02/2	8/2025
Location of Project: Global			
Person-Months Per Year Committed to the	Cal: 2.0	Acad:	Sumr:
Support:	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title:			
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Source of Support: Total Award Amount: Total A	word Daried Covered:		
	ward Period Covered:		
Location of Project: Person-Months Per Year Committed to the	Cole	A and:	S. umar
Support: Current Pending	Cal: Submission Planned in	Acad:	Sumr: *Transfer of Support
Project/Proposal Title:	Odbinission i lanned in	ivear i uture	Hansier of Support
1 Tojeou Toposai Tille.			
Source of Support:			
• •	ward Period Covered:		
Location of Project:			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
Support:	Submission Planned in		*Transfer of Support
Project/Proposal Title:			
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Source of Support:			
Total Award Amount: Total Av	ward Period Covered:		
Location of Project:			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
*If this project has previously been funded by anothe	r agency, please list and	furnish informa	ation for immediately pre-
ceding funding period.			

NSF Form 1239 (10/99)



(See GPG Section II.D.8 for guidance on information to include on this form.)

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information may delay consideration of this proposal.	Other agencies (including	a NSE) to whi	ch this proposal has
Investigator: James S. Desmond	Other agencies (including	9 (40) / to will	cir uno proposarnas
Support:	Submission Planned in N	ear Future	☐ *Transfer of Support
Project/Proposal Title:			
Reducing the Threat from high-risk pathogens causing	ig febrile illness in Liberia	(current propo	osal)
Source of Support: DTRA			
Total Award Amount: \$4,912,818.06 Total Av	vard Period Covered: 01/0	01/2020-12/31	/2024
Location of Project: United States, Liberia			
Person-Months Per Year Committed to the	Cal: 6.0	Acad:	Sumr:
Support:	Submission Planned in N	ear Future	☐ *Transfer of Support
Emerging Pandemic Threats PREDICT 2			
Source of Support: USAID			
• •	vard Period Covered: 10/	01/2014-09/30	0/2019
Location of Project: Global	vara i ciloa coverca. Tor	01/2014 00/00	3/2013
Person-Months Per Year Committed to the	Cal: 3.0	Acad:	Sumr:
Support: Current Pending	Submission Planned in N		*Transfer of Support
Project/Proposal Title:	Submission Flamed in N	eai Future	☐ Transier or Support
• •	implications for human or	uthrooks in 187	act Africa
Understanding filovirus diversity in bat reservoirs and	implications for numan of	utbreaks in vve	est Amca
Source of Support: NIH			
, ,		04/0000 00/0/	
	vard Dariad Cavarad: 03%		8/2025
	vard Period Covered: 03/	01/2020-02/28	3/2025
Location of Project: Global			
Location of Project: Global Person-Months Per Year Committed to the	Cal; 2.0	Acad:	Sumr:
Location of Project: Global Person-Months Per Year Committed to the Support: Current Pending		Acad:	
Location of Project: Global Person-Months Per Year Committed to the Support: Current Pending Project/Proposal Title:	Cal: 2.0 A Submission Planned in N	Acad: ear Future	Sumr: *Transfer of Support
Location of Project: Global Person-Months Per Year Committed to the Support: Current Pending	Cal: 2.0 A Submission Planned in N	Acad: ear Future	Sumr: *Transfer of Support
Location of Project: Global Person-Months Per Year Committed to the Support:	Cal: 2.0 A Submission Planned in N	Acad: ear Future	Sumr: *Transfer of Support
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Location of Project: Global Person-Months Per Year Committed to the Support: Current Pending Project/Proposal Title: Next Generation Sequencing Capacity Building in Lib Source of Support: DTRA Total Award Amount: \$2,250,000.00 Total Av	Cal: 2.0 A Submission Planned in N	Acad: ear Future morrhagic Fev	Sumr: *Transfer of Support rer Biopreparedness
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(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each information may delay consideration of this proposal.	n investigator and other	senior personne	el. Failure to provide this
mornial of the proposition of the proposition	Other agencies (includ	ing NSF) to whi	ch this proposal has
Investigator: Dr. Fatorma Bolay			
Support:	Submission Planned in	Near Future	☐ *Transfer of Support
Reducing the Threat from high-risk pathogens causing	ng febrile illness in Liberi	a (current propo	osal)
Source of Support: DTRA			
Total Award Amount: \$4,912,818.06 Total Av	ward Period Covered: 01	/01/2020 - 12/3	31/2024
Location of Project: Liberia			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
Support:	Submission Planned in	Near Future	
Project/Proposal Title: Partnership for Research on	Ebola Virus (PREVAIL) I	II	
Source of Support: NIH/NIAID			
Total Award Amount: \$15,000,000.00 Total Av	ward Period Covered: 0	4/30/2015-5/31/	/2025
Location of Project: Liberia			
Person-Months Per Year Committed to the	Cal:10.0	Acad:	Sumr:
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Project/Proposal Title:			
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Location of Project:	· ··· · · · · · · · · · · · · · · · ·		
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
*If this project has previously been funded by anothe			= :::::::
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(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each information may delay consideration of this proposal.		senior personn	el. Failure to provide this
illiornation may delay consideration of this proposal.	Other agencies (includi	na NSF) to wh	ch this proposal has
Investigator: Bode Shobayo	Jenner a gerrarea (mranam		
Support: ☐ Current ☐ Pending ☐ Project/Proposal Title:	Submission Planned in	Near Future	☐ *Transfer of Support
Reducing the Threat from high-risk pathogens causir	na febrile illness in Liberia	a (current prope	osal)
Troubling the Tribut Politings for patriogene sauch	ig toomo miloso ni cibom	a (oanom prop.	, out,
Source of Support: DTRA			
Total Award Amount: \$4,912,818.06 Total Av	ward Period Covered: 01	/01/2020 — 12/s	31/2024
Location of Project: Liberia			
Person-Months Per Year Committed to the	Cal: 1.5	Acad:	Sumr:
Support: Current Pending	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title:			
Surveillance of acute febrile illness in New Kru and V	Vest Point Communities,	Montserrado, I	_iberia
Total Award Amount: \$39,402.82 Total Av	ward Period Covered: 01	/01/2010 = 00/	30/2010
Location of Project: Liberia	wara i erioa ooverea. o i	10112013 - 031	00/2010
Person-Months Per Year Committed to the	Cal: 9.0	Acad:	Sumr:
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Current and Pending Support (See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each information may delay consideration of this proposal.		senior personne	el. Failure to provide this
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Investigator: Erin Sorrell	I		
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Reducing the Threat from high-risk pathogens causing	ig febrile illness in Liberia	a (current propo	sal)
Source of Support: DTRA			
	ward Period Covered: 01/	/01/2020-12/31	/2024
Location of Project: Liberia	0.1.40		^
Person-Months Per Year Committed to the		Acad:	Sumr:
Support:	Submission Planned in N	Near Future	
Strengthening Health Security Systems in Libya: Adv dated Waste Management Systems in Libya's Public			and Implementing Vali-
dated waste Management Systems in Libya's Fublic	riealtii and veterinary La	aboratories	
Source of Support: U.S. Department of State			
	ward Period Covered: 12/	/18/2017-12/31	-2019
Location of Project: Jordan/Libya	raid i onod borolodi iz		
Person-Months Per Year Committed to the	Cal: 3.0	Acad:	Sumr:
Project.			
Support:	Submission Planned in N	Near Future	
Project/Proposal Title:			
Developing Laboratory Risk Assessment Tools to Se	cure Institutions Handling	g High Consequ	uence Pathogens in Mo-
rocco			
Source of Support: U.S. Department of State			
, ,	ward Period Covered: 12/	/01/2018-12/31	/2019
Location of Project: Morocco	raid i oliod oorolodi iz	0,,2010 12,01	,2010
Person-Months Per Year Committed to the	Cal: 2.4	Acad:	Sumr:
Support:	Submission Planned in I		*Transfer of Support
Project/Proposal Title:			
Preventing Terrorist Exploitation of Dangerous Patho	gens during Outbreaks b	y deploying Or	e Health Rapid Response
Teams			
Source of Support: U.S. Department of State			
··	ward Period Covered: 12/	101/2019 12/21	/2018
Location of Project: Libya/Tunisia	valu Fellou Covereu. 12/	101/2010-12/51	72019
Person-Months Per Year Committed to the	Cal: 3.0	Acad:	Sumr:
Support: Current Pending Support: Pending Support: Current Support: S	Submission Planned in N		*Transfer of Support
Project/Proposal Title:	Capitilisaion i latinica in i	tour ratare	
Formalizing Biohazardous Waste Management Acros	ss Key Health Facilities in	n Libya	
Source of Support: U.S. Department of State			
, ,	ward Period Covered: pro	niected 10/01/2	019-09/30/2020
Location of Project: Libya/Tunisia	vara i enou oovereu, pro	gooled Torottz	010 0010012020
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Support: ☐ Current ☐ Pending ☐ Submiss Project/Proposal Title:	ion Planned in	Near Future	☐ *Transfer of Support
One Health Next Generation			
Source of Support: USAID			
Total Award Amount: 998,571 Total Award Peri	od Covered: 10	/01/2019 – 9/30)/2024
Location of Project: Multiple (South-east Asia and Africa)			
Person-Months Per Year Committed to the Project.	Cal: 1.8	Acad:	Sumr:
Support:	sion Planned in	Near Future	☐ *Transfer of Support
Creating Tools and Building Capacity for Global Implementation	on of the Interna	ational Health R	egulations (IHR 2005)
Source of Support: Defense Threat Reduction Agency, US De	partment of De	fense	
Total Award Amount: \$591,102 Total Award Peri	od Covered: 09	/30/2016-09/30	/2019
Location of Project: Middle East			
Person-Months Per Year Committed to the Project.	Cal: 3.0	Acad:	Sumr:
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Reducing the threat from high-risk pathogens causing febrile i	llness in Guinea	ì	
Source of Support:			
Total Award Amount: Total Award Peri	od Covered:		
Location of Project: Guinea			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
*If this project has previously been funded by another agency, ceding funding period.	please list and	furnish informa	tion for immediately pre-
NSF Form 1239 (10/99)		USE ADDITI	ONAL SHEETS AS NECESSARY



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Reducing the threat from high-risk pathogens causing febrile illness in Liberia/William B. Karesh DTRA Thrust Area 6/Cooperative Counter WMD Research with Global Partners Broad Agency Announcement HDTRA1-14-24-FRCWMDBAA

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EcoHealth Alliance, New York, USA

EcoHealth Alliance is an US-based NGO that specializes in scientific research on the causes, origins and spread of zoonotic emerging diseases. EcoHealth Alliance scientists have been conducting field research on infectious zoonotic diseases for over three decades. EcoHealth Alliance is based in New York City with 10,000 square feet of office space including a meeting room and basic laboratory—freezer storage and light microscopy. The scientific staff (15 core scientists, 100+ field staff) is supported by a core admin staff of 11, which is available for work on this project and is also funded through private individual and foundation support.

EcoHealth Alliance is equipped with 25 networked computers (PCs and Macs) including ARRA funded International LifeSize Video Conferencing facilities, and high-speed video conferencing facilities have been installed with key international collaborators. EcoHealth Alliance has access to a 24-7 server, server support, and all required software including ArcGIS, MatLab, SPSS, Microsoft Office, and Adobe CS3 running on both Apple and Windows Operating Systems. Additionally we have a four-processor, public IP addressed Linux server which can be used for intensive computational modeling and database processing by all the grantees.

EcoHealth Alliance is the headquarters of two networks that provide exceptional leverage for the core scientists: 1) The EcoHealth Alliance Local Conservation Partners: A global partnership of 15 NGOs in Asia (including Bangladesh, India, and China), Africa and Latin America (including Argentina and Brazil). This network provides access to fieldwork in countries (such as India) that are often difficult to work in, and obtain samples from; 2) The Consortium for Conservation Medicine: A unique collaborative institution linking Johns Hopkins Bloomberg School of Public Health, Tufts University School of Veterinary Medicine Center for Conservation Medicine, The University of Pittsburgh Graduate School of Public Health, The University of Wisconsin-Madison Nelson Institute for Environmental Studies, The USGS National Wildlife Health Center, and EcoHealth Alliance. The CCM provides access to hundreds of high caliber scientists, their facilities, and their students at 6 leading institutes of public health, veterinary medicine, and environmental science in the USA.

Society for the Conservation of Nature of Liberia (SCNL), Monrovia, Liberia

The Society for the Conservation of Nature of Liberia (SCNL) is an accredited, non-governmental organization based in Monrovia, Liberia that serves as the oldest, most well respected, and important civil service organization devoted to the environment and conservation in Liberia. With over 50+ staff based in the office and in the field, SCNL has had an enormous impact, and has been the driving force behind many conservation efforts in the country.

SCNL partners with numerous international NGO's including the Wild Chimpanzee Foundation, Conservation International, Fauna and Flora International, Liberia Chimpanzee Rescue and Protection, Rainforest Trust, EcoHealth Alliance, World Resources Institute and Birdlife International. SCNL's experience as the implementing partner of PREDICT Liberia

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has placed the organization at the forefront of a new paradigm within the public health sector in Liberia. In the post-Ebola environment, Liberia has adopted a One Health approach to public health and because SCNL has played such an important role in operationalizing and promoting this new paradigm, the organization has positioned itself as a leader in the field.

Society for the Conservation of Nature of Liberia (SCNL) is equipped with the necessary equipment and facilities to conduct fieldwork throughout Liberia. Located in Congo Town a suburb of Monrovia, SCNL has easy access to vendors in order to procure supplies. SCNL has several 4WD vehicles able to handle Liberia's rough terrain. SCNL is equipped with 4 Stirling Ultracold portable -86°C freezers, 2 dry shippers to maintain cold chain, 3 mobile centrifuges for use in the field, various sized mist nets, 2 harp traps for catching bats, has a label printer for labeling cryovials. SCNL also has a warehouse built from a converted shipping container and other basic equipment needed to conduct proper field work.

National Public Health Institute of Liberia (NPHIL), Monrovia, Liberia

National Public Health Institute of Liberia (NPHIL) is an autonomous agency of the Government of Liberia. In 2016, through an Act of the Legislature, NPHIL was established to collaborate with and strengthen the Ministry and other institutions in the health sector through the carrying out of research into public health concerns of the Nation and to provide direction for disease prevention activities. NPHIL's facilities include two campuses with the headquarters based in Monrovia, Montserrado County, and research and reference laboratories based in Charlesville, Margibi in Liberia under the Integrated Disease Surveillance and Response (IDSR) System. At the NRL,30% of the staff are core lab technicians, 46% lab aides and 24% lab assistants.

The Division of Public Health and Medical Research (DPHMR) is housed at the Charlesville campus and includes 91 acres with multiple research suites. DPHMR includes three research units in Microbiology, Parasitology and Vector Biology, and Nutritional Epidemiology; and have 13 scientific staff.

NPHIL has a strategic and an operational plan with support from the US Center for Disease Control (CDC), the World Health Organization (WHO) and the US National Institutes of Health (NIH).

NPHIL's Laboratory complex is located in Charlesville, Margibi County. Contained within the facility are two laboratories: the National Public Health Reference Lab and the Medical and Public Health Research lab. The reference lab is responsible for confirming surveillance samples for priority diseases in Liberia and has three sections, namely; molecular, serology and microbiology suites. The Public Health and Medical Research labs are involved with Ebola research in collaboration with the NIH/PREVAIL and studies in Malaria, AMR and Nutritional Epidemiology and also being conducted in these labs. NPHIL's laboratory complex hosts two BSL-2 suites and a BSL-3 lab is currently being completed for work on MDR-TB and other level 3 risk pathogens. The complex is equipped with uninterrupted

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power supply from one 250 KV Λ generator and three backups (One 220KV Λ and two 155 KV Λ).

Significant equipment at the NPHIL facilities include ELISA plate readers and washers (2), light-cycler real-time quantitative PCR machines (2) conventional PCR machines (2), GeneXpert Real-time PCR (6), CO₂ incubator (5), class II biosafety cabinets (6), Illumina MiSeq (1), liquid nitrogen (LN2) tanks (3) and a 30 liter per day LN2 generator. Other available equipment includes, gel electrophoresis equipment, conventional microscopes, table top centrifuges, microfuges, Autoclaves, Water distillers, refrigerators and freezers, Millipore Direct Q water purification system, weighing balances and PAPR equipment and chargers.

Trained and competent laboratory staff include seven junior scientists and eight laboratory technicians with proficiency in varying laboratory techniques such as PCR, RT-PCR, serology, blood processing and DNA/RNA extraction, DNA/RNA sequencing and Microbiology.

Liberia Chimpanzee Rescue and Protection, Charlesville, Liberia/Golden, CO, USA

Liberia Chimpanzee Rescue and Protection (LCRP) is an NGO operating in Liberia with a US based 501c3 affiliate. LCRP is one of the leading animal welfare and conservation organizations in Liberia focused on protecting and conserving wildlife, primarily chimpanzees. LCRP has a staff of 22, mostly dedicated to chimpanzee care. One of the co-directors, Dr. James Desmond, DVM, MS, is a veterinarian specializing in great ape health and zoonotic disease research.

LCRP currently operates on the grounds of the National Public Health Institute of Liberia (NPHIL) and has an MOU with the Society for the Conservation of Nature of Liberia (SCNL) and close relationships with the other prominent conservation and public health NGOs operating in the country such as: Conservation, Fauna and Flora International, and Wild Chimpanzee Foundation. In addition, LCRP works very closely with several government entities such as the Forestry Development Authority, Ministry of Agriculture, and NPHIL.

LCRP has four vehicles that are capable of handling the difficult road conditions present in Liberia, several laptop computers, various medical supplies and equipment, and shares office space and facilities with SCNL in Monrovia.

University of Nebraska Medical Center, Omaha, Nebraska, USA

The University of Nebraska Medical Center (UNMC) is a vital enterprise in the nation's heartland and has mission to improve the future of health care in Nebraska and beyond. As Nebraska's only public academic health sciences center, UNMC is committed to the education of a 21st century health care work force, to finding cures and treatments for devastating diseases, to providing the best care for patients, and to serving our state and its communities through award-winning outreach. UNMC is one of four campuses that make up the University of Nebraska

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system. UNMC has six colleges, two institutes and a graduate studies program, serving nearly 4,000 students in more than two dozen programs.

The recently established UNMC Global Center for Health Security (GCHS) is one of the nation's primary biosecurity resources for training, education, research, and clinical care. The Center has become the focal point of state, national and international collaborations having created a spectrum of biosecurity and biodefense services to help prepare for natural and man-made disasters. The network of experts help to advance the coordinated, interdisciplinary development of new research and clinical practice and to disseminate innovative approaches to keep communities safe from epidemics and to counter weapons of mass destruction.

The GCHS provides a unique platform for health system preparedness, awareness, recognition, and response for public health and hospital emergencies. With a comprehensive capability in research, education & training, and health system operations, we strive to facilitate 21st-century care for public health emergencies in all environments. Below are some of the centers and initiatives that fall under GCHS.

Nebraska Biocontainment Unit (NBU)

- A collaborative project involving the University of Nebraska Medical Center & Nebraska Medicine (UNMC/NM), as well as the Nebraska Department of Health and Human Services
- The 10-bed unit opened in 2005 and cared for three of the ten patients with Ebola Virus Disease (EVD) managed in U.S. biocontainment units during the Fall of 2014 outbreak
- Now serves as Region VII RESPTC for treatment of Ebola/HCI patients
- Partner with the Nebraska Public Health Laboratory BSL-3 lab at UNMC
- Volunteer-rostered staff of specialty physicians, nurses, technicians, and respiratory therapists, who are trained in high-level isolation and bio-preparedness. These volunteers are employed in other areas of the health system, train quarterly & can report promptly for duty when unit is activated

National Training, Simulation and Quarantine Center (TSQC)

- Selected as the National Training, Simulation, and Quarantine Center in 2017. This \$20
 million HHS-funded capability will be home to the National Disaster Medical System &
 CStars ID training programs, and includes:
 - $\circ\,\Lambda$ 20-bed National Quarantine Unit, on the 1st floor of UNMC's Davis Global Center building in July 2019
 - o The National Biocontainment Training Center, a fully equipped mock-up of a patient biocontainment unit with six patient care rooms, support spaces, autoclave, and training laboratory
 - o An Emergency Operations Center(EOC) and multipurpose room for incident management training and skills training. This space will serve as the UNMC/NM EOC for exercises and real-world events
 - o Access to the Davis Global Center facility and the interprofessional Experiential Center for Enduring Learning (iEXCEL), which includes a 360 degree laser projection simulated

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environment immersion cave, CAD wall, iWall, holographic theater, and other virtual- and augmented-reality training & simulation tools

Nebraska Drug Development Pipeline

- Collaboration among the Department of Defense, the National Strategic Research Institute (NSRI), the University of Nebraska-Lincoln, UNMC, and the pharmaceutical industry to develop new therapeutics and radiation countermeasures, products not currently prioritized for development
- An expandable model for other public health emergency countermeasures

Nebraska Mobile Genomics Unit

- Able to respond to a public health emergency by providing genomic characterization of the pathogen at the site of the outbreak
- Setup sequencing laboratory and provided training to local scientist in the Democratic Republic of the Congo, in May 2018.

U.S. Air Force Center for the Sustainment of Trauma and Rediness Skills (C-STARS)

- First C-STARS infectious disease program dedicated to developing protocols, best practices, and training for USAF medical personnel in the care and transport of individuals with active or suspected HCI
- Established in late 2018 and projected to begin full-scale training in late 2019

Georgetown University, Washington, DC, USA

The Georgetown University Medical Center (GUMC) consists of a nationally-ranked School of Medicine (SOM), School of Nursing & Health Studies (NHS), Lombardi Comprehensive Cancer Center (LCCC), and Biomedical Graduate Research Organization (BGRO). GUMC is home to more than 400 basic and clinical research scientists, and 300 active clinical trials. Clinical care is provided at Medstar Georgetown University Hospital (MGUH) and satellite clinics through a partnership with MedStar Health, Inc. The Georgetown University Medical Center is the largest and most prominent Catholic medical center in the country.

Georgetown's School of Medicine provides a comprehensive approach to medical education, following the Jesuit ideal of *cura personalis*, or "care of the whole person." As one of the most selective medical schools in the country, the School of Medicine is consistently ranked in US News and World Report's top 50 graduate programs at research universities. In 2004, the School of Medicine opened its Integrated Learning Center, which supports the School of Medicine's emphasis on a patient centered, competence-based curriculum and provides the latest methods of clinical teaching and evaluation. Georgetown medical students consistently match into top medical schools around the country for their residency programs.

LABORATORY

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GU does not anticipate requiring laboratory facilities for the purposes of their contribution to the research project. We anticipate all laboratory activities will take place in Liberia, as part of the capacity building effort inherent to the proposal. However, if required, there is also extensive reach-back laboratory facilities available via GUMC as needed, including the state of the art Discovery Center in the School of Nursing and Health Sciences. Located on the third floor of the School of Medicine's Med-Dent Building, accessible at 3900 Reservoir Road NW, the Discovery Center covers 3,000 square feet and includes a teaching laboratory, a research laboratory, a cell culture room, and a Zeiss Axiovert 200 microscope. The facility is equipped with modern laboratory teaching tables and equipment; adjacent to the teaching laboratory is a preparation and instrumentation room that serves both the teaching laboratory and the interconnected research laboratory, which houses a separate cell culture room. The research areas are outfitted with stateof-the-art shared core instrumentation that includes centrifuges, cell incubators, microscopes, DNA amplifying, electronic cell counting and electrophoresis equipment. While primarily used by students and faculty within the Department of Human Science, students from the other academic departments at Nursing and Health Sciences also take courses and conduct scientific investigation with faculty in this core, shared facility. Additional laboratory facilities are available via the Department of Microbiology and Immunology in GUMC. Specific laboratory space for virology studies can be made available for students for training in laboratory techniques including RNA extraction, PCR and sequencing.

COMPUTER

The PI, Co-PI, and all research staff at Georgetown University have exclusive use of PC-based desktop computers with extended RAM, significant GB hard disk space, dual-color flat-panel LCD monitors, and high-speed HP laser printers. The PI and Co-PI will also have access to exclusive access to Macbook Pro or Dell laptops. Available software for desktop and laptop computers used for the project includes WINDOWS and Mac operating systems, MS-Office 2010, SPSS 20.0, and SAS 9.3. Study personnel will have full Internet and e-mail access; will be networked to shared, secure drives for data access; and will have full communication capabilities through the use of phone, fax, and email. GUMC provides complete hardware, software, and network support through its University Information Systems department. Box is also available for secure storage and access of files and folders on the Internet enabling the user to access files from any available computer with a web browser and Internet connection.

OFFICE

All study investigators have secured private offices and study personnel also have office space. All investigators have access to conference rooms with video and teleconferencing equipment.

HUMAN SUBJECT REGULATORY COMPLIANCE TRAINING

The PI has completed on-line certification from the IRB and NIH related to protection of human subjects in research. Georgetown University Policy on Protection of Research Data Standard operating procedures regarding data protection and patient confidentiality have been adopted throughout the institution. Office spaces, databases, and e-mail usage all have specific security requirements. The University and Medical Center recently launched a new effort regarding protection of patient data. The PI and other members of the research team will attend relevant seminars/trainings.

OTHER

All research team members have direct access to a full range of library, computer, audiovisual, shop, and clinical facilities at GUMC.

SHARED RESOURCES

Although additional resources are not anticipated to be required for GU's contribution to the project, the following shared resources are available as needed as reach-back capability or for provision of subject matter expertise while developing and implementing the research project in Liberia.

Animal Models Shared Resource (AMSR) and Division of Comparative Medicine (DCM)

Animal models are powerful cancer research tools and a vital link in translating laboratory studies into the clinic. The function of the Animal Models Shared Resource (AMSR) is to facilitate efficient, economical, and state-of-art use of animals for the performance of cancer-related studies. This is accomplished through a centralized resource, where AALAS-certified, highly trained veterinary technicians provide preclinical research services. A significant emphasis is placed on assisting users with the design and performance of animal studies using a wide-range of models, including zebrafish and a recently developed model to study endocrine resistance and breast cancer recurrence in an estrogen receptor positive rat model. Major services provided include all aspects of rodent studies, such as establishing genetically modified mouse colonies, administrating carcinogens, monitoring tumor growth, collecting tissues and tumors at necropsy, and administering drugs, diets or other compounds. Studies using zebrafish include generating gene knockout or gene overexpressing models, screening for toxicity/drugs, and xenotransplantation experiments. Imaging services are also provided to monitor tumor initiation, progression, and response to therapy.

The AMSR is located within Georgetown University Medical School's Division of Comparative Medicine (DCM). The DCM is a centralized, AAALAC-accredited, USDA-registered animal facility and has an approved letter of assurance on file at the NIH. The DCM is a 50,000 sq ft facility located in the Georgetown University Medical Center. It was originally constructed in 1984 as a research resource facility. It was later expanded in 1994 and became the Division of Comparative Medicine. There are a variety of different areas within the DCM that range from barrier level protection to bio safety level 2 containment. The DCM also has surgical and procedure rooms, a cage wash area, autoclaves, cold boxes, dedicated loading docks, a Hydropac machine, and feed and bedding storage.

The animal housing locations in the DCM include:

- A and B zones as well as perimeter rooms: A combination of conventional and SPF housing rooms, using either ventilated caging systems or static "shoebox" cages. There are also rooms designed to house large animals and for aquatic species.
- C, E, & F zones: Rodent barrier areas specifically designed to offer our highest level of bio-security.
- D zone: Designed and used for research with hazardous materials.

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All of our areas are climate controlled to control temperature, humidity and lighting to fall within the recommendations of "The Guide for the Care and Use of Laboratory Animals".

The doors to each zone are security controlled using the University's GoCard system. Access must be requested and approved by the main office before entering any zone. The AMSR is codirected by Leena Hilakavi-Clarke, PhD, and Christopher Albanese, PhD, who oversee the animal and imaging components, respectively. The DCM is directed by Dr. Patricia Foley, DVM.

Biostatistics & Bioinformatics Shared Resource (BBSR) goal is to provide basic, translational, clinical and population science investigators with access to high quality statistical science and informatics. Ming Tan, PhD, Chair of the Biostatistics, Bioinformatics, and Biomathematics Department and Subha Madhavan, PhD, Director of Innovation Center for Biomedical Informatics are Codirectors of BBSR. BBSR functions include: study design; statistical analysis and reporting of research studies including clinical trials, studies with high dimensional "omics" and imaging data including pathway analysis; review and monitoring of clinical protocols through membership on the Protocol Review and Monitoring System and Data and Safety Monitoring Committees; and provision of biostatistics and informatics training and expertise in the collection, integration, management, and application of biomedical data. In addition, the BBSR provides investigators with advanced statistical and bioinformatics methods and expertise developed independently by BBSR faculty. The BBSR has excellent computing resources, informatics systems, and informatics and statistical software necessary for efficient and effective support of research. BBSR supports the development of the information architecture for connecting data and metadata from clinical, biospecimen, and research systems to enable all forms of research.

<u>Clinical Research Unit (CRU)</u> is located on 7th floor East Wing of the Main Building, Georgetown University Hospital (GUH). This location is central to the medical center, and is convenient for investigators, clinicians, staff, patients and families. The GU-CRU is equipped to provide around-the-clock support for research studies, seven days a week.

The GU-CRU provides 10 patient-care rooms and occupies approximately 5411 square feet of space. It has the flexibility to support either inpatient or outpatient services, thereby, maximizing use of all rooms (2 are dedicated for cognitive testing; 4 are dedicated for outpatient testing; 4 are mixed inpatient/outpatient use). The GU-CRU, although a University unit, is part of the MedStar JCAHO approved institution.

The GU-CRU provides outpatient and inpatient clinical research support to both pediatric and adult research subjects. Some of the procedures that nurses currently perform or assist with include:

- Exercise Stress Testing
- Pulse Wave Analysis
- Chemotherapy Administration
- Complex Pharmacokinetic Sampling and Collection
- Complex Sample Processing

- Expert IV / Phlebotomy Services
- Insulin Clamp Studies
- Diabetes Education
- Vaccination
- Telemetry
- Cognitive Testing
- Specialized Room for Cognitive Testing with Video Monitoring
- Complex Medication Administration with Monitoring
- 6-Minute Walk Testing
- Lumbar Puncture
- Allergy Testing
- Metabolic Cart and Pulmonary Function Testing
- DXA Hologic Q Series

The staff of the GU-CRU is not limited to these procedures. The GU-CRU staff are continually learning and extending their capabilities based on the needs of the investigators.

Cultural and Linguistic Competence Resources Faculty, postdoctoral fellows, staff, and researchers also have access to The National Center for Cultural Competence (NCCC) provides national leadership and contribute to the body of knowledge on cultural and linguistic competency within systems and organizations. Major emphasis is placed on translating evidence into policy and practice for programs and personnel concerned with health and mental health care delivery, administration, education and advocacy. The NCCC is a component of the Georgetown University Center for Child and Human Development (GUCCHD) and is housed within the Department of Pediatrics of the Georgetown University Medical Center. The NCCC provides training, technical assistance, and consultation, contributes to knowledge through publications and research, creates tools and resources to support health and mental health care providers and systems, supports leaders to promote and sustain cultural and linguistic competency, and collaborates with an extensive network of private and public entities to advance the implementation of these concepts. The NCCC provides services to local, state, federal, and international governmental agencies, family advocacy and support organizations, local hospitals and health centers, healthcare systems, health plans, mental health systems, universities, quality improvement organizations, national professional associations, and foundations. In addition, the NCCC's on-line training, publications, and products are accessed by tens of thousands of individuals each year.

<u>Data Management Core (DMC)</u> provides research investigators at LCCC with high-quality survey data collection and management services, study tracking, data cleaning and data manipulation services as well as consultation services for all population science research projects.

For this study the Core will be responsible for programming the study surveys in REDCap - a secure, IRB-approved, web-based application designed for managing online surveys and for communication between study sites; and develop a tracking database application in MS Access to track study participants from both sites – LCCC and JTCC, throughout the study from

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recruitment to study closeout. The Core will be responsible for checking, cleaning and curating the study data collected at different time points in the study to ensure completeness and accuracy of data. The Core will also be responsible for interpretation, organization, validation and merging of data from the survey and tracking database applications along with abstracted EMR/hospitalization/medical event records. They will use advanced data manipulation techniques to create, manipulate, validate and analyze study data and provide ready to use analytic datasets to statisticians and investigators during and at the end of the study. They will provide ongoing maintenance of the Survey and Tracking data applications throughout the study period and backup and secure all study data as per institution standards.

The tracking database will reside on a Georgetown server and can only be accessed using the Georgetown login and a database login. Staff at JTCC will be provided with affiliate Georgetown NetIDs so that they can remotely access the study tracking MS Access database on the server via remote desktop. The web-based survey application, REDCap, is also hosted on a secure Georgetown server that can only be accessed via a secure study login.

Library Resources provide optimum services, facilities and resources to enhance the pursuit of knowledge and academic excellence. The present holdings of all University libraries total over 1,740,000 volumes and 1,850,000 microforms. The Joseph Mark Lauinger Memorial Library has a collection of over one million volumes. Georgetown is a U.S. Government Documents Depository. Blommer Science Library covers the subject fields of biology, chemistry, mathematics, physics, and computer science. The book and bound journal collection there numbers over 63,000 volumes; and almost 900 journals are currently received. Other library resources include: The Maternal and Child Health Library, the Woodstock Theological Library and the National Reference Center for Bioethics Literature. The John Vinton Dahlgren Memorial Library is the major library for the Georgetown Medical Center. The Library occupies over 31,000 square feet on four levels. The staff is comprised of academic librarians, computer scientists, and support staff. The Library provides access to several medical databases including MEDLINE, EMBASE Alerts, and the Micromedex drug information system. The library's print collection includes more than 176,442 volumes (including 43,372 books and 118,188 bound journal volumes), current subscriptions to 1,831 journals, and over 2,700 audiovisual and microcomputer software programs.

Survey, Research, and Biospecimen Collection Shared Resource (SRBSR) was established in July 2011, encompasses and expands upon two prior Shared Resources, the Clinical and Molecular Epidemiology Shared Resource (CMESR) and the Familial Cancer Registry (FCR). Led by a clinical investigator (Isaacs) and a genetic counselor (Peshkin), the SRBSR has created a platform for a unified subject recruitment infrastructure to streamline subject recruitment into nontherapeutic studies while minimizing redundancy of data collection across individual studies through a protocol called the Lombardi Research Participant Registry (LRPR). From protocol activation (6/18/12) to 12/31/12, the SRBSR team has enrolled 547 subjects to the LRPR, which includes access to medical records, data, fluid and tissue biospecimens from consented subjects. These data are useful for pilot studies and project design. Essentially all (98.5%) of these subjects also consented to be re-contacted for participation in future nontherapeutic research studies for which they may be eligible. The SRBSR has successfully utilized the LRPR to triage and enroll 84 subjects into seven investigator- initiated studies at LCCC as of 12/31/12. The

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biospecimen repository, built by the subsumed Shared Resources, includes over 2,000 BRCA1/2 characterized subjects with a family history of cancer as well as over 1,800 subjects with sporadic cancer, many with clinical and demographic data. Integration of databases of several Shared Resources is underway with the goal of integrating all clinical and research information into the Georgetown Database of Cancer (G-DOC®). Patient and participant confidentiality is maintained with careful standard operating procedures across the SRBSR and its associated studies.

Office of Minority Health and Health Disparities Research is a new community based space for The Georgetown Office of Minority Health and the Health Disparities, led by Dr. Lucile L. Adams-Campbell, opened in 2011, located at 1000 New Jersey Ave, SE, Washington, DC, 20003. The new space allows for improved access between LCCC and minority and underserved communities which facilitate research engaging the local minority community in our effort to address cancer health disparities. The location is 15 minutes from Lombardi and in close proximity to metro stops and several bus lines, which provide easy access to the community outside of Georgetown.

The office space measures 4,437 square feet, and includes 8 offices for faculty and patient/participant intake privacy, and 9 modular offices for staff, graduate students and postdoctoral fellows. Each staff member is provided with a data encrypted desktop computer, or equivalent. The suite also houses a conference room, reception and waiting areas, photocopy machine, and data/voice access. There is also an exercise physiology lab, and a nutritional education area that includes a kitchen. The exercise physiology lab includes a metabolic unit, treadmills, elliptical machines, and weight training machines. In addition there are 2 Wii-Fit exercise rooms including video games and televisions, and a room with a DEXA machine, which measures body position. The nutritional education area includes a wet sink and kitchen.

<u>University Information Services (UIS)</u> is located in St. Mary's Hall and provides the technology infrastructure to support the teaching and scholarship activities of the school and will be the main resource for instructing students in computer programs (i.e., Excel, PowerPoint) to facilitate learning. Faculty members collaborate with UIS personnel to optimize technology support. Additionally, the school has its own systems manager to provide on-site assistance for faculty, students, and staff for issues pertaining to hardware, software, and Internet-based functions.

ATTACHMENT 3 – SUPPORTING DOCUMENTATION

1. FOREIGN PRINCIPLE INVESTIGATORS AND OTHER MEMBERS OF FOREIGN RESEARCH TEAM

Foreign PI:

None

Foreign Co-I:

Mosokah Fallah, PhD, MPH, MA

Deputy Director General/Technical Services, National Public Health Institute of Liberia

Other members (alphabetical order):

Fatorma Bolay, PhD, MS

Director of Public Health and Biomedical Research, National Public Health Institute of Liberia

John Dogba, MPH

Director of the National Public Health Reference Laboratory, National Public Health Institute of Liberia

Michael Garbo, MS

Executive Director, Society for Conservation of Nature, Liberia

Anne Laudisoit, PhD

Senior Scientist, EcoHealth Alliance, United States of America

Bode I. Shobayo, MSc

Research Scientist, Division of Medical and Public Health Research, National Public Health Institute of Liberia

2. DESCRIPTION OF RELATIONSHIP BETWEEN PROJECT AND CURRENT RESEARCH EFFORTS OF FOREIGN RESEARCH TEAM

PI William Karesh is the Technical Lead on USAID's PREDICT project. Since 2015, PREDICT's Ebola Host Project has operated in Liberia, sampling thousands of wild animals and discovery new viruses in circulation in some of these populations. Co-PI Jonathan Epstein and James Desmond support this project through field sampling, scientific oversight, and project management.

Co-PI James Desmond is an American citizen living in Liberia. He has worked closely with Mosokah Fallah, Fatorma Bolay, John Dogba, and Bode Shobayo, as well as with the director of NPHIL, Tolbert Nyasewah, on the Ebola Host Project since 2015.

Co-PI Ellen Carlin and Catherine Machalaba worked most recently with the National Public Health Institute of Liberia in 2018 to develop a global health security gaps analysis. We engaged NPHIL, the Ministry of Health, and the Ministry of Agriculture in a roundtable to support data and information gathering for this project. We also worked with Co-PI James Desmond on this analysis.

Catherine Machalaba is a policy research on the project, "Forest Health Futures, Liberia," which launched in Liberia in 2019. Ms. Machalaba is working with James Desmond and key partners (e.g., Liberia's Forestry Development Authority, NPHIL, Environmental Protection Agency of Liberia) on applied research to understand the bioeconomics of forest resources and how they relate to human health and conservation.

Through the USAID PREDICT project in Liberia, Ms. Machalaba works closely with the country's One Health Coordination Platform to evaluate operational strategies for cost-effective risk reduction measures.

3. FACILITIES, EQUIPMENT, AND OTHER RESOURCES

EcoHealth Alliance, New York, USA

EcoHealth Alliance is an NGO that specializes in scientific research on the causes, origins and spread of zoonotic emerging diseases. EcoHealth Alliance scientists have been working on spatial modeling of zoonoses for over 15 years, and on modeling of infectious disease emergence and spread for over a decade. EcoHealth Alliance is based in New York City with 10,000 square feet of office space. The scientific staff (31 core scientists, 100+ field staff) is supported by a core admin staff of 18 who are available for work on this project and funded through foundation and federal support. EcoHealth Alliance does not support diagnostic facilities at its core headquarters and works in partnership with a network of leading diagnostic labs in the USA and around the world.

EcoHealth Alliance is equipped with fiber optic Internet access and video conferencing facilities to facilitate easy communication between collaborators. EcoHealth Alliance employees have around the clock access to servers, VPNs, encryption software, IT support, and all necessary software including Git and Github (hosted software revision/audit service), Sublime and Vim text editors, Vagrant and Oracle Virtualbox virtual machines, Google Apps (hosted email and collaboration web based software), Ansible (server provisioning software framework), Python, NodeJS, and R programming languages, Meteor (Javascript framework), Bash shell scripts, Jenkins (continuous integration server), Microsoft Office and Adobe CS6 running on both Apple Mac OS X, Ubuntu linux, and Windows Operating Systems. Additionally, EcoHealth Alliance has a dedicated quad-core Linux server and another dedicated dual quad-core Mac Pro Server each with 4TB hard drives. Either server individually or in combination may be used for intensive computational modeling and/or database processing by all the grantees. Access to the cloud and supercomputing services (Amazon) is provided by core funding to EcoHealth Alliance.

EcoHealth Alliance is the headquarters of a global network of over 70 partners that

provides exceptional leverage for the core scientists. This network includes staff from: intergovernmental agencies (WHO, OIE, FAO, DIVERSITAS, IUCN); locally-based wildlife conservation organizations in Asia, Africa and Latin America; infectious disease surveillance laboratories including BSL-3 and -4 laboratories; and scientific institutions. EcoHealth Alliance is the headquarters of the One Health Alliance of South Asia (OHASA); the Consortium for Conservation Medicine (CCM); the journal *EcoHealth*; an NSF Research Coordination Network (EcoHealthNET); the IUCN Wildlife Health Specialist Group; and the OIE Wildlife Health Network. EcoHealth Alliance is a member of the IUCN and Columbia University's Center for Environmental Research and Conservation (CERC), so that many scientific staff are adjuncts at Columbia University's E3B Department, or in the Mailman School of Public Health.

National Public Health Institute of Liberia

National Public Health Institute of Liberia (NPHIL) is an autonomous agency of the Government of Liberia. In 2016, through an Act of the Legislature, NPHIL was established to collaborate with and strengthen the Ministry and other institutions in the health sector through the carrying out of research into public health concerns of the Nation and to provide direction for disease prevention activities. NPHIL's facilities include two campuses with the headquarters based in Monrovia, Montserrado County, and research and reference laboratories based in Charlesville, Margibi in Liberia under the Integrated Disease Surveillance and Response (IDSR) System. At the NRL, 30% of the staff are core lab technicians, 46% lab aides, and 24% lab assistants.

The Division of Public Health and Medical Research (DPHMR) is housed at the Charlesville campus and includes 91 acres with multiple research suites. DPHMR includes three research units in Microbiology, Parasitology and Vector Biology, and Nutritional Epidemiology; and have 13 scientific staff.

NPHIL has a strategic and an operational plan with support from the US Center for Disease Control (CDC), the World Health Organization (WHO) and the US National Institutes of Health (NIH).

NPHIL's Laboratory complex is located in Charlesville, Margibi County. Contained within the facility are two laboratories: the National Public Health Reference Lab and the Medical and Public Health Research lab. The reference lab is responsible for confirming surveillance samples for priority diseases in Liberia and has three sections, namely; molecular, serology and microbiology suites. The Public Health and Medical Research labs are involved with Ebola research in collaboration with the NIH/PREVAIL and studies in Malaria, AMR and Nutritional Epidemiology and also being conducted in these labs. NPHIL's laboratory complex hosts two BSL-2 suites and a BSL-3 lab is currently being completed for work on MDR-TB and other level 3 risk pathogens. The complex is equipped with uninterrupted power supply from one 250 KVA generator and three backups (One 220KVA and two 155 KVA).

Significant equipment at the NPHIL facilities include ELISA plate readers and washers (2), light-cycler real-time quantitative PCR machines (2) conventional PCR

machines (2), GeneXpert Real-time PCR (6), CO₂ incubator (5), class II biosafety cabinets (6), Illumina MiSeq (1), liquid nitrogen (LN2) tanks (3) and a 30 liter per day LN2 generator. Other available equipment includes, gel electrophoresis equipment, conventional microscopes, table top centrifuges, microfuges, Autoclaves, Water distillers, refrigerators and freezers, Millipore Direct Q water purification system, weighing balances and PΛPR equipment and chargers. Trained and competent laboratory staff include seven junior scientists and eight laboratory technicians with proficiency in varying laboratory techniques such as PCR, RT-PCR, serology, blood processing and DNA/RNA extraction, DNA/RNA sequencing and Microbiology.

Liberia Chimpanzee Rescue and Protection

Liberia Chimpanzee Rescue and Protection (LCRP) is an NGO operating in Liberia with a US based 501c3 affiliate. LCRP is one of the leading animal welfare and conservation organizations in Liberia focused on protecting and conserving wildlife, primarily chimpanzees. LCRP has a staff of 22, mostly dedicated to chimpanzee care. One of the co-directors, Dr. James Desmond, DVM, MS, is a veterinarian specializing in great ape health and zoonotic disease research.

LCRP currently operates on the grounds of the National Public Health Institute of Liberia (NPHIL) and has an MOU with the Society for the Conservation of Nature of Liberia (SCNL) and close relationships with the other prominent conservation and public health NGOs operating in the country such as: Conservation, Fauna and Flora International, and Wild Chimpanzee Foundation. In addition, LCRP works very closely with several government entities such as the Forestry Development Authority, Ministry of Agriculture, and NPHIL.

LCRP has four vehicles that are capable of handling the difficult road conditions present in Liberia, several laptop computers, various medical supplies and equipment, and shares office space and facilities with SCNL in Monrovia.

Society for the Conservation of Nature of Liberia

The Society for the Conservation of Nature of Liberia (SCNL) is an accredited, non-governmental organization based in Monrovia, Liberia that serves as the oldest, most well respected, and important civil service organization devoted to the environment and conservation in Liberia. With over 50+ staff based in the office and in the field, SCNL has had an enormous impact, and has been the driving force behind many conservation efforts in the country.

SCNL partners with numerous international NGO's including the Wild Chimpanzee Foundation, Conservation International, Fauna and Flora International, Liberia Chimpanzee Rescue and Protection, Rainforest Trust, EcoHealth Alliance, World Resources Institute and Birdlife International. SCNL's experience as the implementing partner of PREDICT Liberia has placed the organization at the forefront of a new paradigm within the public health sector in Liberia. In the post-Ebola environment, Liberia has adopted a One Health approach to public health and

because SCNL has played such an important role in operationalizing and promoting this new paradigm, the organization has positioned itself as a leader in the field.

Society for the Conservation of Nature of Liberia (SCNL) is equipped with the necessary equipment and facilities to conduct fieldwork throughout Liberia. Located in Congo Town a suburb of Monrovia, SCNL has easy access to vendors in order to procure supplies. SCNL has several 4WD vehicles able to handle Liberia's rough terrain. SCNL is equipped with 4 Stirling Ultracold portable -86°C freezers, 2 dry shippers to maintain cold chain, 3 mobile centrifuges for use in the field, various sized mist nets, 2 harp traps for catching bats, and a label printer for labeling cryovials. SCNL also has a warehouse built from a converted shipping container and other basic equipment needed to conduct proper field work.

University of Nebraska Medical Center, Omaha, Nebraska, USA

The University of Nebraska Medical Center (UNMC) is a vital enterprise in the nation's heartland and has mission to improve the future of health care in Nebraska and beyond. As Nebraska's only public academic health sciences center, UNMC is committed to the education of a 21st century health care work force, to finding cures and treatments for devastating diseases, to providing the best care for patients, and to serving our state and its communities through award-winning outreach. UNMC is one of four campuses that make up the University of Nebraska system. UNMC has six colleges, two institutes and a graduate studies program, serving nearly 4,000 students in more than two dozen programs. No laboratory research for this project will occur at UNMC; project datasets accessed from UNMC computers will be password protected and secure connections such as VPN will be used when accessing the data from off-site.

The recently established UNMC Global Center for Health Security (GCHS) is one of the nation's primary biosecurity resources for training, education, research, and clinical care. The Center has become the focal point of state, national and international collaborations having created a spectrum of biosecurity and biodefense services to help prepare for natural and man-made disasters. The network of experts helps to advance the coordinated, interdisciplinary development of new research and clinical practice and to disseminate innovative approaches to keep communities safe from epidemics and to counter weapons of mass destruction.

UNMC The GCHS provides a unique platform for health system preparedness, awareness, recognition, and response for public health and hospital emergencies. With a comprehensive capability in research, education & training, and health system operations, we strive to facilitate 21st-century care for public health emergencies in all environments. Below are some of the centers and initiatives that fall under GCHS:

- Nebraska Biocontainment Unit (NBU). A collaborative project involving the University of Nebraska Medical Center & Nebraska Medicine (UNMC/NM), as well as the Nebraska Department of Health and Human Services
- National Training, Simulation and Quarantine Center (TSQC). Selected as the National Training, Simulation, and Quarantine Center in 2017. This \$20 million

HHS-funded capability will be home to the National Disaster Medical System & CStars ID training programs, and includes

- Nebraska Drug Development Pipeline. Collaboration among the Department of Defense, the National Strategic Research Institute (NSRI), the University of Nebraska-Lincoln, UNMC, and the pharmaceutical industry to develop new therapeutics and radiation countermeasures, products not currently prioritized for development.
- Nebraska Mobile Genomics Unit. Able to respond to a public health emergency by providing genomic characterization of the pathogen at the site of the outbreak.
- U.S. Air Force Center for the Sustainment of Trauma and Rediness Skills (C-STARS). First C-STARS infectious disease program dedicated to developing protocols, best practices, and training for USAF medical personnel in the care and transport of individuals with active or suspected HCI

Georgetown University, Washington, DC, USA

The Georgetown University Medical Center (GUMC) consists of a nationally-ranked School of Medicine (SOM), School of Nursing & Health Studies (NHS), Lombardi Comprehensive Cancer Center (LCCC), and Biomedical Graduate Research Organization (BGRO). GUMC is home to more than 400 basic and clinical research scientists, and 300 active clinical trials. Clinical care is provided at Medstar Georgetown University Hospital (MGUH) and satellite clinics through a partnership with MedStar Health, Inc. The Georgetown University Medical Center is the largest and most prominent Catholic medical center in the country.

All research staff at Georgetown University have exclusive use of PC-based desktop computers with extended RAM, significant GB hard disk space, dual-color flat-panel LCD monitors, and high-speed HP laser printers. Investigators will also have access to exclusive access to Macbook Pro or Dell laptops. Available software for desktop and laptop computers used for the project includes WINDOWS and Mac operating systems, MS-Office 2010, SPSS 20.0, and SAS 9.3. Study personnel will have full Internet and e-mail access; will be networked to shared, secure drives for data access; and will have full communication capabilities through the use of phone, fax, and email. GUMC provides complete hardware, software, and network support through its University Information Systems department. Box is also available for secure storage and access of files and folders on the Internet enabling the user to access files from any available computer with a web browser and Internet connection. All study investigators have secured private offices and study personnel also have office space. All investigators have access to conference rooms with video and teleconferencing equipment.

Dr. Standley has completed on-line certification from the IRB and NIH related to protection of human subjects in research. Georgetown University Policy on Protection of Research Data Standard operating procedures regarding data protection and patient confidentiality have been adopted throughout the institution. Office spaces, databases, and e-mail usage all have specific security requirements. The University and Medical

Center recently launched a new effort regarding protection of patient data. Dr. Standley and other members of the research team will attend relevant seminars/trainings.

Biostatistics & Bioinformatics Shared Resource (BBSR) provides basic, translational, clinical and population science investigators with access to high quality statistical science and informatics. BBSR functions include: study design; statistical analysis and reporting of research studies including clinical trials, studies with high dimensional "omics" and imaging data including pathway analysis; review and monitoring of clinical protocols through membership on the Protocol Review and Monitoring System and Data and Safety Monitoring Committees; and provision of biostatistics and informatics training and expertise in the collection, integration, management, and application of biomedical data. In addition, the BBSR provides investigators with advanced statistical and bioinformatics methods and expertise developed independently by BBSR faculty. The BBSR has excellent computing resources, informatics systems, and informatics and statistical software necessary for efficient and effective support of research. BBSR supports the development of the information architecture for connecting data and metadata from clinical, biospecimen, and research systems to enable all forms of research.

4. PLANNED WORKSHOPS: TOPIC, IMPLEMENTER, AND TIMELINE

All trainings to be conducted in Monrovia, Liberia or at field sites in Liberia.

Description	Lead	Timeline
Workshop 1a: All participants	Billy Karesh/	At Kickoff
Overall study protocol	Ellen Carlin (EHA)	
Half-day review of entire research design and anticipated outputs		
during kick-off meeting		
Overall research study protocol		
Workshop 2a: Task 2 personnel, Task 4 personnel, students	Emily Hagan (EHA)	Mid Y1
Human subjects	James Desmond	End Y3
Two-day didactic workshop targeted to all personnel engaged with	(LCRP)	
human subjects at clinical and field study sites and others who will		
handle human data		
Overview of human study protocol and project aims		
IRB/human subjects research protocol		
 Ethical considerations and practices for conducting human research 		
Recruitment, consent, and enrollment of human subjects		
Patient questionnaire and administration		
Community safety during sample collection		
Ethical practices for storing and conducting human		
research data and analysis		
Transport protocol		
Workshop 3a: Task 3 personnel, students	Michael Wiley	At kickoff
Biosafety and biosecurity	(UNMC)	Mid Y1

One-day didactic and hands-on workshop in adherence to core principles and requirements for safe and secure sample handling and management (based on written DTRA requirements and BMBL		Y3 refresh
5 th Edition Sections III-VI)		
 Biosafety and biosecurity 		
 Sample storage and disposition 		
Workshop 3b: Task 3 personnel, students	Michael Wiley	At kickoff
Laboratory techniques	(UNMC)	Mid Y1
Four-day didactic and hands-on intensive training in multiplex real-		Y3 refresh
time PCR, and refresher training on singleplex PCR and ELISA		
serology		
 real-time PCR testing and analysis 		
 NGS testing and analysis 		
Serology testing and analysis		
Workshop 4a: Task 4 personnel, students	James Desmond	At Kickoff
Animal subjects	(LCRP)/	Y3 refresh
Two-day didactic and hand-on training in ethics in animal research,	Ellen Carlin (EHA)	
personal protection during animal and sample handling, and	, ,	
storage and transport requirements		
Overall animal study protocol		
IACUC/animal subjects research		
Personal protective equipment		
Transport protocol		
Workshop 5a: Task 3 and other interested personnel	Michael Wiley	Y2
Lab data analytics	(UNMC)	
Three-day training workshop for results interpretation from all	,	
diagnostic testing modes used in project protocol		
Results interpretation		
Bioinformatics		
Workshop 6a: All personnel, other invited ministries relevant to	Catherine	OY2
risk and impact management	Machalaba (EHA)	
Risk reduction	` ,	
Four-day stakeholder workshop, especially those working on		
publications and policy and program implementation, to focus on		
analyzing project data and designing risk reduction and reporting changes		
analyzing project data and designing risk reduction and reporting changes		
analyzing project data and designing risk reduction and reporting changes • Questionnaire and diagnostic data analysis (statistical		
 analyzing project data and designing risk reduction and reporting changes Questionnaire and diagnostic data analysis (statistical methods, data analysis, and interpretation) 		
 analyzing project data and designing risk reduction and reporting changes Questionnaire and diagnostic data analysis (statistical methods, data analysis, and interpretation) 		

Annual training timeline:

Trainings	Y1	Y2	Y3	OY1	OY2
Workshop 1a: Overall study protocol					
Workshop 2a: Human subjects					
Workshop 3a: Biosafety and biosecurity	2x				
Workshop 3b: Lab techniques	2x				
Workshop 4a: Animal subjects	2x				
Workshop 5a: Lab data analytics					
Workshop 6a: Risk reduction					

5. FOREIGN PI AND KEY PERSONNEL LETTERS OF COLLABORATION

See next page.

NATIONAL PROPERTY OF THE PARTY
National Public Health Institute Of Liberia

Preventing and Controlling Public Health Threats

Office of the Deputy Director General for Technical Services Ref. No:NPHIL/RL/MPF-DDGT/088/'19

July 23, 2019

To: DTRA C-WMD Thrust Area 6 Program

This letter signifies my commitment to support the proposal, Reducing the threat from high-risk pathogens causing febrile illness in Liberia.

I strongly support this project. It is designed to build on significant investment already underway in Liberia to augment country capacity for surveillance, detection, and reporting of infectious diseases both endemic and emerging. As some of these projects come to an end, it is critical that the capacity underway be maintained and advanced. This initiative will allow for that. It will also support the creation of a body of scientific knowledge about the presence of pathogens in humans and animals and their epidemiological and ecological dynamics, and the testing of important hypotheses related to the movement of pathogens between humans and animals.

My own experience directing and overseeing the National Public Health Reference Laboratory and the Public Health Diagnostics and Research Laboratory in Liberia are directly relevant to the project objectives.

My academic and professional background in epidemiology, bio surveillance, case management and community mobilization equip me with both the technical skills and contextual perspective needed to ensure that this project meets mutual goals for Liberia and for the U.S. funder.

My oversight will make certain that all of the research being undertaken in the field and in NPHIL's laboratories meet Liberia's specific priorities for research and capacity building.

I am looking forward to being co-Principal Investigator and ensuring a successful outcome for the project.

Best regards,

Mosoka P. Fallah, PhD, MPH, MA

Society for the Conservation of Nature of Liberia (SCNL)



Tubman Boulevard, Congo Town, CARE Compound

P.O. Box 2628 Monrovia, Liberia, West Africa

(+231) 886 573 612/0777544611

Website: www.scnlliberia.org

E-mail: scnlliberia@yahoo.com



Michael Garbo
Executive Director
Society for Conservation of Nature of Liberia
Congo Town, Monrovia

July 23, 2019

To: DTRA C-WMD Thrust Area 6 Program

This letter signifies my commitment to support the proposal, Reducing the threat from high-risk pathogens causing febrile illness in Liberia.

I strongly support this project. It is designed to build on significant investment already underway in Liberia to augment country capacity for surveillance, detection, and reporting of infectious diseases both endemic and emerging. As some of these projects come to an end, it is critical that the capacity underway be maintained and advanced. This initiative will allow for that. It will also support the creation of a body of scientific knowledge about the presence of pathogens in humans and animals and their epidemiological and ecological dynamics, and the testing of important hypotheses related to the movement of pathogens between humans and animals.

My own experience as Executive Director of the Society of Conservation of Nature of Liberia is directly relevant to the project objectives. My experience overseeing and implementing multiple conservation projects and most recently the USAID funded PREDICT project provides me with the requisite experience to ensure the project meets the goals set forth in the proposal. My involvement will ensure that the wildlife surveillance component of this project will be professionally executed in the field and financially.

Sincerely yours,

Mr. Michael F. Garbo

Executive Director/SCNL



July 24, 2019

To: DTRA C-WMD Thrust Area 6 Program

This letter signifies my commitment to support the proposal, Reducing the threat from high-risk pathogens causing febrile illness in Liberia.

I strongly support this project. It is designed to build on significant investment already underway in Liberia to augment country capacity for surveillance, detection, and reporting of infectious diseases both endemic and emerging. As some of these projects come to an end, it is critical that the capacity underway be maintained and advanced. This initiative will allow for that. It will also support the creation of a body of scientific knowledge about the presence of pathogens in humans and animals and their epidemiological and ecological dynamics, and the testing of important hypotheses related to the movement of pathogens between humans and animals.

As the Country Coordinator of PREDICT Liberia and over a decade conducting fieldwork around the world on zoonotic disease surveillance, my experience is directly relevant to the aims of this project. As the Co-Director of Liberia Chimpanzee Rescue and Protection as well as a consultant for many international conservation and public health I have a great deal of experience overseeing and implementing successful zoonotic disease surveillance projects in wild animal and domestic animal populations under a variety of settings and cultures. Having resided in Liberia for the past four years, I have built strong professional relationships with most of the principals involved in this project and have a very good understanding of Liberia's public health landscape. LCRP's involvement will ensure successful implementation and execution of this project.

Sincerely,

Dr. James S. Desmond DVM, MS

Co-Director, Liberia Chimpanzee Rescue and Protection



COLLEGE OF PUBLIC HEALTH
Department of Environmental, Agricultural
and Occupational Health

July 17, 2019

To: DTRA C-WMD Thrust Area 6 Program

From: Michael Wiley

This letter signifies my commitment to support the proposal, Reducing the threat from high-risk pathogens causing febrile illness in Liberia.

I strongly support this project. It is designed to build on significant investment already underway in Liberia to augment country capacity for surveillance, detection, and reporting of infectious diseases both endemic and emerging. As some of these projects come to an end, it is critical that the capacity underway be maintained and advanced. This initiative will allow for that. It will also support the creation of a body of scientific knowledge about the presence of pathogens in humans and animals and their epidemiological and ecological dynamics, and the testing of important hypotheses related to the movement of pathogens between humans and animals.

My own experience with setting up a genomics laboratory in Liberia and preforming sequencing activities at the Liberian Institute for Biomedical Research is directly relevant to the project objectives. I feel my skill set and expertise complements the work being purposed and very excited to be included.

Sincerely,

Michael Wiley

Department of Environmental, Agricultural and Occupational Health

College of Public Health

University of Nebraska Medical Center

984388 Nebraska Medical Center / Omaha, NE 68198-4388 402-559-8924 / FAX 402-559-7259 / www.unmc.edu/publichealth/



July 16, 2019

To: DTRA C-WMD Thrust Area 6 Program

From: Claire J. Standley, PhD

This letter signifies my commitment to support the proposal, Reducing the threat from high-risk pathogens causing febrile illness in Liberia.

I strongly support this project. It is designed to build on significant investment already underway in Liberia to augment country capacity for surveillance, detection, and reporting of infectious diseases both endemic and emerging. As some of these projects come to an end, it is critical that the capacity underway be maintained and advanced. This initiative will allow for that. It will also support the creation of a body of scientific knowledge about the presence of pathogens in humans and animals and their epidemiological and ecological dynamics, and the testing of important hypotheses related to the movement of pathogens between humans and animals.

Georgetown University is a leading academic and research institution in the USA, with multiple schools and departments contributing to a strong cross-campus research agenda that encompasses various aspects of public health and migration. The Center for Global Health Science and Security consists of a multi-disciplinary team that focuses on research to support capacity building for preparedness and response to public health emergencies and expertise in translating public health evidence into actionable policies and practices for decision-makers.

My own experience with health systems strengthening, with an emphasis on prevention and control of infectious disease in both humans and animals is directly relevant to the project objectives of building Liberian capacity for high consequence zoonotic pathogen surveillance associated with human acute febrile illness. I have extensive experience in international capacity building for public health and One Health efforts.

Sincerely,

Claire J. Standley, PhD

Assistant Research Professor

Center for Global Health Science and Security

Georgetown University



REPUBLIC OF LIBERIA . MINISTRY OF HEALTH

P. O. BOX 10-9009 1000 MONROVIA 10, LIBERIA WEST AFRICA

Office of the Deputy Minister for Planning Research & Human Development Ref. No.:

MOH/GOL/AVT-DMP/786/*19

July 24, 2019

To: DTRA C-WMD Thrust Area 6 Program

From: Ministry of Health, RL

This letter signifies the Libera's Ministry of Health commitment to support the proposal, Reducing the threat from high-risk pathogens causing febrile illness in Liberia.

The Ministry of Health pledged her support to this project which is designed to build on significant investment already underway in Liberia to augment country capacity for surveillance, detection, and reporting of infectious diseases both endemic and emerging. This initiative will also support the creation of a body of scientific knowledge about the presence of pathogens in humans and animals and their epidemiological and ecological dynamics, and the testing of important hypotheses related to the movement of pathogens between humans and animals.

The Ministry of Health will work with the National Public Health Institute of Liberia (NPHIL) on this project via a memorandum of understanding to implement the human clinical element of the present study by providing personnel to execute the study protocol at county hospitals. For the first three years, the study sites will be Redemption Hospital in Monrovia (a public hospital) and Phebe Hospital in Bong (a private hospital that received public funding from our ministry).

Sincerely,

A. Vallee Tulay

Deputy Health Minister for Policy Planning, Research and M&

July 17, 2019

To: DTRA C-WMD Thrust Area 6 Program

From: Nursing for All

This letter signifies my commitment to support the proposal, Reducing the threat from high-risk pathogens causing febrile illness in Liberia.

Nursing for All (NFA) strongly supports this project as relevant to the health needs of Liberia itself and the surrounding region. The project effectively leverages work that has already been accomplished in Liberia to augment country capacity for surveillance, detection, and reporting of infectious diseases. As some of these projects come to an end, it is critical that the capacity underway be maintained and advanced to prevent the next Ebola crisis. The project is highly likely to advance that goal, while furthering our knowledge of zoonotic infectious diseases of epidemic potential.

NFA's six years of experience with nurse capacity development in Liberia will be germane to this project as we assist in training and coordinating hospital personnel to collect the samples this project needs. NFA has operated in Nimba County since our inception and is delighted to support a project so relevant to the concerns of nurses currently practicing in that county.

Sincerely,

Laura Jean Ridge, ANP-BC, AAHIVE

Founder

Nursing for All

Thrust Area 6/Cooperative Counter WMD Research with Global Partners Defense Threat Reduction Agency Broad Agency Announcement HDTRA1-14-24-FRCWMDBAA

6. GUIDELINES AND PROTCOLS FOR HUMAN AND ANIMAL SUBJECTS RESEARCH

For human subjects research, our protocols will align with PREDICT protocols with which our in-country teams have been complying for four years. They will be modified to reference the specifics of this project's IRB (as opposed to PREDICT's IRB).

• 5.4 Human Syndromic Surveillance (see next page)



Section 5.4. Human Syndromic Surveillance

Prepared by

Christine K Johnson, PREDICT Biological and Ecological Surveillance Lead, UC Davis Karen Saylors, PREDICT Behavioral Surveillance Co-Lead, Metabiota Corina Monagin, Metabiota

> With contributions from: Maureen Miller PREDICT Behavioral Surveillance Lead Jason Euren, Metabiota Ashley Lucas, Metabiota Nicole Ureda, UC Davis Kim Dodd, Metabiota Brian Bird, UC Davis David Wolking, PREDICT Operations Officer Tracey Goldstein, PREDICT Pathogen Discovery Lead

> > and the PREDICT One Health Consortium

Objectives: To safely and ethically collect biological samples and data from humans in clinical settings.

This document was made possible by the generous support of the American people through the United States Agency for International Development (USAID) Emerging Pandemic Threats PREDICT program. It was drafted to support activities conducted under PREDICT and is intended for an audience of qualified professionals trained in standard, associated best practices. This guide is not intended for use by untrained individuals.

The contents of this document are the responsibility of the authors and do not necessarily reflect the views of USAID or the United States Government. USAID, PREDICT, and the authors of this guide bear no responsibility for the actions of non-PREDICT-affiliated individuals implementing the material herein.

The authors assert that human surveillance and sampling should always occur in compliance with all applicable laws and regulations and should only be undertaken after securing all necessary permits and approvals, including ethical approvals.

For more information about the contents of this guide, please contact predict@ucdavis.edu.

Suggested Citation Form: PREDICT One Health Consortium 2016. PREDICT Operating Procedures: Human Syndromic Surveillance













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Procedures for Patients in Hospitals and Clinics

Section 5.4.6. Overview of Procedures in Hospitals and Clinics

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Section 5.4.20. Appendix V. IRB Compliance Responsibilities and Expectations



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Planning Syndromic Surveillance

Section 5.4.1. Confirmation of Knowledge

When you are familiar with the information in this guide, take the PREDICT quiz Section 8.4.12. Human Syndromic Surveillance.

PREDICT team members involved in the human surveillance activities described in this guide must be familiar with PREDICT's Institutional Review Board (IRB)-approved Master Protocol and related IRB obligations and should take and pass the quiz Section 8.4.18. PREDICT IRB Compliance and Monitoring.

Section 5.4.2. Ethical and Training Considerations

All PREDICT activities involving human subjects must adhere to the most up-to-date version of the Master Protocol that has been approved by the UC Davis Institutional Review Board (IRB). The Master Protocol is available online through the PREDICT Operating Procedures e-Book under "Section 5.3" (https://eidith.org/Resources/PREDICTOperatingProcedureseBook.aspx). In addition, PREDICT activities involving human subjects may only be initiated after obtaining ethical approval from country institutional review boards.

Before implementing human subjects research related activities, documentation of all necessary country approvals along with attestations of trainings and adherence to ethical standards must be provided for review to UCD, and the UCD IRB as appropriate. These include

- documentation of local IRB/ethical approvals and all approved documents (including the consent form and human questionnaire translated into the local language and any additional introduction letters and recruitment scripts planned for use);
- completion of CITI training for all personnel listed on the country protocol (with training events documented in EIDITH);
- 3) training of project staff in procedures outlined in this SOP (with training events documented in EIDITH);
- 4) identification and documentation of local institutional biosafety committee (IBC) requirements (if any);
- a consultation from a local expert summarizing risks to the area; and
- 6) an attestation that all personnel will adhere to USA and local government federal and state regulations regarding protection of human subjects research.

A checklist with both country IRB preparation guidance and post country IRB approval procedures relating to UC Davis IRB authorization has been created to assist country teams with this process (Appendix 1). Please review this checklist when preparing your application for













country IRB submission and to guide the final UCD IRB authorization process following local IRB approval. The UC Davis IRB must approve each country's protocol before local activities are initiated.

Effort will be made in all recruitment, consent, sampling, and interview activities to assure potential participants that their **participation in the study is completely voluntary** and that all information shared with researchers will be kept confidential. Every effort will be made to avoid coercion and ensure the privacy, respect, dignity, and freedom of each participant.

PREDICT staff named on the country protocol must complete Collaborative Institutional Training Initiative (CITI) training in human research ethics for biomedical researchers. In addition, PREDICT staff listed in the country protocol will need to ensure proper training of hospital/clinic POC(s) in study procedures, including recruitment, enrollment, informed consent, and sample collection, to ensure compliance with our Master IRB protocol and PREDICT practices.

When the staffing and implementation plans have been established, a plan should be developed to train clinic and hospital staff on protocol procedures to ensure implementation of agreed upon study design. Consideration should be given to how information will be presented, as not every facility staff member will need to know every detail of the PREDICT plan.

Section 5.4.3. Partnerships with Participating Health Facilities

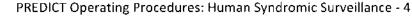
Symptomatic patients will be recruited for syndromic surveillance in collaborating health facilities that have a catchment area that includes high-risk communities and PREDICT field sites where linked animal and human samples are being collected concurrently.

Syndromic surveillance of patients presenting to health facilities is necessary to identify symptomatic individuals. In order to optimize the chances of accessing the most relevant acute symptomatic individuals presenting at health facilities, appropriate selection and engagement of health facilities is key. While each individual site will require a slightly different approach, teams can be guided by the following methodology when looking to engage and maintain relationships with their sites in each country.

Assessment of the Health Facility

After initial engagement with key personnel, teams will need to work collaboratively with health facility personnel to consider the most optimal way to engage with clinical, laboratory and professional staff. A short form to assist with initial assessment of potential partners for syndromic surveillance is attached in Appendix 2 (Health Facility Screening Form).

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Understanding Patient Flow

A thorough review of patient flow from arrival at the facility to discharge should be done by country teams through scoping site visits including:

- Where do patients normally present upon arrival to the facility and who would they first come into contact with for initial screening and assessment?
- What health professionals would potentially be involved in the assessment, diagnosis and treatment of individuals presenting with syndromes of interest throughout their stay at the health facility?
- If patients are not admitted to a health facility but might require follow-up care, what are the normal follow-up and discharge procedures?
- If patients are admitted to the health facility, what service units/departments might be involved in their care and treatment?

Understanding Staffing Needs

Understanding normal daily routine of staff and diagnostic practices, and identifying point of contact(s) (POC), will ensure that PREDICT procedures fit in as seamlessly as possible into the normal clinic routine.

- What is staff workload like?
- Who is your POC(s) to help identify symptomatic individuals?
- Who is your POC(s) for recruitment of appropriate individuals?
- Who may be best suited for assisting with study procedures, including sample collection and administration of questionnaire?
- Are these POC(s) likely to be the same person or different?
- What will be the best way to engage and train staff about study procedures and protocol?
- Are clinical staff skilled in proposed sampling procedures?
- How will costs for staff time at hospitals be covered and implemented?

The team should identify how PREDICT activities will fit into hospital workflow and develop an implementation plan that will need to be agreed upon with the hospital team. Decisions will need to be made about whether current hospital staff will be assigned additional duties or whether a new staff person(s) will be hired.

A detailed implementation plan, taking into consideration the following issues, should be developed with participating hospital staff:

- What are some potential barriers to implementation?
- What level of visibility and follow-up will be appropriate to keep sites engaged for the duration of the study?
- How will you maintain clear and open communication with health facility staff?
- What is the plan if key personnel involved in implementation leave the health facility?
- How will you take into consideration any known or observed differences religious/ethnic/immigration status in targeting individuals for recruitment?
- How will you monitor for adverse events?

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Section 5.4.4. Patient Recruitment in Hospitals and Clinics

PREDICT targets patients that have been recently admitted to clinics and hospitals with acute conditions that match the case definitions for undiagnosed febrile syndromes of likely viral origin. The objective of PREDICT's testing strategy is to detect novel viruses that are causing diseases in patients without a known etiology. PREDICT testing should not overlap or duplicate diagnostic testing already being conducted at the hospital.

In communications with clinic medical staff, clinic administration and patients who might be enrolled, it is critical to note that PREDICT's testing strategy will not directly inform on patient diagnoses or treatment. Our testing strategy is exploratory at the community level and not designed as a point of care diagnostic platform for normative (known) diseases.

Case definitions should be reviewed closely with hospital POC(s) in advance of study implementation to identify patients for enrollment. Patients for enrollment may be identified in the emergency room, in the ward, or in the intensive care unit of each participating clinic and hospital. The POC(s) at each location should use the clinical case definitions below to target potential participants. Case definitions for syndromes have been standardized with those commonly used by WHO and CDC to allow national health authorities to interpret data in an international context.

Syndromic Category Clinical Case Definitions

Surveillance should be designed to target specific syndromes as appropriate in each clinical setting. Identification of relevant syndromes for each facility should be done on a facility-by-facility basis with participating partners and facility staff. Selected syndromes should reflect 1) high priority undiagnosed syndromes with likely animal origins, and 2) the clinical caseload of the hospital or clinic so that a large number of patients with targeted syndromes can be enrolled. Additionally, targeted syndromes should take into account local needs and seek to not duplicate ongoing syndromic surveillance programs by other partners at the clinic or hospital.

In larger referral hospitals with high caseloads, enrollment of patients in the PREDICT study will most likely want to focus on the following three severe syndromes and clinical case definitions to better target individuals with potentially unknown viral pathogens of concern:

1. Severe Acute Respiratory Illness (SARI) of unknown origin:

Acute onset of a fever greater than or equal to 38° C (100.4° F) within the last 5 days AND cough

AND requires hospitalization (or referral to a hospital)

AND absence of a more likely clinical explanation.

2. Acute Encephalitis Syndrome (AES) of unknown origin:

Acute onset of a fever (greater than or equal to 38°C or 100.4 °F) within the last 5 days AND clinical signs consistent with meningitis, encephalitis, acute flaccid paralysis, or other













acute signs of central or peripheral neurologic dysfunction, as documented by a physician or a health-care provider

AND absence of a more likely clinical explanation.

3. Hemorrhagic fever of unknown origin:

Acute onset illness with a fever greater than or equal to 38°C (100.4 °F) within the last 5 days in a severely ill patient

AND clinical findings of bleeding or hemorrhage with no apparent cause

AND one or more of the following clinical findings: 1) severe headache, 2) muscle pain, 3) rash on the trunk within 3–4 days after rash onset, 4) vomiting, 5) diarrhea, 6) abdominal pain, or 7) pharyngitis, as documented by a physician or a health-care provider AND absence of a more likely clinical explanation.

See also http://wwwn.cdc.gov/nndss/script/casedef.aspx?CondYrID=893&DatePub=2010-01-01

In smaller rural clinics, with limited diagnostic capabilities and lower patient caseloads, it may be appropriate to enroll a broader range of patients with suspected illness of unknown origin. In these circumstances, the following 2 clinical case definitions, for less severe and less specific syndromes, may be appropriate to target in addition to the severe syndromes targeted above.

4. Fever of Unknown Origin (FUO):

A temperature greater than or equal to 38° C (100.4° F) for more than 24 hours as reported or measured by the patient or a health-care provider

AND absence of a more likely clinical explanation or failure to reach a diagnosis.

5. Influenza-like Illness (ILI) of unknown origin:

Acute onset of a fever greater than or equal to 38° C (100.4° F) within the last 5 days.

AND cough

AND absence of a more likely clinical explanation.

Be sure to follow the most up-to-date version of the PREDICT Master IRB protocol with respect to all procedures, including recruitment, enrollment, inclusion, and exclusion criteria, and sample sizes.

Additional Enrollment Criteria and Considerations

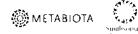
PREDICT and hospital/clinic staff must take special care to ensure that patient recruitment and enrollment is not adversely impacting patients seeking medical care, or hindering patients' ability or willingness to seek medical care in any way. Recruitment and enrollment of patients should only occur after patients have established access to health services. Patient recruitment for this study should not be linked to patient intake or admission. Enrollment must be completely voluntary.

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Eligible individuals should be recruited as soon as safely possible after presentation to the health facility, and after initial screening to ascertain whether patients meet the above clinical case definition, in order to maximize the utility of the biologic specimen collected. Successful recruitment of syndromic individuals will require monitoring of incoming patients to health facilities. Recruitment from health facilities involves many coordinated steps, involving coordination between PREDICT and health facility staff.

In addition to the clinical case syndromes identified above, inclusion and exclusion criteria outlined in the approved Master IRB protocol that must be applied to all PREDICT studies is reiterated below:

Additional Inclusion Criteria	Exclusion Criteria		
Adults (18 years of age or greater) who provide informed consent	Individuals aged 18 years or older who refuse to provide informed consent, a parent or guardian of a child who refuses to provide consent on behalf of their child, or a child 12 years or older unable or unwilling to provide assent		
 Children (2-17 years of age) * with an accompanying parent or guardian who is able to provide informed consent. Assent of children 12 years or older also required. 	Adults unable to provide informed consent, including individuals with physiologically or medically induced cognitive impairments. **		
3. Pregnant women	Children without an accompanying parent or guardian who is able to provide informed consent		
	4. Children < 2 year of age		
	5. Prisoners		

^{*}Children defined as 2-17 years unless the age of majority in a participating country differs. In $\,$ these cases, the age range for children will be listed in the country specific IRB protocols.

Section 5.4.5. Determining the Number of Patients to Enroll in Clinical Settings

Estimated sample sizes of patients approved in the Master IRB is a maximum of 1,620 in each country for syndromic surveillance activities over the course of the project. Any deviations from this total estimate will need to be reviewed and authorized by the UCD IRB (See Section 5.8.1b).

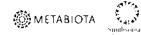
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^{**}Patients who are incapacitated and unable to provide informed consent may be enrolled if an appropriate patient representative (e.g., family member) is present, willing, and able to provide consent on the patient's behalf. If, in the course of study operations, such a patient become capable of providing informed consent, the patient will be directly consented.



Patients meeting targeted case definitions should be enrolled systematically across the year so that the patient population is sampled across all relevant seasons. Monthly sample sizes throughout the year should reflect a consistent proportion of patients meeting targeted case definitions.

In general, patients should be enrolled using a quota system until approximately 20% of the participants are children < 18 years of age and 80% are adult. For larger hospitals and clinics, interval sampling will be implemented by selecting every Nth case at the site among those individuals who meet enrollment criteria. The interval should be determined by country teams based on an evaluation of the expected number of cases presenting at the site within a given year in order to best meet study design and sample size criteria. For example, in a large hospital with many patients meeting enrollment criteria, the first patient meeting criteria would be selected for study participation followed by selection of every 3rd or 5th individual (depending on the appropriate interval) until the maximum sample size is obtained.

Procedures for Patients in Hospitals and Clinics

Section 5.4.6. Overview of Procedures in Hospitals and Clinics

PREDICT and hospital/clinic staff should consider and make arrangements to conduct the following steps. These steps may need to be adjusted depending on the circumstances of each enrolled health facility. An overview is summarized below for ease of use in training PREDICT staff. Details for each procedure are described further below and in the IRB protocol.

Outline of Activities Involving Patients:

- Patient Triage and Intake: Patients arrive at health facilities and present to patient triage and/or intake units. Clinic or hospital POC(S) will assess patient etiology as part of their normal routine. Following patient triage and intake, patients with presenting syndromes of interest will need to be actively referred to PREDICT POC(s). This active referral will deviate from the health facility staff's normal routine. Country coordinators will need to establish a protocol with the health facility staff prior to beginning recruitment and ensure that this process does not negatively impact patient access to health services, or health facility workflow.
- 2. Administer Informed Consent: Patients determined eligible via the Screening Form will be offered participation in PREDICT. Study staff will administer the informed consent form to interested patients. No study procedures can be conducted without having first obtained informed consent. Informed consent must happen in a private space and should not involve anyone other than research staff, the patient, a representative if the patient is incapacitated, an impartial witness if the participant is illiterate, and a













parent/guardian if the patient is a child. Once consented, the patient is considered an enrolled participant.

Note: The presence of clinical staff directly involved in patients' care during the consenting process should be construed as coercive. Patients may think they need to consent in order to continue receiving care. PARTICIPATION MUST BE STRICTLY VOLUNTARY.

- **3. Collect PREDICT Specimens**: Once enrolled, PREDICT POC(s) will coordinate human biologic specimen collection. Samples may be taken concurrently when collecting samples for normative diagnostics or independently.
- 4. Administer Human Questionnaire: Study staff will administer the standardized IRB approved human questionnaire to all enrolled participants at a point in time that ensures patient privacy and is not disruptive to patient care. The human questionnaire must be administered to all patients from which a biologic specimen is collected.

In clinical settings with critically ill patients, the full human questionnaire may not be possible or appropriate to administer. At a minimum, the "Core Human Questionnaire" (pages 1-6 of Human Questionnaire) and the Human Hospital & Clinic Module for Patients should be completed.

5. Normative Diagnostics: Throughout a patient's inpatient stay, a variety of normative diagnostics, if available, might be run by the health facility staff to determine patient etiology. If additional sampling procedures are conducted as part of normative diagnotics that do not overlap with PREDICT specimen types already collected, PREDICT may request that any unused or remaining diagnostic specimen types be saved from patients enrolled in the PREDICT study (such as cerebral spinal fluid, pleural fluid, etc) to expand the sample set for PREDICT testing.

Once health facility staff obtain diagnostic results, patients' etiologies will be updated. This information can be used to prioritize samples for testing with PREDICT viral family protocols. If an etiology for fever or clinical syndromes is identified, samples from this patient are of lower priority, unless a novel viral infection is still suspected because the objective of PREDICT's testing strategy is to detect novel viruses that are causing disease in patients. PREDICT POC(s) will need to follow the inpatient progress of enrolled participants to know when etiologies are updated.

6. Second PREDICT Serum Specimen Collected: 7 days after the first sample collection or later, an additional serum sample (the discharge serum) should be obtained from participants when possible.

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Section 5.4.7. Administering Informed Consent

Participation of human subjects in the study will be strictly voluntary and will require signed, informed consent. All consent discussions and procedures will be conducted in a private room or location with a trained staff member fluent in the local language. Only the PREDICT staff person/POC and the patient will be present during the consent process. Additionally, the patient's representative if the participant is incapacitated, an impartial witness if the participant is illiterate, and/or the patient's parent or guardian if the patient is a child, can be present during the consent process. CITI-trained PREDICT staff may occasionally observe consent procedures to ensure they are appropriately and thoroughly conducted.

All participants will be given an information sheet and consent form prior to being asked to participate in this study. Potential participants will review the information sheet and consent form with the PREDICT POC(s) and will be given time to ask questions. During the review, POC(s) will explain details of the study, including:

- Purpose of the study,
- Why they were selected,
- What will happen if they enroll in the study,
- Potential risks due to their participation,
- How their participation is beneficial to understanding viral pathogens in the community,
- That their participation is completely voluntary,
- How they can withdraw their participation at any time,
- How participation in the study will not interfere with, nor affect, their routine medical care in the health facility,
- How PREDICT testing is exploratory research, and not diagnostic, and this will not inform on patient diagnosis or treatment.
- Test results, these will not be directly communicated back to the participant

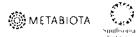
PREDICT Study staff POC(s) will review the consent form with participants, answering any questions participants have. It should be made clear to all participants that any data or information collected will be kept strictly confidential. Measures will be taken to ensure the respect, dignity, freedom, and privacy of each participant. PREDICT POC(s) involved in the enrollment and recruitment of participants must avoid coercion of any kind. The PREDICT representative conducting informed consent procedures will not enroll the participant in the study unless confident that the participant or his or her representative fully understands the study and all potential associated risks and benefits.

After reviewing the forms and discussing the study, individuals who agree to participate will sign and date two copies of the consent form, and the staff member conducting the consent discussion will also sign and date the consent forms. If the participant is a child, he or she will













be asked to provide assent to participate in the study and the patient's parent or guardian will sign and date the consent forms. If the patient is illiterate, the witness will sign and date two consent forms. If the patient is incapacitated, his or her representative will sign and date the consent forms. The patient will be given a copy of all consent documents.

Section 5.4.8. Brief Overview of PPE

Minimum PPE Required for Safe Human Specimen Collection

The minimum PPE used by healthcare professionals for human sampling should follow the CDC and other international guidelines for best practices and precautions.

The following are the minimum PPE requirements:

- Gloves
- Designated clothing (which may include gown, apron, long sleeve lab coat)
- Closed-toed shoes
- Eye protection (glasses or goggles), face mask or shield

(See the PREDICT Biosafety and PPE Guide (Section 4.1) for detailed instructions regarding PPE Use.)

Section 5.4.9. Collecting Clinical Specimens

Enrolled patients who satisfy inclusion criteria as described above (with signed consent form) will be asked to provide clinically relevant biological specimens based on clinical symptoms. To ensure patient privacy, no identifying information from patients will be stored with, or paired with, biological specimens or test results.

Patients should be enrolled with specimens and data collected within 3-5 days of onset of symptoms if possible, and not longer than 10 days after onset becase we are targeting viral etiologies. Critically, patients must have specimens collected as soon as possible after admission in order to ensure they are captured in the viremic phase and/or while they are still shedding the virus, if the illness turns out to be of viral origin. If feasible, hospitalized patients may have repeated serum samples collected at seven days after enrollment, or later before discharge.

Biological samples may only be collected by trained personnel certified by the country's authority for certification of medical professionals. All personnel collecting or handling PREDICT biological specimens must wear appropriate PPE and practice Universal Precaution procedures.

Study representatives should conduct activities in a secure location and a confidential v.27Feb2017 PREDICT Operating Procedures: Human Syndromic Surveillance - 12













manner to ensure participant privacy. A barrier or private room should be utilized so that participants cannot be seen by outside observers while they are being sampled. During and immediately after sample collection, trained medical professionals and/or clinic staff will monitor specimen collection site(s) and treat any complications according to existing health facility protocols.

Summary of Clinical Specimen Types

The decisions about which specimens to collect should be based on the patient's clinical symptoms (eg. blood and oral/nasal swabs for respiratory patients;):

- 2 x Oral or Nasal or Oropharyngeal swabs one in 500 μL VTM and one in 500 μL Trizol
- 2 x Whole blood samples one with max of 500 μL of whole blood in 500 μL VTM and one with max of 500 µL of whole blood in 500 µL Trizol
- 2 x Serum samples 2 x 500 μL aliquots, frozen without media
- 2 x Urogenital swab samples one swab each in 500 μl VTM and 500 μl Trizol OR
 - 2 x Urine samples one 500 μL urine sample each in 500 μL VTM and in 500 μL Trizol
- 2 x Rectal swabs one swab in 500 μL VTM and one in 500 μL Trizol OR
 - 2 x Fecal samples 0.5cc (pea size) feces in 500 μL VTM and 0.5cc (pea size) feces in 1 mL Trizol
- Additional samples or aliquots of specimens collected for standard normative diagnostic purposes by hospital staff may be requested, as appropriate and based on clinical symptoms (see below).

Whole Blood and Serum

Trained phlebotomists, doctors, or nurses will collect venous blood samples by standard venipuncture from the right or left antebrachium.

A minimum of two blood samples will be collected from each participant. Collect one sample into a vacutainer tube containing serum separator and the other into a vacutainer tube containing EDTA. For children aged 12 years or younger, collect a maximum of 6mL in each tube. From individuals aged 13 years and older, collect a maximum of 12mL per tube.

Ensure adherence to appropriate PPE while handling biological specimens. Allow blood in the red top or serum separator tube to clot, then centrifuge. After clotting and centrifugation, aliquot a minimum of two (and up to four) 0.5 mL aliquots of serum into individual cryovials without Trizol or VTM.

From the EDTA lavender top tube, place up to 500 µL whole blood directly into 2 vials, one containing 500 µL VTM and one containing 500 µL Trizol. Mix each vial well.













Samples will be frozen immediately in liquid nitrogen and then transferred to an ultralow (-80°C) freezer as soon as possible for storage until analysis.

Note that two blood sampling events are warranted if feasible in a hospital or clinic setting. one on the day of enrollment and one seven days after enrollment or later (before discharge), to collect a serum sample only. If serologic assays are available for use for targeted viruses, a rise in IgM with convalescence might assist in establishing causality with disease syndromes.

Oral, Nasal, or Oropharyngeal Swabs

Each patient may have duplicate oral, nasal, or oropharyngeal swabs collected on the day of enrollment to the study.

Oral and nasal swabs will be collected by applying a sterile, flexible, nylon-tipped swab to the appropriate tissue and gently rubbing for 2-5 seconds. Oropharyngeal swabs will be collected by medically trained personnel by gently inserting sterile, flexible, nylon-tipped swabs into the pharyngeal cavity for 2-5 seconds and rotating while removing, as is done for diagnostic procedures.

Place each swab into its own vial, one containing 500 μL VTM and one containing 500 μL of Trizol, mix each tube well, and freeze immediately.

Rectal Swab or Feces

Rectal swabs will be collected by gently inserting 2 sterile, flexible, nylon-tipped swabs into the anal canal, moving them from side to side, and rotating while removing. Place each swab into a vial, one containing 500 μL VTM and one containing 500 μL of Trizol. Mix each tube well and freeze immediately.

If patients are to provide a stool sample instead, they will be provided containers labeled with their individual ID number and instructions on how to collect an uncontaminated fecal sample, including appropriate guidelines for hand washing after sample collection.

Add 500 μL (a pea-sized piece) of feces directly into each of two vials, one containing 500 μL VTM and one containing 1ml Trizol. Mix each tube well and freeze immediately.

Urogenital Swab or Urine

A urine sample will be collected in a sterile universal container. Patients will be provided containers labeled with their unique ID numbers and instructions on how to collect an uncontaminated urine sample, including appropriate guidelines for hand washing after













sample collection.

Add up to 500 µL of urine directly into each of two vials, one containing 500 µL VTM and one containing 500 µL Trizol. Mix each tube well and freeze immediately.

If urine can't be obtained, collect two urogenital swabs and place into two vials, one containing 500 μL VTM and one containing 500 μL of Trizol. Mix each tube well and freeze immediately.

Additional Samples

For hospitalized patients, PREDICT also may receive remnants or aliquots of appropriate clinical specimens that have already been collected for diagnostic purposes. PREDICT testing should be conducted on remaining sample aliquots only after standard diagnostic procedures have been completed to ensure PREDICT activities do not interfere with patient care. These samples may include urogenital swabs, cerebral spinal fluid (CSF), pericardial fluid, pleural fluid, ocular swabs, or others. PREDICT should collect these remnants or aliquots in keeping with the respective participant's clinical symptoms, for instance, pleural fluid would be sourced from participants with respiratory distress, CSF from participants with encephalitis, etc. These samples can be frozen at -80 °C without Trizol or VTM. If additional PREDICT analyses are done on hospital diagnostic screening samples, results will not be communicated to patients or participating health facilities.

Section 5.4.10. Medical History and Behavioral Risk Data Collection in Clinical Setting

All enrolled patients will complete the required elements of the *Human Questionnaire* and the Human Hospital and Clinic Module for Patients. If appropriate given the clinical setting and patient condition, the full PREDICT Human Questionnaire with all relevant modules can be completed.1

Questionnaire data will be collected by trained staff in a strictly confidential manner. Individual interviews will be conducted in private with no other individuals within a 10-foot distance, ensuring that others cannot hear the interviews. A barrier will be created so that no other individuals can view the participant while they are in their interview. Staff will take care to pair interviewers and respondents by sex to ensure protection of women and children and privacy











 $^{^{}m 1}$ To access the Human Questionnaire and desired module bubble forms, log in to EIDITH at https://connect.eidith.org/. Click the "Download Bubble Forms" button and select "Human Questionnaire" under the Choose Type drop-down menu. Select the Questionnaire or module you wish to download, indicate the number of forms you would like, and press "Submit." When prompted to do so, click on the word "here" to download your form/s. Additional instructions for completing and uploading the forms may be found in the Videos and Instructions menus on the connect.EIDITH.org dashboard.



and confidentiality of responses. Children will not be interviewed in the absence of a parent or guardian.

As many questions are sensitive in nature, the presence of support persons may make it difficult for participants to feel comfortable answering questions honestly. PREDICT POC(s) should liaise with clinical staff and family members for critically ill participants, as appropriate, to determine the most patient-centered means of collecting sensitive data, while still maintaining the accuracy of the data collection methods.

Where participants are intubated and unable to communicate verbally, but alert and appropriately communicative, POC(s) may administer the human questionnaire using paper and pencil with participants, if possible. Where patients are sedated and/or comatose, a shortened version of the questionnaire may be completed with a family member or substitute decision maker, if deemed appropriate by all parties. The human questionnaire must be completed if a biologic specimen is drawn; therefore, if the POC(s) is unable to complete the questionnaire for any reason with a participant, they will be excluded from the study. In all instances, the decision to complete the human questionnaire with critically ill individuals must weigh the benefits and downsides with family/friends, clinical staff, and the research team. The POC(s) must also consider patient privacy in immobile or critically ill participants and deem if there is appropriate space in which to conduct the questionnaire to ensure privacy and confidentiality.

Participants may be given a small token of appreciation for participation in the study that is appropriate with local culture and customs and valued at no more than \$10 USD. Local research teams will determine the most appropriate item to give as a token of gratitude to research participants. This item should be given to participants after consent and baseline sampling and interviews are complete.

Section 5.4.11. Record Maintenance and Ensuring Participant Privacy

A study participant log should be maintained at each site to track participant enrollment. Information on new participant enrollments should be added to the log in a timely fashion after their consent; the enrollment of pregnant women and children, in particular, should be noted. If, after signing a consent form, a participant decides that they wish to withdraw from study activities, this information must be recorded in the participant log. In addition, each site may wish to maintain a confidential linking log that links participant names to their unique identification number; this log should also be maintained in an up-to-date manner, with information on study enrollees added shortly after their consent. An example participant log is attached in Appendix III.

No identifying information from patients will be stored with or paired with questionnaire data, biological specimens, or analytical test results. Further, identifying information must not be stored electronically and must be stored securely in locked drawers or cabinets in areas accessible only by PREDICT staff. When questionnaires are moved to the country headquarters, v.27Feb2017 PREDICT Operating Procedures: Human Syndromic Surveillance - 16













they will contain only coded data to ensure the safety and confidentiality of participants and will be maintained in a secure database. The only document that will link the participant with a unique ID number is the consent form, which will be stored in a locked file separately from participant data in the offices of the Country Coordinator.

Section 5.4.12. Reporting Results

The PREDICT team will inform collaborating partners of the aggregate patient test and behavioral risk findings as well as provide information about viral detection and zoonotic diseases detected, as appropriate. One key benefit of this study to participating clinics and hospitals is to enhance understanding of viruses that could be causing syndromes in local people but that have previously gone undiagnosed. This information will inform participating clinics and hospitals about viruses common in target patient communities and may lead to practices that could reduce exposure and health risks.

Report summaries of interpreted data generated from the project will be provided to the Ministry of Health for approval for release. Following approval for release, report summaries from the project can be shared with other in-country collaborating investigators and hospitals. Adverse events or serious adverse events will be included in report summaries provided to Ministries of Health upon request.

Section 5.4.13. Protocol Deviations, Unanticipated Problems, and Adverse Events

For complete information on protocol deviations, unanticipated problems, and adverse events, see the PREDICT Compliance and Monitoring Guide.

Protocol Deviations

Country teams and hospital and clinic POCs responsible for conducting PREDICT surveillance activities must be familiar with PREDICT's IRB protocols and knowledgeable about expected human surveillance operations. If, during the course of study activities, a team member becomes aware that any human surveillance activities have not been conducted in accordance with protocols or training guides, the team member should promptly inform the country field coordinator/human surveillance officer (if one is active in the country) or Country Coordinator about the deviation. The Country Coordinator should promptly contact the regional lead and complete any documentation, including developing any Corrective and Protective Action plans.

Unanticipated Problems

Unanticipated problems are events that are unexpected and related to the research study and that put one or more study participants at greater risk of harm. Unanticipated problems can include events or issues arising during standard research operations that may not cause detectable harm or adverse effects to research participants, but nonetheless raise the level of

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risk associated with research participation (e.g., stolen consent forms or linking logs; breaches of privacy during research interviews). All problems meeting the three criteria above must be reported to the Operations Officer (predict@ucdavis.edu) within 24 hours (if the unanticipated problem is serious) or 72 hours (if the problem is not serious) using the form in Appendix IV.

Adverse Events and Serious Adverse Events

It is possible that during the course of study activities, a participant may experience discomfort or distress. Certain discomforts, such as pain at the site of blood collection and discomfort answering sensitive questions, are expected and detailed in the study protocol. Additional possible risks to study participation may be identified for a given site upon consultation with a local risk expert.

If, during the course of study operations, a participant reports or exhibits one of these anticipated adverse reactions to study participation (be it physical, mental, emotional, or social), that adverse reaction, or "adverse event," should be documented and reported to the human surveillance/field coordinator (if one is active in the country) and Country Coordinator promptly, but no later than within five working days (see the Reportable Information, Unanticipated Problem, and Adverse Event Reporting Form, Appendix IV). Once the Country Coordinator learns of the Adverse Event, he or she should report it to the Lead PREDICT PI (Dr. Mazet) and Operations Officer (predict@ucdavis.edu) within **72 hours**.

In the event a participant reports or exhibits a *serious* adverse event that is *unexpected*, that is likely *related* to study activities, and that implies the *level of risk to all study participants may be higher than previously expected*, that serious adverse event should be reported to the human surveillance/field coordinator (if one is active in the country) or Country Coordinator within five working days. The human surveillance/field coordinator should report the event to the Country Coordinator, and the Country Coordinator should report the event to the Lead PREDICT PI (Dr. Mazet) and Operations Officer (predict@ucdavis.edu) within 24 hours.

The Lead PREDICT PI and Operations Officer are responsible for notifying the UCD IRB within the same time frame (72 hours for adverse events; 24 hours for serious adverse events). The Country Coordinator should report these adverse events to the in-country IRB or ethical committee if and as required to do so.

After becoming aware of any adverse event, the Country Coordinator should confer with their regional lead, the PREDICT global team, and relevant IRBs/ethical boards to determine what steps, if any, should be taken to address the adverse event and prevent similar future events.



Section 5.4.14. Site Monitoring

Each in-country team should work together in the first year to implement key procedures from the PREDICT IRB Compliance and Monitoring Guide on site monitoring and reporting (summarized in Appendix 5). Country Coordinators will be expected to work with PREDICT POCs at hospital and clinic sites to develop a regular system for transferring key study documents, reviewing records for completion, and addressing issues or concerns that arise during study activities.

As part of monitoring and reporting plans, at the completion of each surveillance period, generally on a calendar year schedule, a data and safety review will be conducted by a representative of the PREDICT global or regional management team. At this review, safety information and adverse events collected during the performance period will be discussed and addressed. Data may include case report forms, notes from study visits, and or any telephone calls to the PI from participants.

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Section 5.4.15. References

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Thrust Area 6/Cooperative Counter WMD Research with Global Partners Defense Threat Reduction Agency Broad Agency Announcement HDTRA1-14-24-FRCWMDBAA

6. GUIDELINES AND PROTCOLS FOR HUMAN AND ANIMAL SUBJECTS RESEARCH

For human subjects research, our protocols will align with PREDICT protocols with which our in-country teams have been complying for four years. They will be modified to reference the specifics of this project's IRB (as opposed to PREDICT's IRB).

• 5.4 Human Syndromic Surveillance (see next page)

Thrust Area 6/Cooperative Counter WMD Research with Global Partners Defense Threat Reduction Agency Broad Agency Announcement HDTRA1-14-24-FRCWMDBAA

For animal subjects research, our protocols will align with PREDICT protocols, with which our in-country teams have been complying for four years. These protocols are listed below and, as they are very extensive, a link to access them is provided. They will be modified to reference the specifics of this project's IACUC (as opposed to PREDICT's IACUC):

- 5.2.5 Safe Animal Capture and Sampling
- 5.2.7 Bat Sampling Methods
- 5.2.8 Rodent Sampling Methods
- 5.2.9 Small Carnivore Sampling Methods
- 5.2.11 Livestock Sampling Methods

Available at: https://ohi.vetmed.ucdavis.edu/programs-projects/predict-projects/predict-projects/publications under "Field Sampling Guides."

7. GUIDELINES FOR SAMPLE TRANSPORT

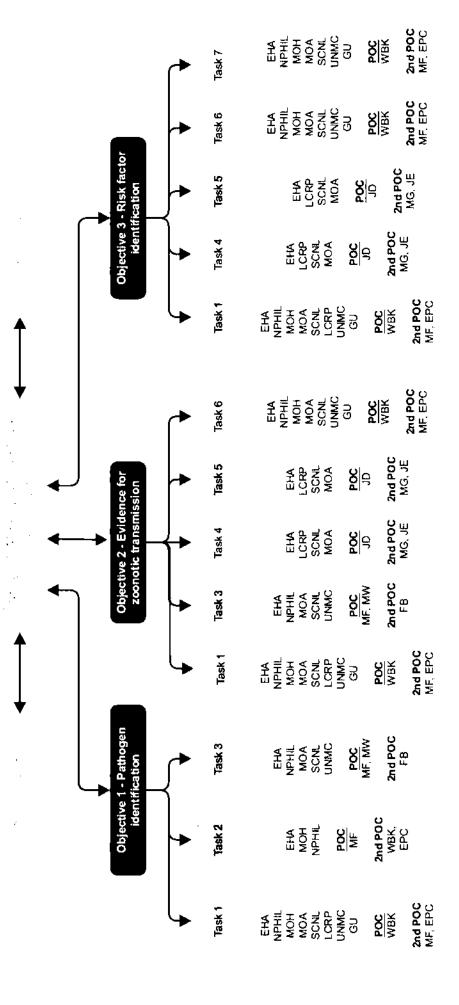
Sample transport from the animal field sites will follow established protocols from the PREDICT project, which SCNL has been implementing for four years. SCNL will also transport the human samples from the hospital sites and the field sites; we will adhere to these cold chain protocols except where necessary to modify to meet the project's specific requirements:

• 6.1 Implementing Cold Chain for Safe Sample Transport and Storage

Available at: https://ohi.vetmed.ucdavis.edu/programs-projects/predict-projects/predict-projects/publications under "General Information."

8. OPERATIONAL FRAMEWORK

Please see next two pages for the operational framework and mapping of performers to tasks, hypotheses, and objectives.



INTIALS

WBK: William B. Karesh (EHA) - PI MF: Mosoka Fallah (NPHIL) - Co-I EPC: Elien P. Carlin (EHA) - Co-I JE: Jonathan Epstein (EHA) - Co-I JD: James Desmond (LCRP) MVV: Michael Wiley (UNMC) FB: Fatorma Bolay (NPHIL)

TASKS

Task 1: Establish an evidence-based research platform for assessing and addressing high-consequence pathogens in Liberia (Y1) Task 2: Enroll human patients and undertake sampling (Y1-3 & OY1-2)

Task 3: Undertake sample processing and testing (Y1-3 & OY1-2)
Task 4: Undertake preliminary animal sampling (Y1)
Task 5: Visit communities; human-animal interface assessment, animal

sampling, and human serology (Y2-3 & OY1-2) Task 6: Analyze data (Y2-3 & OY1-2)

AL: Anne Laudisoit (EHA) MG: Michael Garbo (SCNL)

Task 7: Disseminate information to stakeholders (Y2-3 & OY1-2)

ORGANIZATIONS

EHA: EcoHealth Alliance
NPHIL: National Public Health Institute of Liberia
MOH: Liberia Ministry of Health (via MOU with NPHIL)
MOA: Ministry of Agriculture (via MOU with NPHIL)
SCNL: Society for the Conservation of Nature Liberia
LCRP: Liberia Chimpanzee Rescue and Protection
UNMC: University of Nebraska Medical Center

UNMC: University of Nebraska Medical Center GU: Georgetown University

					_
Supporting Task	All partners	T1: Research platform establishment			
	EHA NPHIL MOH	T2: Human sampling			
	EHA UNMC NPHIL MOA	T3: PCR, NGS, serology	T3: PCR, NGS, serology		
	EHA SCNL LCRP MOA		T4: Preliminary animal sampling	T4: Preliminary animal sampling	
	EHA SCNL LCRP MOA		T5: Animal sampling & risk interface assessment	T5: Animal sampling & risk interface assessment	
	All partners		T6: Data analysis	T6: Data analysis	
	All partners			T7: Data dissemination & utlization to reduce threat and & risk	
Tested Hypothesis	?	H1: Emergent and/or high- risk pathogens cause an undiagnosed subset of acute febrile illness in humans in Liberia	H2: A subset of AFI cases are due to high-consequence zoonoses, even among patients who test positive for endemic pathogens	H3: Exposure to domestic animals and wildlife increases the likelihood that AFI cases result from zoonotic animal to human transmission	
Objective achieved	/	O1: Identify causative agents of AFI in Liberia	O2: Identify evidence for zoonotic transmission of high-consequence AFI pathogens	O3: Indentify risk factors for zoonotic AFI in humans	•



July 25, 2019

To Whom It May Concern:

Please find enclosed our technical proposal, *Reducing the threat from high-risk pathogens causing febrile illness in Liberia* (HDTRA1-14-24-FRCWMD-BAA WMD, Grant #12819625). We request that this Phase II application be assigned for review by the Defense Threat Reduction Agency, Biological Threat Reduction Program Thrust Area 6—Cooperative Counter WMD Research with Global Partners.

The West Africa Ebola crisis underscored the critical need to examine etiology of acute febrile illness (AFI) toward understanding prevalence, improving in-country syndromic surveillance, diagnostic capability, and research capacities, and promoting adherence to international health security frameworks such as the International Health Regulations (2005), the Biological & Toxins Weapons Convention, and the Performance of Veterinary Services Pathway. The proposed effort is designed to test hypotheses related to the causative and underappreciated agents of AFI and is distinct from other studies in its rigorous investigation of these illnesses in the context of the human-animal interface.

With Liberian and other partners, we will identify critical weaknesses in disease detection in Liberia at clinical and laboratory stages and enable the development of updated clinical, surveillance, and reporting protocols to reduce risk. The project will support Liberia's One Health Coordination Platform (OHCP) by using an integrated human-animal approach to surveillance and detection of high-consequence zoonotic pathogens, and by ensuring that all relevant sectors are included in data sharing and training workshops. The efforts will support Liberia's priority of multi-sectoral health coordination and leverage the relationships established through the OHCP. Building on existing DTRA investments, this project will help ensure continuity of past and ongoing training and capacity building efforts. By collating results from a similar project in development for Guinea and coordinating with other in-country febrile illness studies, this work will help produce a regional picture of febrile zoonotic disease risk in West Africa that can inform U.S. and global personnel decisions in the region, surveillance efforts, and medical countermeasure investment priorities.

We thank you for your consideration of our request.

Sincerely,

Market .

William B. Karesh, DVM Executive Vice President for Health and Policy

Statement of Work

Project Title: Reducing the threat from high-risk pathogens causing febrile illness in Liberia *Document Date:* July 26, 2019

Objective: This project will build Liberian capacity for threat reduction through an integrated human-animal surveillance approach to high consequence zoonotic pathogens associated with human acute febrile illness (AFI) including Ebola virus, Lassa virus, and other emerging infections. We will identify and characterize the etiological agents of infectious AFI in Liberia, particularly among patients with a history of animal contact. Many AFI causative agents may go undetected empirically by common rapid diagnostic tests or by existing surveillance platforms. We will work to mitigate this challenge through scientific discovery, hypothesis testing, and capacity building while leveraging significant U.S. government and other investment in workforce building and laboratory infrastructure. Training provided to local partners in critical biosecurity and biosafety skillsets will include: sample transport and laboratory biosafety and biosecurity; human and animal sampling approaches; performance of both routine and advanced molecular diagnostic assays; cold-chain transport implementation; and data analysis and reporting. As many emerging diseases have been inadequately studied in Liberia, this project will provide fundamental baseline knowledge of pathogens circulating and potentially causing human illness. Its outcomes will suggest opportunities for improved clinical training, tailored case definitions, and other methods to improve identification rates for especially dangerous pathogens at the index case level and prior to widespread transmission. The desired endpoint is a broad, sustainable surveillance program that enhances public and global health security.

Scope: The grantee proposes a five-year multi-disciplinary study incorporating the epidemiology, ecology, and microbiology of AFI in Liberia. The grantee team shall focus on the following major **goals** and milestones:

1. Identify causative agents of AFI in Liberia

- Establish an evidence-based research platform for assessing and addressing highconsequence pathogens in Liberia (Y1)
- Enroll human patients and undertake sampling (Y1-3 & OY1-2)
- Undertake sample processing and testing (Y1-3 & OY1-2)

2. Identify evidence for zoonotic transmission of high-consequence AFI pathogens

- Establish an evidence-based research platform for assessing and addressing high-consequence pathogens in Liberia (Y1)
- Undertake sample processing and testing (Y1-3 & OY1-2)
- Undertake preliminary animal sampling (Y1)
- Visit communities: human-animal interface assessment, animal sampling, and human serology (Y2-3 & OY1-2)
- Analyze data (Y2-3 & OY1-2)

3. Identify risk factors for zoonotic AFI in humans

- Establish an evidence-based research platform for assessing and addressing high-consequence pathogens in Liberia (Y1)
- Undertake preliminary animal sampling (Y1)
- Visit communities: human-animal interface assessment, animal sampling, and human serology (Y2-3 & OY1-2)

- Analyze data (Y2-3 & OY1-2)
- Disseminate information to stakeholders (Y2-3 & OY1-2)

Background: Limited detection and diagnostic capacity by definition results in a limited ability of clinicians and public health professionals to accurately identify infectious agents. Febrile illness can be caused by pathogens other than malaria and typhoid that may include dozens of pathogens unassessed by health providers, including hemorrhagic fever viruses; bacterial Select Agents such as Burkholderia mallei/pseudomallei, Yersinia pestis, and Coxiella burnetti; and any number of as-yet unknown pathogens. Because the incidence of such agents has not been assessed in Liberia, febrile illness thus presents an unquantified and undifferentiated burden to Liberian health and the health care system and continues to do so. Liberia's public health authorities do not assess incidence of febrile illness. Some studies are just beginning to assess this. Other published studies have reported on causative agents of infectious fever in other lowand middle-income countries (LMIC), including in West Africa. In low resource settings, and particularly where malaria is endemic, patients presenting with febrile illness may be treated presumptively for malaria and may not receive an accurate diagnosis. Co-infections may also be common, particularly with malaria parasites. Where studies have sought to investigate the source of febrile illness, high-risk pathogens of proliferation concern such as Brucella, dengue virus, and viral hemorrhagic fevers have been observed. The specific challenge for Liberian health authorities is that pathogens that result in a burden of febrile illness in the population—and the zoonotic transmission pathways that may drive it have not been systematically nor comprehensively identified.

Preliminary Data: This project will leverage more than four years of human and animal data collected during the USAID PREDICT Ebola Host Project in Liberia and in neighboring countries. To date, our team in Liberia has enrolled 585 people and sampled 5387 wild and domestic animals. That project has focused on determining the animal reservoir of Zaire ebolavirus and human behavior/activities to evaluate risk factors for spillover to people. Our research team, which included U.S. and Liberian partners, made the first discovery of the virus in a bat in West Africa. Partner discoveries have included a virus new to science, Bombali ebolavirus, in a bat in Sierra Leone. Anthropological investigation of the risk factors associated with zoonotic spillover events were also extensively addressed; data are still being collated and analyzed, but preliminary evaluation reveals trends in animal contact that vary by country, gender, age, and occupation. The data suggest that in the general Liberian population, some communities are nearly evenly split (up to 60%/40%) with members that have and do not have animal contact as defined by the survey; this informs our own study design in that it provides a sound statistical basis testing the questions at the root of our hypotheses, including whether animal contact is a risk factor for certain zoonotic febrile infections.

Most of the work of the Ebola Host Project is presently being prepared for publication. Key references available include:

- EcoHealth Alliance. 2019. EcoHealth Alliance Scientists Discover the Deadly Zaire Ebola Virus in West African Bat [press release]. Retrieved from: https://www.ecohealthalliance.org/2019/01/ecohealth-alliance-scientists-discover-the-deadly-zaire-ebola-virus-in-west-african-bat.
- Goldstein T, Anthony SJ, Gbakima A, et al. The discovery of Bombali virus adds further support for bats as hosts of ebolaviruses. *Nat Microbiol* 2018;3:1084-1089.

Tasks/Scientific Goals: (Format: Year #(s).Task #. Sub-task#)

TASK 1

1.1: Establish an evidence-based research platform for assessing and addressing high-consequence pathogens in Liberia

The grantee shall oversee refinement and finalization of human and animal study protocols and data collection instruments. This stage incorporates planning and training in the protection of human subjects and animal subjects; training in laboratory biosafety, biosecurity, and safe disposal of samples or sampling materials after laboratory work (which will adhere to guidelines in the BMBL 5th edition, sections $III - VI^{25}$); laboratory diagnostic techniques; and any necessary revisions to original sampling and testing approach based on DTRA feedback and discussion at the kick-off meeting. We will refine our human subjects data collection tools, piloting our instruments within our research network to assure validity and reliability of the questionnaires. A database will be created for secure data entry and data storage of human subjects data. MOH will assign personnel to train clinical staff and oversee study in clinics in Monrovia and Bong. NPHIL and CVL will assign personnel to laboratory. EHA and Liberian partners will host kick-off meeting in Monrovia, Liberia to which all partners will be invited. Each study partner will present on its roles and specific desired outcomes to support its agency's priorities. In addition, we will invite other researchers undertaking febrile illness and related research in-country, such as the U.S. Centers for Disease Control and Prevention (AFI study), the Walter Reed Army Institute of Research (Joint West Africa Research Group), and the Henry Jackson Foundation (sepsis study). Human subjects research and lab training workshops will occur during kick-off.

- 1.1.1 Refine and finalize human and animal study protocols and data collection instruments
- 1.1.2 Secure and finalize all research permits (human and animal) including IRB, IACUC, and national approvals in Liberia
- 1.1.3 Assign MOH, NPHIL, and CVL staff to field and laboratory positions
- 1.1.4 Host kick-off meeting in Liberia
- 1.1.5 Conduct Workshop 1a: overall research protocol (concurrent with Task 1.1.4)

TASK 2

1.2 - O2.2: Enroll human patients and undertake sampling

We will enroll febrile patients at two hospitals in Y1-3 and two hospitals in Y4-5 to collect blood and respiratory samples and transport them to the Liberia Institute for Biomedical Research (LIBR) for testing. Cross-sectional sampling will be used to provide a representative sample of a relatively urban or relatively rural population (depending on site) of individuals with fever. Longitudinal sampling of target populations (not individuals) across up to 2.5 years per clinical study site will maximize the opportunity for detection and possibly reveal seasonal trends in infection or other time-related changes in trends. Sampling will be based on available volume in the clinical sites but is designed to assure detection of rare pathogens and answering questions about the relative proportion of febrile illness caused by each; we are targeting 1,500 patients at the first two hospitals total, and 1,500 at the second set of sites in the option years. We will review historical and concurrent surveillance reports for the study counties and for neighboring counties as comparators. MOH will provide a locally hired on-site project coordinator to work with the hospital team and oversee the study protocol (train clinicians and nurses; be alerted when febrile patients arrive; work with hospital staff to oversee informed consent, enrollment, sample collection, and interviews). will train study staff in human subjects research and patient

recruitment; biosafety, safe and secure sample collection, handling, packaging, and transport; and implementation of the study protocol. Training will provide the principles for safe and ethical human subjects research; and project-specific teachings to ensure staff understand, practice, and can implement the study protocol (enrollment determination, informed consent, and questionnaire administration (demographic information, animal ownership), sample acquisition, data entry, and sample packaging and readying for transport).

- 1.2.1, 3.2.1 Conduct Workshop 2a: IRB/human subjects research
- 1.2.2-O2.2.2 Locally-hired project coordinator reports to hospital at each study site
- 1.2.3-O2.2.3 Enroll patients (continuous)

TASK 3

1.3 - O2.3: Undertake sample processing and testing

LIBR reception personnel will be briefed on the study protocol and will notify the project supervisor on receipt of the samples, at which point study-specific inventory and storage procedures will be followed. LIBR has an ABI 7000 Sequence Detection System in operation on which the laboratory scientists and technicians are well trained; a MiSeq system for NGS that is available but requires staff training; and ELISA platforms for serology. NPHIL will budget for and be responsible for ordering needed consumables throughout the project, and UNMC will provide assistance, training, and oversight. LIBR staff are already trained in real-time PCR and ELISA platforms; UNMC will refresh these skills and provide additional training via two oneweek didactic and hands-on workshops Y1; another dedicated workshop in Y3; and in other years if needed via visits to the laboratory. These will cover execution of specific pathogen tests, advanced techniques (NGS), and results interpretation (including NGS bioinformatics); sample inventory management; and biorisk management. UNMC will provide oversight and mentorship through their at least twice-yearly working visits to Monrovia and the laboratory as well as video and teleconference. UNMC will leverage its additional DTRA work at LIBR (under funding consideration) to assist with skill-building among laboratory scientists and technicians there. UNMC will assess competence at each visit via a standardized evaluation form to use as a basis for targeted future training.

- 1.3.1-O2.3.1 Provide necessary equipment and consumables to NPHIL laboratory (continuous)
- 1.3.2, 3.3.2 Conduct Workshop 3a: laboratory biosafety and biosecurity, sample disposition
- 1.3.3, 3.3.3 Conduct Workshop 3b: laboratory sample testing techniques
- 1.3.4-O2.3.4 Provide continuous on-the-job training in laboratory techniques
- 1.3.5 Submit annual report (Y1)
- 2.3.6 Host workshop on results interpretation/bioinformatics
- 3.3.7 Host regional technical ad networking workshop

TASK 4

1.4 – 3.4 Undertake preliminary animal sampling

While laboratory training is beginning, preliminary field animal sampling will begin in Y1 with sampling in communities selected based on previous cases of AFI from historical hospital admissions trends, including some communities from which the study site hospitals draw patients. We will review a sampling of hospital records from Monrovia and Bong in search of geographic trends in AFI presentations going back three years, and begin randomized sampling

of peridomestic and wild animals in four communities identified as part of this process and continue every three months. In five-day/five-night trips we will target approximately 50 bats, 50 rodents, 50 livestock (including chickens if poultry-transmitted infection is suspected), and 10 dogs per sampling event, allowing for approximately 640 animals sampled in Y1 to include blood and oral/nasopharyngeal specimens, and feces and urine when possible. Our teams are trained in species identification, and we will also plan to barcode approximately 5% of individual bats and rodents in Y1 to improve species determination and team training. All animals will be non-lethally sampled with strict adherence to U.S. IACUC-approved protocols following those currently used by EHA scientists globally (Attachment 3) and using bat and rodent sampling protocols we developed for the PREDICT project (Attachment 3). All personnel undertaking animal sampling will be will be trained to ensure competency with a combination of didactic and practical training. SCNL will transfer samples to LIBR consistent with PREDICT protocols (Attachment 3).

- 1.4.1, 3.4.1 Conduct Workshop 4b: IRB/human subjects research (for animal teams)
- 1.4.2 Review hospital records in search of geographic trends in acute febrile illness presentations
- 1.4.3 Sample in communities identified as part of this process and continue every three months

TASK 5

1.5 - O2.5: Visit communities: human-animal interface assessment, animal sampling, and human serology

Animal sampling will continue in Y2, expanding to communities of enrolled patients, sampling in and around study enrollees' homes and surrounding areas; we plan to reach three communities in Y2. This task predominantly supports Hypothesis 3. It is designed to: a) assess the risk interface between people and animals; b) strategically target and sample animal species for the pathogens/antibodies they are most likely to have based on what is already known about pathogen-host proclivity; and c) enable follow-up serology on patients and their community neighbors. We will sample five communities in the catchment areas of Redemption and Phebe Hospital, targeting 400 animals per community, and the patient plus 20 neighbors per community for human interviews and blood sampling. In option years, we will target three communities with the same numbers of animal and human subjects per community.

- 2.5.1-O2.5.2 Review study patient records for geographic trends in AFI presentations
- 2.5.2-O2.5.3 Undertake sampling in and around study enrollees' homes
- 2.5.3-O2.5.4 Undertake sampling from broader patients' communities
- 2.5.4-O2.5.5 Administer human-animal interface assessment
- 2.5.5-O2.5.6 Collect human samples for serology

TASK6

2.6 - **O2.6**: Analyze data

We will compare any diagnoses established at the clinical sites to laboratory results; and compare clinical study site diagnoses and laboratory results to national weekly and monthly county surveillance records. We will estimate population in catchment areas (from where the patient population comes) to develop prevalence estimates of each detected pathogen. We will compare phylogenetic sequence data from humans and animals to identify possible shared strains and infer transmission. Using the questionnaire data comparisons of exposure variables across

Thrust Area 6 - Cooperative Counter Weapons of Mass Destruction Research with Global Partners
Broad Agency Announcement HDTRA1-14-24-FRCWMDBAA

varying demographics measures in study sites will be conducted to characterize high risk behaviors and statistical analysis will be employed to identify differences between groups with a 95% probability of detecting a difference. As appropriate, multivariate analysis will be utilized to evaluate the relationship between the positive biological findings and key measures of contact to evaluate the factors that influence and may have led to AFI pathogen exposure. The pathogen and human interface data collected in this study; characterization of zoonotic potential through phylogenetic analyses undertaken in this and other studies (such as PREDICT); and additional data such as available spatial, ecological, and environmental data will inform models designed to help tease correlation from causation. The data will thus provide the foundation of an OY2 risk reduction workshop. We will also compare diagnostic results for endemic agents to reports for these diagnoses in the preceding years to allow for control for any changed practices (even if subconscious) in our target counties based on the project team's presence; this will also allow for a controlled comparison of the impact on incidence of any differential diagnosis or testing interventions we may implement in OY1 and OY2. We will develop recommendations for adapted differential diagnostic protocols and testing practices.

2.6.1-O2.6.1 Undertake data analysis

TASK 7

2.7-O2.7: Disseminate information to stakeholders

We will host the annual stakeholders meeting to which we will invite all project partners as well as others doing related research in country. We will discuss preliminary data and analyses and use these to inform any needed modifications to forward sampling strategy. We will review protocols for biosafety, specimen transport, and animal handling at each annual meeting. We will provide support travel for at least one (1) Liberian scientist to present at an international conference. We will share samples as appropriate with other in-country projects to ensure synergies. We will compile and summarize research results and share with all partners and other in-country researchers as appropriate and use it to develop an annual report for DTRA. In Y3, we will broaden annual stakeholders meeting to include regional partners from Guinea and possibly other adjacent countries; share information about ongoing research; plan cross-border study for OY1. We will broaden outreach in Y3 and OY2 to communities that have engaged in sampling to share results and discuss preliminary risk mitigation strategies. Project data will provide the foundation of an OY2 risk reduction workshop at the annual meeting to engage multi-sectoral Liberian participants to review statistical evaluation of diagnostic data, identify key risk interfaces, assess economic options for prevention and control, and develop threat reduction measures. Workshop products include 1) development of priorities for refined PCR and serological tests based on study findings, 2) recommendations for an updated national surveillance and reporting strategy and plan, 3) inclusion of stakeholders (e.g., National Disaster Management Authority, the Forestry Development Authority, the Ministry of Finance) to consider options for risk and impact reduction and generate policy recommendations. We will work with MOH and MOA to develop written educational products designed for laypersons to explain project results, community impact, and risk mitigation, and thank community members for their participation.

- 2.7.1-O2.7.1 Host annual stakeholders meeting
- 2.7.2-O2.7.2 Present to DTRA at Annual Technical Review
- 2.7.3-O2.7.3 Submit annual report
- 2.7.4-O2.7.4 Share specimens if available and appropriate with other in-country researchers

Reducing the threat from high-risk pathogens causing febrile illness in Liberia

Pl: William B. Karesh

Thrust Area 6 - Cooperative Counter Weapons of Mass Destruction Research with Global Partners
Broad Agency Announcement HDTRA1-14-24-FRCWMDBAA

2.7.5, O2.7.5 Support Liberian scientist to present at international conference

3.7.6 Host regional technical and networking workshop

3.7.7-O2.7.7 Prepare/submit up to two (2) peer-reviewed manuscripts

3.7.8, O2.7.8 Engage sampled communities for follow-up education

O2.7.9 Conduct Workshop 6a: risk reduction workshop

Cost estimate: Y1: \$995,517.56 Y2: \$989,251.55 Y3: \$996,113.74 OY1: \$962,716.26

OY2: \$969,218.86

Performance Schedule:

Thrust Area 6 - Cooperative Counter Weapons of Mass Destruction Research with Global Partners
Broad Agency Announcement HDTRA1-14-24-FRCWMDBAA

Task	Y1	Y2	Y3	OY1	OY
Task 1: Establish evidence-based research initiative for high-cor					
1.1 Refine and finalize human and animal study protocols	<u> </u>	 			
1.2 Secure and finalize all research permits (human and animal)		_	1		
1.3 Assign MOH, NPHIL, and CVL staff to field and lab positions			1		
1.4 Host kick-off meeting in Liberia			1		
1.5 Conduct Workshop Ia: overall research protocol					
Task 2: Enroll human patients and undertake sampling	•	-	<u> </u>		
2.1 Conduct Workshop 2a: IRB/human subjects research					
2.2 Local project coordinator reports to hospital at each study site					
2.3 Enroll patients (continuous)					
Task 3: Undertake sample processing and testing	•	•	•	•	
3.1 Provide equipment and consumables to LIBR					
3.2 Conduct Workshop 3a: biosafety/biosecurity, sample disp.					
3.3 Conduct Workshop 3b: laboratory sample testing techniques					
3.4 Provide on-the-job training in lab techniques (continuous)					
3.5 Submit Y1 annual report					
3.6 Conduct Workshop 5a: results interpretation, bioinformatics					
3.7 Host regional technical and networking workshop					
Task 4: Preliminary animal sampling			•	•	
4.1 Conduct Workshop 4a: IACUC/animal subjects research					
4.2 Review hospital records for geo. trends in AFI presentations					
4.3 Sample animals in select communities (preliminary)					
Task 5: Visit communities: interface assessment, animal samplin	ig, hun	ian sero	logy	·	
5.1 Review study patient records for geographic AFI trends					
5.2 Administer human-animal interface assessment					
5.3 Undertake animal sampling in/around study enrollees' homes					
5.4 Undertake animal sampling from patients' communities					
5.5 Collect human samples for serology					
Task 6: Analyze data					
6.1 Undertake data analysis					
Task 7: Disseminate research results to stakeholders					
7.1 Host annual Stakeholders meeting					
7.2 Present to DTRA at Annual Technical Review					
7.3 Submit annual report					
7.4 Share specimens if appropriate w/ other in-country researchers					
7.5 Support Liberian scientist to international conference					
7.6 Host regional technical and networking workshop					
7.7 Prepare/submit up to two (2) peer-reviewed manuscripts					
7.8 Engage sampled communities for follow-up education					
7.9 Conduct Workshop 6a: risk reduction workshop					

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17. [CONTRACTOR'S NEGOTIATED AGREEMENT document and return—copies to issuing of free.) Com- items or perform all the services set forth or otherwise identi- sheers for the consideration stated herein. The rights and oble contract shall be subject to and governed by the following the	tractor agrees to furnish fied above and on any e gations of the parties to	and deliver all antinuation this	Your b	sid on Solicita	tion Nu	iisber	•	d to sign this document.) ons or changes are set forth in	tull above, is bereby	accepted as
 (b) the solicitation, if any, and (c) such provisions, represent as are attached or incorporated by reference herein, (Anachments are listed herein.) 	tions, certifications, and	I specifications.	to the to following docum	erms listed a ing documen ent is necess	bove an ts: (a) th ary. (B I	d on any continuati ne Government's so lock 18 should be ch	on sheets. This licitation and ye celed only wh	award consummates the cont our bid, and (b) this award/co. on awarding a scaled bid com	raet which consists a ntract. No turther co	of the
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(Signature of person authorized to sign)			BY_			(Signature of C	ontracting Offic	er)	4	

Section B - Supplies or Services and Prices

CIN: HDTRA10335520001

ITEM NO 0001	SUPPLIES/SERVICES	QUANTITY 1	UNIT Lot	UNIT PRICE \$4,912,818.06	AMOUNT \$4,912,818.06
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				NET AMT	\$4,912,818.06
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000101	Funding in support of CLI FFP	N 0001			30.00
				NET AMT	\$0.00
	ACRN AA				\$4,912,818.06

Section C - Descriptions and Specifications

CLAUSES INCORPORATED BY FULL TEXT

252.601-9002 GRANT REFERENCE INFORMATION (MAY 2009)

- a. This grant is awarded as a result of Broad Agency Announcement (BAA) HDTRA1-11-16 BRCWMD-BAA, Research and Development Enterprise, Basic and Applied Sciences Directorate,
 Basic Research for Combating Weapons of Mass Destruction (C-WMD).
- b. **CFDA #:** 12.351
- c. Authority: 10 U.S.C 2358 as amended

Section E - Inspection and Acceptance

INSPECTION AND ACCEPTANCE TERMS

Supplies/services will be inspected/accepted at:

CLIN	INSPECT AT	INSPECT BY	ACCEPT AT	ACCEPT BY
0001	N/A	N/A	Destination	Government
000101	N/A	N/A	N/A	N/A

Section F - Deliveries or Performance

DELIVERY INFORMATION

CLIN	DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
0001	POP 01-JUN-2020 TO 31-MAY-2025	N/A	DEFENSE THREAT REDUCTION AGENCY/CT-I (b)(6) 8725 JOHN J. KINGMAN ROAD MSC 6201 FORT BELVOIR VA 22060-6201 (b)(6) FOB: Destination	HDTRAI
000101	N/A	N/A	N/A	N/A

ACCOUNTING AND APPROPRIATION DATA

AA: 044315 097 0134 000 N 20202022 D 3400 0901515BR_KD_BP_TB_20 2022_0134_3400_SCNCT DTRA 410 AMOUNT: \$4.912.818.06

ACRN CLIN/SLIN CIN AMOUNT

AA 000101 HDTRA10335520001 \$4,912,818.06

CLAUSES INCORPORATED BY FULL TEXT

252.601-9000 GRANT POINTS OF CONTACT (MAY 2009)

d.	Grant Specialist:
	Name: (b)(6)
	Defense Threat Reduction Agency/BE-BCR
	8725 John J. Kingman Road, MS 6201
	Fort Belv <u>oir, VA 22060-62</u> 01
	telephone ^{(b)(6)}
	email address (b)(6)
	0 5 1 0.00

e. Grantee Business Office:

Name: Dr. Aleksei Chmura

Title: Authorized Organizational Representative

Phone: (212) 380-4473

E-mail: chmura@ecohealthalliance.org

f. Grantee Principal Investigator (PI):

Name: Dr. William Karesh

Title: Executive Vice President of Health and Policy

Phone: (212) 380-4463

E-mail: karesh@ecohealthalliance.org

252.601-9001 GRANTS OFFICER'S REPRESENTATIVE (GOR) (MAY 2009)

g.	Grants Officer's Representative (GOR) for this Grant is:
_	Name: (b)(6)
	Defense Threat Reduction Agency/
	8725 John J. Kingman Road, MS 6201
	Fort Belvoir, VA 22060-6201
	telephone ^{(b)(6)}
	email address: ^{(b)(6)}

b. SCOPE AND LIMITATIONS OF AUTHORITY FOR DTRA GRANTS OFFICER'S REPRESENTATIVE

- 1. The Grants Officer's Representative (GOR) is responsible for monitoring the technical and programmatic performance of the grant or cooperative agreement (hereinafter referred to as agreement) including compliance with the agreement's reporting requirements. Perceived deviations from the agreement's terms and conditions shall be brought to the attention of appropriate recipient personnel and if not corrected, to the attention of the Grants Officer. Deviations or other occurrences indicative of the recipient's inability or unwillingness to conform to the agreement's requirements shall be brought to the immediate attention of the Grants Officer.
- 2. The GOR has no authority to modify the stated terms of the agreement or specifications in any manner, or to approve any action that would result in additional charges to the Government. The DTRA Grants Officer must make all such changes in writing.
- 3. The GOR is authorized to correspond directly with the recipient on matters within the scope and limitations of his or her authority. All such correspondence shall be signed personally by the GOR and a copy will be furnished the Grants Officer for placement in the official agreement file.
- 4. The GOR will provide technical advice to the recipient to the extent such advice will not alter any of the agreement's terms and conditions or result in an increase in the estimated cost of the agreement's performance as specified in the agreement. The GOR is encouraged to discuss with the recipient new ideas related to the original scope of the agreement that may be of special interest to DTRA. The GOR should also be alert for indications that any part of the research is becoming unfruitful. If, as a result of such discussions, questions arise as to the possible need for a modification, the matter shall be brought to the immediate attention of the Grants Officer. The GOR shall not direct the recipient to undertake any action that the recipient believes to be contrary to the agreement's scope, terms or conditions without the written approval of the Grants Officer.
- 5. Any visits to the recipient's facilities on matters pertaining to the agreement will be documented in a brief memorandum. A copy will be provided the Grants Officer for placement in the official agreement file.
- 6. The GOR will maintain such work files as he or she deems necessary to properly document performance of the duties and responsibilities as a GOR. Upon completion of the agreement and delivery of all required reports, such work files will be forwarded to the Grants Officer for placement in the official agreement file.
- 7. In performance of the GOR's duties, the GOR shall constantly stress protection of the Government's interests. Similarly, the GOR shall avoid any act which may tend to compromise the position of DTRA, any individual member of DTRA or which will impact confidence in the integrity of DTRA with the business community.

(End of Clause)

FUNDING PROFILE:

The amount of \$4,912,818.06 is obligated for work to be performed during the period beginning with grant award and continuing through May 31, 2025

The Government's liability is limited to the amount obligated

INVOICE SCHEDULE

INVOICE SCHEL		
1	6/30/2020	\$81,880.36
2	7/31/2020	\$81,880.30
3	8/31/2020	\$81,880.30
4	9/30/2020	\$81,880.30
5	10/31/2020	\$81,880.30
6	11/30/2020	\$81,880.30
7	12/31/2020	\$81,880.30
8	1/31/2021	\$81,880.30
9	2/28/2021	\$81,880.30
10	3/31/2021	\$81,880.30
11	4/30/2021	\$81,880.30
12	5/31/2021	\$81,880.30
13	6/30/2021	\$81,880.30
14	7/31/2021	\$81,880.30
15	8/31/2021	\$81,880.30
16	9/30/2021	\$81,880.30
17	10/31/2021	\$81,880.30
18	11/30/2021	\$81,880.30
19	12/31/2021	\$81,880.30
20	1/31/2022	\$81,880.30
21	2/28/2022	\$81,880.30
22	3/31/2022	\$81,880.30
23	4/30/2022	\$81,880.30
24	5/31/2022	\$81,880.30
25	6/30/2022	\$81,880.30
26	7/31/2022	\$81,880.30
27	8/31/2022	\$81,880.30
28	9/30/2022	\$81,880.30
29	10/31/2022	\$81,880.30
30	11/30/2022	\$81,880.30
31	12/31/2022	\$81,880.30
32	1/31/2023	\$81,880.30
33	2/28/2023	\$81,880.30
34	3/31/2023	\$81,880.30
35	4/30/2023	\$81,880.30
36	5/31/2023	\$81,880.30
37	6/30/2023	\$81,880.30
38	7/31/2023	\$81,880.30
39	8/31/2023	\$81,880.30
40	9/30/2023	\$81,880.30
41	10/31/2023	\$81,880.30
42	11/30/2023	\$81,880.30
43	12/31/2023	\$81,880.30
44	1/31/2024	\$81,880.30
45	2/29/2024	\$81,880.30
7-7	212312024	901,000,00

46	3/31/2024	\$81,880.30
47	4/30/2024	\$81,880.30
48	5/31/2024	\$81,880.30
49	6/30/2024	\$81,880.30
50	7/31/2024	\$81,880.30
51	8/31/2024	\$81,880.30
52	9/30/2024	\$81,880.30
53	10/31/2024	\$81,880.30
54	11/30/2024	\$81,880.30
55	12/31/2024	\$81,880.30
56	1/31/2025	\$81,880.30
57	2/28/2025	\$81,880.30
58	3/31/2025	\$81,880.30
59	4/30/2025	\$81,880.30
60	5/31/2025	\$81,880.30

Section J - List of Documents, Exhibits and Other Attachments

Exhibit/Attachment Table of Contents

DOCUMENT TYPE	DESCRIPTION	PAGES	DATE
Attachment 1	Statement of Work	8	26-JUL-2019
Attachment 2	Terms and Conditions	18	06-APR-2018

AWARD/CONTRACT	1. THIS CONTRA UNDER DPAS			ORDER			RATING	PAGE OF	PAGES
2. CONTRACT (Proc. Inst. Inform.) NO. HDTRA120C0055	3. EFFECTIVE DA	ATE 30 Jur	1 2020)	4. REQUISI	TION/PURC	HASE REQUEST/P	ROJECT NO.	•
5. ISSUED BY CODE HDTRA1 6. ADMINISTERED BY (It office than Item 5) DEFENSE THREAT REDUCTION AGENCY/AL-AC 8725 JOHN J KINGMAN ROAD, MSC 6201 FORT BELVOIR VA 22060-6201 6. ADMINISTERED BY (It office than Item 5) OFFICE OF NAVAL RESEARCH-BOSTON 495 SUMMER STREET, ROOM 627 BOSTON MA 02110-2109					E N62879				
7. NAME AND ADDRESS OF CONTRACT ECOHEALTH ALLIANCE INC. MR. ALEKSEI CHMURA 460 W 34TH ST 17TH FL NEW YORK NY 10001-2317	OR (No., weet cit	r. ernadi , siaie o	∐ md zip co	nle)	9.	DELIVERY FOB C DISCOUNT FO	R PROMPT PAYMEN	OTHER (See built)	Slaw)
						t copies unless othe DITHE ADDRES	•		
	FACILITY CODE		I ₁₂ n	A 3/8 (E NIT 33)	SI TILL BE MAD	HOWNIN:	COD	Ŀ HQ0337	
11. SHIP TO/MARK FOR CODE HDTRA1 DEFENSE THREAT REDUCTION AGENCY/CT-1 (b)(6) 8726 JOHN J. KINGMAN ROAD MSC 6201 FORT BELVOIR VA 22060-6201				COLUMBUS CEN	ITER ITUEMENT OPERA				
13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: [] 10 U.S.C. 2304(e)() [] 141 U.S.C. 253(c)()			14. ACCOUNTING AND APPROPRIATION DATA See Schedule						
	PLIES SERVICES	•	15C.	QUANTITY	15D. UNIT	15	E. UNIT PRICE	15F. AM	OUNT
SEE SO	CHEDULE	Ī							
	16.	TABLE C	OF CO		<u>J. TOTAL AM</u>	OUNTOFO	CONTRACT	\$4,99	95,106.37
(X) SEC. DESCRIPTIO	N'	PAGE(S)					SCRIPTION		PAGE(S)
PART L- THE SCHO X A SOLICITATION/ CONTRACT F		1		I CONT	PART RACT CLAUS		RACT CLAUSES		
X B SUPPLIES OR SERVICES AND B		2 - 3					EXHIBITS AND O	THER ATTAC	Н.
X C DESCRIPTION/SPECS/WORK	STATEMENT	4	Х		F ATT ACHM			20 mb 20 = 100	11
D PACKAGING AND MARKING X E INSPECTION AND ACCEPT AN	ICE	5		REPRE			<u>NS AND INSTRU</u> AT IONS AND	C HO NS	1
X F DELIVERIES OR PERFORMAN		6		K OTHE	R STATEMEN	ITS OF OFFE	RORS		
X G CONTRACT ADMINISTRATIO		7 - 10					STO OFFERORS		-
H SPECIAL CONTRACT REQUIR CONTRACTING OFFICER WILL CO		FALED-RID	OR NE		<u>JATION FACT</u> DCUREMENT(C			T) AS APPLICAT	1.E
17. CONTRACTOR'S NEGOTIATED AGREEMENT document and return—copies to issuing office.)—Comiterns or perform all the services set forth or otherwise identification for the consideration stated herein. The rights and obliquentiates shall be subject to and governed by the following dio (b) the soliculation, if any, and (c) such provisions, representates are attached or incorporated by reference herein. [Anachments are listed herein.] 19A. NAME AND TITLE OF SIGNER—(7)	Contractor is required to actor agrees to furnish and advoce and on any contractors of the parties to this actions of the parties are this actions, certifications, and specious, certifications, and specious corp.	sign this d deliver all innation outract, cerfications.	18. Your bi meludir to the to follown docum- 20 A. (b)(6)	SEALED-BID A id on Solicitation Not get the additions of a terms listed above a ng documents: (a) I NAME OF CODE (b)(6)	WARD IContractor mober changes made by vor nd on any continuati the Government's so slock 18 should be cl ONTRACTING CONTRACTING	on which additions for sheets. This awaite titton and your tecked only when a GOFFICER SOPETICER	or changes are set forth in and consummates the control bid, and (b) this award conswarding a scaled-bid com	full above, is bereby ract which consists o ntract. No further co.	accepted as
19B. NAME OF CONTRACTOR	19C. DAT	E SIGNED	20B.		ATES OF AME	ERICA		20C. DATE S	SIGNED
BY(Signature of person authorized to sign)			BY_	(b)(6)	(Signature of C	iontracting Officer)		29-Jun-202	20

Section B - Supplies or Services and Prices

CIN: HDTRA10345980001

ITEM NO 0001	SUPPLIES/SERVICES	QUANTITY 1	UNIT Lot	UNIT PRICE \$4,995,106.37	AMOUNT \$4,995,106.37
0001	Year 1: FRBAA14-6-2-03 FFP	56	Lot	p4,773,100.57	φτ, 222, 100.37
	Crimean-Congo Hemorrha Tanzania. In accordance w dated 3/18/2018 and DTR 8/1/2018 at attachment 2 FOB: Destination U009	iht the following a	attachements: S	SOW at attchement 1	
				NET AMT	\$4,995,106.37
ITEM NO 000101	SUPPLIES/SERVICES Funding to support CLIN FFP	QUANTITY 0001	UNIT	UNIT PRICE	AMOUNT S0.00
	ACRN AA			NET AMT	\$0.00 \$4,848,483.14

HDTRA120C0055

Page 3 of 11

\$0.00

ITEM NO SUPPLIES/SERVICES QUANTITY UNIT UNIT PRICE AMOUNT 000102 S0.00
Funding to support CLIN 0001
FFP

ACRN AB S146,623.23 CIN: HDTRA10345980002

NET AMT

Section C - Descriptions and Specifications

CLAUSES INCORPORATED BY FULL TEXT

252.601-9002 GRANT REFERENCE INFORMATION (MAY 2009)

- a. This grant is awarded as a result of Broad Agency Announcement (BAA) **HDTRA1-11-16-BRCWMD-BAA**, Research and Development Enterprise, Basic and Applied Sciences Directorate, Basic Research for Combating Weapons of Mass Destruction (C-WMD).
- b. **CFDA #:** 12.351
- c. Authority: 10 U.S.C 2358 as amended.

Section E - Inspection and Acceptance

INSPECTION AND ACCEPTANCE TERMS

Supplies/services will be inspected/accepted at:

CLIN	INSPECT AT	INSPECT BY	ACCEPT AT	ACCEPT BY
0001	Destination	N/A	Destination	Government
000101	N/A	N/A	N/A	N/A
000102	N/A	N/A	N/A	N/A

Section F - Deliveries or Performance

DELIVERY INFORMATION

CLIN	DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
0001	POP 01-JUL-2020 TO 30-JUN-2025	N/A	DEFENSE THREAT REDUCTION AGENCY/CT-I (b)(6) 8725 JOHN J. KINGMAN ROAD MSC 6201 FORT BELVOIR VA 22060-6201 (b)(6) FOB: Destination	HDTRAI
000101	N/A	N/A	N/A	N/A
000102	N/A	N/A	N/A	N/A

ACCOUNTING AND APPROPRIATION DATA

AA: 044315 097 0134 000 N 20202022 D 3400 0901515BR_KD_BP_TB_20 2022_0134_3400_SCNCT DTRA 410 AMOUNT: \$4,848,483.14

AB: 044315 097 0134 000 N 20182020 D 34HQ 0901515BR_KD_BP_OT_18 1820_0134_34HQ_SCNCT DTRA 410 AMOUNT: \$146,623.23

ACRN	CLIN/SLIN	CIN	AMOUNT
AA	000101	HDTRA10345980001	\$4,848,483.14
AB	000102	HDTRA10345980002	\$146,623,23

CLAUSES INCORPORATED BY FULL TEXT

252.601-9000 GRANT POINTS OF CONTACT (MAY 2009)

d. Grant Specialist:
Name: (b)(6)

Defense Threat Reduction Agency/BE-BCR
8725 John J. Kingman Road, MS 6201
Fort Belvoir, VA 22060-6201
telephond(b)(6)
email address(b)(6)

e. Grantee Business Office:

Name: Alexia Churma

Title: Authorized Organizational Rep

Phone: (212) 380-4460

E-mail: chmura@ecohealthalliance.org

f. Grantee Principal Investigator (P1):

Name: Melinda Rostal

Title: Senior Research Scientist

Phone: (212) 380-4460

E-mail: rostal@ecohealthalliance.org

252.601-9001 GRANTS OFFICER'S REPRESENTATIVE (GOR) (MAY 2009)

g. Grants Officer's Representative (GOR) for this Grant is:

Name: (b)(6)

Defense Threat Reduction Agency/
8725 John J. Kingman Road, MS 6201

Fort Belvoir, VA 22060-6201

telephone (b)(6)]
email address:	(b)(6)	

b. SCOPE AND LIMITATIONS OF AUTIIORITY FOR DTRA GRANTS OFFICER'S REPRESENTATIVE

- 1. The Grants Officer's Representative (GOR) is responsible for monitoring the technical and programmatic performance of the grant or cooperative agreement (hereinafter referred to as agreement) including compliance with the agreement's reporting requirements. Perceived deviations from the agreement's terms and conditions shall be brought to the attention of appropriate recipient personnel and if not corrected, to the attention of the Grants Officer. Deviations or other occurrences indicative of the recipient's inability or unwillingness to conform to the agreement's requirements shall be brought to the immediate attention of the Grants Officer.
- 2. The GOR has no authority to modify the stated terms of the agreement or specifications in any manner, or to approve any action that would result in additional charges to the Government. The DTRA Grants Officer must make all such changes in writing.
- 3. The GOR is authorized to correspond directly with the recipient on matters within the scope and limitations of his or her authority. All such correspondence shall be signed personally by the GOR and a copy will be furnished the Grants Officer for placement in the official agreement file.
- 4. The GOR will provide technical advice to the recipient to the extent such advice will not alter any of the agreement's terms and conditions or result in an increase in the estimated cost of the agreement's performance as specified in the agreement. The GOR is encouraged to discuss with the recipient new ideas related to the original scope of the agreement that may be of special interest to DTRA. The GOR should also be alert for indications that any part of the research is becoming unfruitful. If, as a result of such discussions, questions arise as to the possible need for a modification, the matter shall be brought to the immediate attention of the Grants Officer. The GOR shall not direct the recipient to undertake any action that the recipient believes to be contrary to the agreement's scope, terms or conditions without the written approval of the Grants Officer.
- 5. Any visits to the recipient's facilities on matters pertaining to the agreement will be documented in a brief memorandum. A copy will be provided the Grants Officer for placement in the official agreement file.
- 6. The GOR will maintain such work files as he or she deems necessary to properly document performance of the duties and responsibilities as a GOR. Upon completion of the agreement and delivery of all required reports, such work files will be forwarded to the Grants Officer for placement in the official agreement file.
- 7. In performance of the GOR's duties, the GOR shall constantly stress protection of the Government's interests. Similarly, the GOR shall avoid any act which may tend to compromise the position of DTRA, any individual member of DTRA or which will impact confidence in the integrity of DTRA with the business community.

(End of Clause)

FUNDING PROFILE:

The amount of \$4,995,106.37 is obligated for work to be performed during the period beginning with grant, July 1 2020, award and continuing through June 30 2025.

The Government's liability is limited to the amount obligated

Invoice Schedule

Invoice Schedule		
1	7/1/2020	\$81,886.97
2	8/1/2020	\$81,886.99
3	9/1/2020	\$81,886.99
4	10/1/2020	\$81,886.99
5	11/1/2020	\$81,886.99
6	12/1/2020	\$81,886.99
7	1/1/2021	\$81,886.99
8	2/1/2021	\$81,886.99
9	3/1/2021	\$81,886.99
10	4/1/2021	\$81,886.99
11	5/1/2021	\$81,886.99
12	6/1/2021	\$81,886.99
13	7/1/2021	\$81,886.99
14	8/1/2021	\$81,886.99
15	9/1/2021	S81,886.99
16	10/1/2021	\$81,886.99
17	11/1/2021	\$81,886.99
18	12/1/2021	\$81,886.99
19	1/1/2022	\$81,886.99
20	2/1/2022	\$81,886.99
21	3/1/2022	\$81,886.99
22	4/1/2022	\$81,886.99
23	5/1/2022	\$81,886.99
24	6/1/2022	\$81,886.99
25	7/1/2022	\$81,886.99
26	8/1/2022	\$81,886.99
27	9/1/2022	\$81,886.99
28	10/1/2022	\$81,886.99
29	11/1/2022	\$81,886.99
30	12/1/2022	\$81,886.99
31	1/1/2023	\$81,886.99
32	2/1/2023	\$81,886.99
33	3/1/2023	\$81,886.99
34	4/1/2023	\$81,886.99
35	5/1/2023	\$81,886.99
36	6/1/2023	S81,886.99
37	7/1/2023	S81,886.99
38	8/1/2023	S81,886.99
39	9/1/2023	S81,886.99
40	10/1/2023	S81,886.99
41	11/1/2023	\$81,886.99
42	12/1/2023	S81,886.99
43	1/1/2024	S81,886.99
44	2/1/2024	\$81,886.99
45	3/1/2024	\$81,886.99

46	4/1/2024	S81,886.99
47	5/1/2024	S81,886.99
48	6/1/2024	S81,886.99
49	7/1/2024	S81,886.99
50	8/1/2024	S81,886.99
51	9/1/2024	S81,886.99
52	10/1/2024	S81,886.99
53	11/1/2024	S81,886.99
54	12/1/2024	S81,886.99
55	1/1/2025	S81,886.99
56	2/1/2025	S81,886.99
57	3/1/2025	S81,886.99
58	4/1/2025	S81,886.99
59	5/1/2025	S81,886.99
60	6/1/2025	S81,886.99
61	7/1/2025	S81,886.99

Section J - List of Documents, Exhibits and Other Attachments

Exhibit/Attachment Table of Contents

DOCUMENT TYPE	DESCRIPTION	PAGES	DATE
Attachment 1	SOW	6	18-MAR-2018
Attachment 2	Terms and Conditions	14	01-AUG-2018

AMENDMENT OF SOLICIT	ATION/MODI	FICATION OF CONTRACT	1.00	ONTRACT ID CODE	PAGE OF PAGES 1 3
2. AMENDMENT/MODIFICATION NO. P00001	3. EFFECTIVE DATE 30-Jun-2020	4. REQUISITION/PURCHASE REQ. NO.	1	5.PRO	ECT NO (Happlicable)
6. ISSUED BY CODE DEFENSE THREAT REDUCTION AGENCY/AL-AC 8725 JOHN J. KINGMAN ROAD, MSC 6201 FORT BELVOIR VA 22060-6201	HDTRA1	7. ADMINISTERED BY (Ifother than item6) OFFICE OF NAVAL RESEARCH-BOSTON 495 SUMMER STREET, ROOM 627 BOSTON MA 02110-2109		CODE N	62879
8. NAME AND ADDRESS OF CONTRACTOR ECOHEALTH ALLIANCE INC. MR. ALEKSEI CHMURA 460 W 34TH ST 17TH FL NEW YORK NY 10001-2317	(No., Street, County,		9B. D. X 10A. 1 HDTR 10B. I	ATED (SEE ITEI MOD, OF CONTI A120C0055 DATED (SEE IT	RACT/ORDER NO.
CODE 3MMU3	FACILITY COI	II'.		n-2020	
The above numbered solicitation is amended as set fort. Offer must neknowledge receipt of this amendment pric (a) By completing Items 8 and 15, and returning or (c) By separate letter or telegram which includes a r RECEIVED ATTHE PLACE DESIGNATED FOR TI REJECTION OF YOUR OFFER—If by virtue of this ar provided cach telegramor letter makes reference to the	n in Item 14. The hour and reforthe hour and date spea copies of the amendme eference to the solicitation IE RECEIPTOF OFFERS rendment you desire to cha solicitation and this amen	cified in the solicitation or as amended by one of th nt: (b) By acknowledging receipt of this amendmen and amendment numbers. FAILURE OF YOUR A PRIOR TO THE HOUR AND DATE SPECIFIED ange an offer already submitted, such change may be	is exten- e following t on each co CKNOWLE MAY RESU made by tel	ded. is not mathods: py of the offer submit DGMENTTO BE JLT IN legramor letter.	extended. ted:
12. ACCOUNTING AND APPROPRIATION DA See Schedule	ATA (If required)				
		TO MODIFICATIONS OF CONTRACT: ACT/ORDER NO. AS DESCRIBED IN ITE		S.	
A. THIS CHANGE ORDER IS ISSUED PURSU CONTRACT ORDER NO. IN ITEM 10A.	JANT TO: (Specify a	authority) THE CHANGES SET FORT II I	N ITEM	14 ARE MADE I	N TIIE
B. THE ABOVE NUMBERED CONTRACT/C office, appropriation date, etc.) SET FORT C. THIS SUPPLEMENTAL AGREEMENT IS	ILIN ITEM 14, PUR	SUANT TO THE AUTHORITY OF FAR			ges in paying
X D. OTHER (Specify type of modification and DTRA Terms and Conditions for Grant Awar					
E. IMPORTANT: Contractor X is not,	is required to sig	gn this document and return	copies to	the issuing office.	
14. DESCRIPTION OF AMENDMENT/MODIFI where feasible.) Modification Control Number: lyles20148 The purpose of this modification is to: Terminate the aw and due to an administrative	CATION (Organized	I by UCF section headings, including solici			ter
15A. NAME AND TITLE OF SIGNER (Type or	print)	16A, NAME AND TITLE OF COM (b)(6) CONTRACTING OF	FICER		ype or print)
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNE	(b)(6)		· (b)(6)	16C. DATE SIGNED
(Signature of person authorized to sign)		(Signature of Contracting Off	icer)		30-Jun-2020

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

SECTION A - SOLICITATION/CONTRACT FORM

The total cost of this contract was decreased by 4,995,106.37 from \$4,995,106.37 to 0.00.

SECTION B - SUPPLIES OR SERVICES AND PRICES

CLIN 0001

The unit price amount has decreased by \$4,995,106.37 from \$4,995,106.37 to \$0.00. The total cost of this line item has decreased by \$4,995,106.37 from \$4,995,106.37 to \$0.00.

SECTION F - DELIVERIES OR PERFORMANCE

The following Delivery Schedule item for CLIN 0001 has been changed from:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 01-JUL-2020 TO 30-JUN-2025	N/A	DEFENSE THREAT REDUCTION AGENCY/CT-I (b)(6) 8725 JOHN J. KINGMAN ROAD MSC 6201 FORT BELVOIR VA 22060-6201 (b)(6) FOB: Destination	HDTRAI

To:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 30-JUN-2020 TO 30-JUN-2020	N/A	DEFENSE THREAT REDUCTION AGENCY/CT-I (b)(6) 8725 JOHN J. KINGMAN ROAD MSC 6201 FORT BELVOIR VA 22060-6201 (b)(6) FOB: Destination	HDTRA1

SECTION G - CONTRACT ADMINISTRATION DATA

Accounting and Appropriation

Summary for the Payment Office

As a result of this modification, the total funded amount for this document was decreased by \$4,995,106.37 from \$4,995,106.37 to \$0.00.

SUBCLIN 000101:

AA: 044315 097 0134 000 N 20202022 D 3400 0901515BR_KD_BP_TB_20 2022_0134_3400_SCNCT DTRA 410 (CIN HDTRA10345980001) was decreased by \$4,848,483.14 from \$4,848,483.14 to \$0.00

SUBCLIN 000102:

AB: 044315 097 0134 000 N 20182020 D 34HQ 0901515BR_KD_BP_OT_18 1820_0134_34HQ_SCNCT DTRA 410 (CIN HDTRA10345980002) was decreased by \$146,623.23 from \$146,623.23 to \$0.00

(End of Summary of Changes)

AWARD/CONTRACT	1. THIS CONTRA UNDER DPAS			ORDE	ΞR			RATING	PAGE 1	OF PA	
2. CONTRACT (Proc. Inst. Ident.) NO. HDTRA12010018	3. EFFECTIVE DA)		4. REQUIS	ITION/PU	PRCHASE REQUEST/F	IASE REQUEST/PROJECT NO.		
5. ISSUED BY CODE HDTRA1 DEFENSE THREAT REDUCTION AGENCY/AL-AC 8725 JOHN J. KINGMAN ROAD, MSC 6201 FORT BELVOIR VA 22060-6201				E OF NA		OBY (Healter) ARCH-BOSTON IOOM 627	han Ivem 5)	COL	E N62879		
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17. CONTRACTOR'S NEGOTIATED AGREEMENT Contractor is required to sign this document and return copies to issuing of free.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheers for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award-contract. (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications as are attached or incorporated by reference herein. (Anachments are listed herein.) 19A. NAME AND TITLE OF SIGNER (Type or print)				id on Soli ng the ad- erros liste ing docum ent is nec	ditions or el ed above an nents: (a) th tessary. (B)	hanges made by y id on any continu	ou which addition sheets. The officitation and heeked only was GOFFICE		raet which consi ntract. No turthe	sts of the	
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Section B - Supplies or Services and Prices

ITEM NO 0001	SUPPLIES/SERVICES	QUANTITY 1	UNIT Lot	UNIT PRICE \$4,995,106.37	AMOUNT \$4,995,106.37
	Year 1: FRBAA14-6-2-03 FFP	56			
	Crimean-Congo Hemorrha Tanzania. In accordance w dated 3/18/2018 and DTR 8/1/2018 at attachment 2 FOB: Destination U009	wiht the following a	ittachements: \$	SOW at attchement 1	
				NET AMT	\$4,995,106.37
ITEM NO 000101	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT S0.00
000101	Funding to support CLIN FFP	001			30.00
				NET AMT	\$0.00
	ACRN AA CIN: HDTRA1034598000) 1			\$4,848,483.14

HDTRA12010018

Page 3 of 11

80.00

ITEM NO SUPPLIES/SERVICES QUANTITY UNIT UNIT PRICE AMOUNT 000102 S0.00
Funding to support CLIN 001
FFP

ACRN AC \$146,623.23

NET AMT

CIN: HDTRA10345980002

Section C - Descriptions and Specifications

CLAUSES INCORPORATED BY FULL TEXT

252.601-9002 GRANT REFERENCE INFORMATION (MAY 2009)

- a. This grant is awarded as a result of Broad Agency Announcement (BAA) HDTRA1-11-16 BRCWMD-BAA, Research and Development Enterprise, Basic and Applied Sciences Directorate,
 Basic Research for Combating Weapons of Mass Destruction (C-WMD).
- b. **CFDA #:** 12.351
- c. Authority: 10 U.S.C 2358 as amended

Section E - Inspection and Acceptance

INSPECTION AND ACCEPTANCE TERMS

Supplies/services will be inspected/accepted at:

CLIN	INSPECT AT	INSPECT BY	ACCEPT AT	ACCEPT BY
0001	Destination	N/A	Destination	Government
000101	N/A	N/A	N/A	N/A
000102	N/A	N/A	N/A	N/A

Section F - Deliveries or Performance

DELIVERY INFORMATION

CLIN	DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
0001	POP 01-JUL-2020 TO 30-JUN-2025	N/A	DEFENSE THREAT REDUCTION AGENCY/CT-I (b)(6) 8725 JOHN J. KINGMAN ROAD MSC 6201 FORT BELVOIR VA 22060-6201 (b)(6) FOB: Destination	HDTRAI
000101	N/A	N/A	N/A	N/A
000102	N/A	N/A	N/A	N/A

ACCOUNTING AND APPROPRIATION DATA

AA: 044315 097 0134 000 N 20202022 D 3400 0901515BR_KD_BP_TB_20 2022_0134_3400_SCNCT DTRA 410 AMOUNT: \$4.848.483.14

AC: 044315 097 0134 000 N 20182020 D 34HQ 0901515BR_KD_BP_OT_18 1820_0134_34HQ_SCNCT DTRA 410 AMOUNT: \$146,623.23

ACRN	CLIN/SLIN	CIN	AMOUNT
AA	000101	HDTRA10345980001	\$4,848,483.14
AC	000102	HDTRA10345980002	\$146,623.23

CLAUSES INCORPORATED BY FULL TEXT

252.601-9000 GRANT POINTS OF CONTACT (MAY 2009)

d.	Grant Specialist:
	Name: (b)(6)
	Defense Threat Reduction Agency/BE-BCR
	8725 John J. Kingman Road, MS 6201
	Fort Belvoir. VA 22060-6201
	telephone (b)(6)
	email address:(b)(6)

e. Grantee Business Office:

Name: Alexia Churma

Title: Authorized Organizational Rep___

Phone: (212) 380-4460

E-mail: chmura@ecohealthalliance.org

f. Grantee Principal Investigator (PI):

Name: Melinda Rostal

Title: Senior Research Scientist

Phone: (212) 380-4460

E-mail: rostal@ecohealthalliance.org

252.601-9001 GRANTS OFFICER'S REPRESENTATIVE (GOR) (MAY 2009)

g. Grants Officer's Representative (GOR) for this Grant is:

Name: (b)(6)

Defense Threat Reduction Agency/ 8725 John J. Kingman Road, MS 6201

Fort Belv <u>oir. V</u> A	22060-620	1
telephone ^{(b)(6)}		
email address ^(b)	(6)	

b. SCOPE AND LIMITATIONS OF AUTHORITY FOR DTRA GRANTS OFFICER'S REPRESENTATIVE

- 1. The Grants Officer's Representative (GOR) is responsible for monitoring the technical and programmatic performance of the grant or cooperative agreement (hereinafter referred to as agreement) including compliance with the agreement's reporting requirements. Perceived deviations from the agreement's terms and conditions shall be brought to the attention of appropriate recipient personnel and if not corrected, to the attention of the Grants Officer. Deviations or other occurrences indicative of the recipient's inability or unwillingness to conform to the agreement's requirements shall be brought to the immediate attention of the Grants Officer.
- 2. The GOR has no authority to modify the stated terms of the agreement or specifications in any manner, or to approve any action that would result in additional charges to the Government. The DTRA Grants Officer must make all such changes in writing.
- 3. The GOR is authorized to correspond directly with the recipient on matters within the scope and limitations of his or her authority. All such correspondence shall be signed personally by the GOR and a copy will be furnished the Grants Officer for placement in the official agreement file.
- 4. The GOR will provide technical advice to the recipient to the extent such advice will not alter any of the agreement's terms and conditions or result in an increase in the estimated cost of the agreement's performance as specified in the agreement. The GOR is encouraged to discuss with the recipient new ideas related to the original scope of the agreement that may be of special interest to DTRA. The GOR should also be alert for indications that any part of the research is becoming unfruitful. If, as a result of such discussions, questions arise as to the possible need for a modification, the matter shall be brought to the immediate attention of the Grants Officer. The GOR shall not direct the recipient to undertake any action that the recipient believes to be contrary to the agreement's scope, terms or conditions without the written approval of the Grants Officer.
- 5. Any visits to the recipient's facilities on matters pertaining to the agreement will be documented in a brief memorandum. A copy will be provided the Grants Officer for placement in the official agreement file.
- 6. The GOR will maintain such work files as he or she deems necessary to properly document performance of the duties and responsibilities as a GOR. Upon completion of the agreement and delivery of all required reports, such work files will be forwarded to the Grants Officer for placement in the official agreement file.
- 7. In performance of the GOR's duties, the GOR shall constantly stress protection of the Government's interests. Similarly, the GOR shall avoid any act which may tend to compromise the position of DTRA, any individual member of DTRA or which will impact confidence in the integrity of DTRA with the business community.

(End of Clause)

FUNDING PROFILE:

The amount of \$4,995,106.37 is obligated for work to be performed during the period beginning with grant, July 1 2020, award and continuing through June 30 2025.

The Government's liability is limited to the amount obligated

Invoice Schedule

invoice Schedul	<u> </u>	
I	7/1/2020	\$81,886.97
2	8/1/2020	\$81,886.99
3	9/1/2020	\$81,886.99
4	10/1/2020	\$81,886.99
5	11/1/2020	\$81,886.99
6	12/1/2020	\$81,886.99
5 6 7	1/1/2021	\$81,886.99
8	2/1/2021	\$81,886.99
9	3/1/2021	\$81,886.99
10	4/1/2021	\$81,886.99
11	5/1/2021	\$81,886.99
12	6/1/2021	\$81,886.99
13	7/1/2021	\$81,886.99
14	8/1/2021	\$81,886.99
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55	1/1/2025	\$81,886.99
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57	3/1/2025	\$81,886.99
58	4/1/2025	\$81,886.99
59	5/1/2025	\$81,886.99
60	6/1/2025	\$81,886.99
61	7/1/2025	\$81,886.99

Section J - List of Documents, Exhibits and Other Attachments

Exhibit/Attachment Table of Contents

DOCUMENT TYPE	DESCRIPTION	PAGES	DATE
Attachment 1	SOW	6	18-MAR-2018
Attachment 2	Terms and Conditions	14	01-AUG-2018

PI: Melinda K. Rostal

1

Thrust Area 6 - Cooperative Counter Weapons of Mass Destruction Research with Global Partners FRCWMD

Statement of Work

Project Title: Crimean-Congo Hemorrhagic Fever: Reducing an Emerging Health Threat in Tanzania

Document Date: March 18, 2018.

Objective: The objective of this grant is to reduce the threat of Crimean-Congo hemorrhagic fever (CCHF) by determining the presence and scale of CCHF virus (CCHFV) circulation in Tanzania. The awardee shall establish a multi-disciplinary team of Tanzanian and international One Health professionals to collect fundamental data on CCHFV, conduct rigorous scientific analyses and support the Government of Tanzania in the development of policies to control and reduce the threat of CCHF. Using a One Health approach the awardee shall investigate the following three hypotheses: 1) CCHFV is circulating in ticks, livestock and wildlife in Tanzania; 2) CCHFV is present and circulating in the human population in Tanzania; 3) CCHFV prevalence, seroprevalence and vector abundance will vary across an environmental disturbance gradient from peri-urban communities, to pastoral rangelands, to protected wildlife areas. The awardee shall support the capacity of Tanzanian human and animal health laboratories to detect anti-CCHFV antibodies, train Tanzanian field researchers and provide vital data to Tanzanian government partners and stakeholders to develop policies to prepare for and reduce the threat of a CCHF outbreak.

Scope: The grantee proposes a five-year multi-disciplinary study of epidemiology, ecology and impact of CCHF in northern Tanzania. The grantee team shall focus on the following major goals and milestones:

- Improve awareness of and capacity to respond to potential CCHF epidemics.
 - Host an annual stakeholders' and partners' meeting in Tanzania (Y1-OY2);
 initiate and maintain diagnostic capacity for detection of CCHFV (Y2-OY1);
 provide training for students and scientists (Y1-OY2).
- Use a One Health approach to identify CCHFV infection patterns in wildlife, cattle and humans across an environmental disturbance gradient.
 - Establish field study protocols (Y1); implement small mammal, cattle and human serosurveys (Y1-2); conduct serological assays on blood samples (Y3-OY1); conduct longitudinal study in humans (OY1); train a Tanzanian post-doctoral fellow to use spatial analyses to determine environmental correlates of CCHFV infection risk (OY2).
- Determine the abundance and CCHFV infection prevalence of tick vectors.
 - Establish tick field study protocols (Y1); implement tick sampling (Y1-2);
 conduct PCR assays on *Hyalomma* spp. ticks (Y3); analyze tick abundance in relation to environmental factors (Y3).
- Support One Health communication and policy development to reduce the threat of CCHF.
- Host a policy development workshop (OY1); host an East Λfrican CCHF symposium (OY2).

Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania
PI: Melinda K. Rostal

Thrust Area 6 - Cooperative Counter Weapons of Mass Destruction Research with Global

Background: Crimean-Congo hemorrhagic fever is a WHO Blueprint R&D priority disease for which there is an urgent need for accelerated research given its epidemic potential and the lack of countermeasures against CCHFV. The Department of Health and Human Services considers CCHF as having the potential to pose a severe threat to human health. Similarly, Tanzania identified viral hemorrhagic fevers as one of six priority zoonoses of greatest national concern. Clinical signs and symptoms include fever, headache, thrombocytopenia, hemorrhagic disease and death in 30-40% of patients. CCHFV can be transmitted via multiple routes, including direct contact with infected animal tissues and transmission from Hyalomma spp. ticks. Human-to-human transmission has frequently been reported and if isolation practices are not implemented, nosocomial outbreaks can occur. Though it is not known to cause disease in animals, CCHFV circulates among both small mammals and large ruminants. Little is known about the status of CCHFV in Tanzania as the most recent cattle serosurvey occurred in 1974-75 (identifying a 9% seroprevalence) and despite neighboring Uganda and Kenya reporting multiple cases, no studies have investigated CCHF in humans in Tanzania.

Similar to the situation with Ebola virus prior to the 2014-16 outbreak, CCHFV antibodies were detected in people in Turkey as far back as 1980, yet no cases were reported until the start of the large outbreak in 2002-06 during which there were 1,103 confirmed cases. This "sudden" appearance of CCHF has been described in many regions that thereafter remain endemic for the virus, including Pakistan, Crimea and Turkey. **Human epidemics have often been linked to environmental and social changes,** which are associated with an increase in the abundance of CCHFV vectors. Thus using a One Health approach is vital to understanding CCHFV ecology, particularly in regions where environmental changes might drive disease emergence. CCHF is a frequent threat faced by U.S. warfighters working in endemic countries in Central Asia and the Middle East. Indeed, war is considered a driver for the emergence of CCHF as demonstrated by the outbreak among 200 Soviet troops in Crimea.

Key references include (further references can be found in the Project Narrative):

Pigott, D. M. et al. Local, national, and regional viral haemorrhagic fever pandemic potential in Africa: a multistage analysis. The Lancet 390, 2662-2672 (2017).

Messina, J. P. et al. The global distribution of Crimean-Congo hemorrhagic fever. Trans R Soc Trop Med Hyg 109, 503-513 (2015).

Hoogstraal, H. The epidemiology of tick-borne Crimean-Congo hemorrhagic fever in Λsia, Europe, and Λfrica. J Med Entomol 15, 307-417 (1979).

Tasks/Scientific Goals: (given in the format: Year.Task.Subtask)

Task Y1.1-YO2.1: Improve the capacity within Tanzania to understand the potential impacts of CCHF and strengthen One Health collaborations between sectors.

Strengthening Tanzania's capacity to consider CCHF as a differential diagnosis, conduct CCHFV diagnostic assays and improve inter-sector communication about this important zoonosis will improve their ability to identify, respond and prevent CCHF outbreaks. 1) The grantee shall mentor four graduate students or FETP fellows in fields that can contribute to our understanding of the epidemiology and ecology of CCHFV in Tanzania (Y1-OY2). 2) The awardee shall provide equipment to TVLA to permit them to sustainably maintain the sample cold chain and diagnostic workflow (e.g. a generator and an ultrafreezer) in Y1. 3) The awardee

shall train all field and laboratory staff (based on what is pertinent for their role) in: biosafety, safe and humane handling of animals, ethical conduct of research with human subjects, biosecurity, etc. in Y1, Y3 and OY1. 4) Through the annual meetings (Y1-OY2), additional meetings throughout the year and communication among stakeholders and between project partners the project shall strengthen the communication between relevant One Health sectors. 5) As the grantee knows of no laboratories conducting CCHFV diagnostics in Tanzania, the awardee shall provide intensive training in the use of serological and polymerase chain reaction (PCR) based assays for the diagnosis of CCHFV (Y3-OY1). The awardee shall select an assay for testing humans that requires recombinant antigen that would be possible to produce in country or in a neighboring country in order to improve the sustainability of the establishment of these assays at diagnostic laboratories in Tanzania. The awardee shall conduct two laboratory workshops on the importance of CCHFV and its diagnosis (Y3). 6) Following a majority of the field and laboratory work, the awardee shall host a policy workshop to present the results to an invited group of government and non-government representatives and using those results develop and provide a set of policy recommendations for the reduction of the threat of CCHFV in Tanzania to the Government of Tanzania (OY1). 7) The awardee shall train one Tanzanian post-doctoral fellow in the spatial ecology of infectious diseases at EcoHealth Alliance in New York City (OY2). 8) The awardee shall host a symposium on CCHF in East Africa and invite global leaders in CCHF research to exchange ideas on additional research that is needed, ways of increasing support for the growing group of CCHF experts in East Africa and ideas about the applicability of control measures being used in other regions that may be transferable to the situation in East Africa (OY2).

- 1.1.1-OY2.1.1 Train a minimum of four graduate students in fields related to CCHFV.
- 1.1.2-Y3.1.2 Strengthen the capacity of the Arusha Regional TVLA laboratory.
- 1.1.3-OY1.1.3 Train staff in situ in epidemiological field methods.
- 1.1.4-OY2.1.4 Support One Health relationships between partners and stakeholders.
- 1.1.5-OY1.1.5 Support laboratory capacity to conduct CCHFV diagnostics.
- 3.1.6 Host one workshop on diagnostic testing for CCHFV at each KCRI and TVLA.
- OY1.1.7 Host a workshop to support CCHF policy development in Tanzania.
- OY2.1.8 Mentor a Tanzanian post-doctoral fellow in spatial ecology of infectious diseases.
- OY2.1.9 Host East African CCHF Symposium.

Task Y1.2-YO1.2: Determine CCHFV infection patterns, risk factors and incidence in humans.

To identify and characterize the risk of infection with CCHFV in people within the study area in northern Tanzania the grantee shall conduct several epidemiological studies. Despite the lack of CCHF outbreaks reported in Tanzania, there are confirmed cases of CCHF in neighboring Uganda and Kenya, the vector is present in Tanzania and we have previously identified circulating antibodies in livestock within the proposed study area. In order to confirm our hypothesis that CCHFV does infect people in Tanzania, the grantee shall 1) finalize IRB approvals in the U.S. and obtain the required permits and ethical approvals in Tanzania (Y1). 2) The awardee shall conduct a cross-sectional study approximately 1,586 people. People who

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enroll shall be given a questionnaire in Swahili and asked to provide a blood sample (Y1-Y2). 3) Laboratory testing using an enzyme linked immunosorbent assay (ELISA) will be conducted at KCRI in Y3-OY1. A subset of samples will be shipped to UoG for confirmation. 4) A preliminary analysis of initial results of the human serosurvey will be completed in Y3 and reported with the results from the animal serosurveys (Y3). 5) In OY1 we will re-sample all willing participants to determine the incidence of CCHFV infection within the sampled population. These samples will be tested at KCRI as described in subtask 1.2.3.

- 1.2.1 Obtain local permissions and approvals to work with human subjects. 1.2.2-
- OY1.2.2 Conduct a cross-sectional study in people within the study area.
- 3.2.3-OY1.2.3 Conduct serological assays for the presence of anti-CCHFV antibodies. 3.2.4-OY1.2.4 Analyze human serosurvey results.
- OY1.2.5 Conduct incidence sampling among cross-sectional study participants.

Task Y1.3-Y3.3: Determine CCHFV infection patterns in cattle across varying environments.

The grantee shall conduct a cross-sectional study in cattle (and other animals, see Task 4) throughout the pastoral livestock and peri-urban areas of the study area to determine whether there is a difference in seroprevalence. 1) The awardee shall finalize the U.S. IACUC approvals and obtain all appropriate permits and ethical approvals required in Tanzania (Y1). 2) The grantee shall collect blood samples and ticks from cattle in Y1-Y2. The grantee shall use conduct an environmental disturbance assessment transect at each site to complement remote sensing data to establish the disturbance levels across the study area. 3) The collected ticks will be identified at TVLA by an experienced entomologist (Y3). 4) Cold chain will be maintained and the serum samples will be transferred to TVLA for analysis with the ID Screen® CCHF Double Antigen Multi-Species ELISA by IDVet. The ticks shall be tested for CCHFV via PCR at TVLA (Y3). A subset of samples shall be shipped to UoG for confirmation. 5) The cattle serosurvey results shall be analyzed and reported at the end of Y3.

- 1.3.1 Obtain local permits and permissions.
- 1.3.2-3.3.2 Conduct a cross-sectional serosurvey in cattle across two levels of environmental disturbance.
- 3.3.3 Collect and identify *Hyalomma spp.* ticks from sampled cattle.
- 3.3.4 Conduct laboratory analyses on cattle ticks and sera.
- 3.3.5 Analyze cattle serosurvey results.

Task Y1.4-OY2.4: Determine CCHFV seroprevalence and infection patterns in wildlife and ticks.

Using a One Health approach the grantee shall conduct a cross-sectional study to compare the tick burden, CCHFV seroprevalence (in wildlife only) and CCHFV prevalence (in ticks only) across three different levels of environmental disturbance: peri-urban, pastoral livestock and protected areas. 1) The awardee shall finalize the U.S. IACUC approvals and obtain all appropriate permits and ethical approvals required in Tanzania (Y1). 2) The awardee shall trap small mammals at the sites where people and livestock are also being sampled as well as in the protected area (Y1-Y2). 3) The grantee shall also conduct tick transects to collect ticks from the vegetation (Y1-Y2). The cold chain shall be maintained and samples will be transferred to TVLA. 4) Ticks shall be speciated by an experienced TVLA technician. 5) Serum samples shall

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be tested with the multispecies CCHFV ELISA kit. *Hyalomma* spp. ticks shall be tested for CCHFV by PCR (Y3). 6) The grantee shall work with partner TAWIRI to access banked serum and ticks collected from wild ruminants in protected areas (Y3). 7) The awardee shall complete and analysis and report of the wildlife serosurvey results at the end of Y3. 8) Since the multispecies ELISA has not been validated using seropositive sera from wildlife (it has been assessed in seropositive livestock samples) the grantee shall transfer 100 samples to PHE for confirmation using the gold standard CCHFV virus neutralization assay (OY2).

- 1.4.1 Obtain local permits and permissions.
- 1.4.2-2.4.2 Conduct cross-sectional study in small mammals.
- 1.4.3-2.4.3 Collect ticks from vegetation at study sites.
- 3.4.4 Identify ticks collected from small mammals and transects.
- 3.4.5 Conduct laboratory analyses for CCHFV antibodies and viral RNA.
- 3.4.6 Test banked serum from wild ungulates.
- 3.4.7 Analyze wildlife serosurvey results.
- OY2.4.8 Confirm seropositive wildlife samples with virus neutralization assays.

Task Y1.5-OY2.5: Disseminate reports to relevant stakeholders.

The awardee shall synthesize all research and capacity building activities described above and 1) An Annual Research Performance Progress Report, Quad Chart and Metrics will be submitted to DTRA and the project shall submit the Annual Sample Repository information using a DTRAspecified format (Y1-OY2). Ouarterly reports shall also be submitted as requested by DTRA. 2) An annual report shall be made to local stakeholders. 3) A stakeholder meeting shall be held annually to describe the project and the current results. Community feedback meetings shall be held to provide aggregate findings and engage with local stakeholders through the project. 4) Scientific and general reports shall be generated and presentations of findings shall be made at national and/or international meetings (e.g. ASM, ASTHM, IMED, One Health etc.) as indicated in the performance schedule below. The grantee shall attend the Annual Technical Review when invited to the review by DTRA. 5) Samples will be maintained in biobanks at KCRI and TVLA, with a subset of duplicated samples stored at UoG and PHE following confirmatory testing of these samples (Y1-OY2). Access to all samples collected and data generated during the course of the project will be maintained, up to and including at least 12 months after the project end date. 6) In Y3 a synthetic report on the cross-sectional studies will be submitted to DTRA. These dissemination pathways shall provide opportunities to gain stakeholder input, including to inform policy to reduce the threat of CCHF in Tanzania. The awardee shall submit a Research Performance Final Report and submit a Final Metrics File at the end of the entire project period.

- 1.5.1-OY2.5.1 Submit reports, including sample repository data, to DTRA.
- 1.5.2-OY2.5.2 Complete annual report to local stakeholders.
- 1.5.3-OY2.5.3 Host annual partners' and stakeholders' meeting.
- 1.5.4-OY2.5.4 Conduct presentations/meetings at times and places specified in the grant schedule, including DTRA Annual Technical Review.
- 1.5.5-OY2.5.5 Maintain samples in biobanks.
- 3.5.6 Complete reports on results of human, cattle and wildlife cross-sectional studies and comparison across the gradient.

Task OY2.6: Identify environmental correlates with CCHFV seroprevalence.

5

Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania PI: Melinda K. Rostal

Thrust Area 6 - Cooperative Counter Weapons of Mass Destruction Research with Global

The grantee shall 1) access remote sensing data sets including the following remote sensing products: NASA's ECOSTRESS data (ECOsystem Spaceborne Thermal Radiometer Experiment on Space Station) that provides data on vegetation water stress and LandSat data, as well as remote sensing derived data such as normalized difference vegetation index (NDVI) and enhanced vegetation index (EVI). 2) Spatially explicit correlates shall be performed to understand the relationship between environmental factors and seropositivity in humans, livestock and wildlife as well as vector and viral prevalence.

OY2.6.1 Access appropriate remote sensing data.

OY2.6.2 Conduct spatial analysis to identify correlates between environmental and ecological factors and CCHFV seropositivity.

Performance Schedule:		_	_	
Task 1: Improve the capacity within Tanzania to understand the potential impacts of CCHF	Year 1	Year 2	Year 3	Option Year 1 Option Year 2
and strengthen One Health collaborations between sectors.				
and such guich thic reason connormations octaved sectors.				
1.2 Strengthen the capacity of the Arusha Regional TVLA laboratory.				
1.3 Train staff in situ in epidemiological field methods			•	$\overline{}$
1 4 Support One Health relationships between partners and stakeholders.				
1.5 Support laboratory capacity to conduct CCHFV diagnostics.				
1.6 Host one workshop on diagnostic testing for CCHFV at each KCRI and TVLA.				<u> </u>
1.7 Host a workshop to support CCHF policy development in Tanzania.			_	
1.8 Mentor a Tanzaman post-doctoral fellow in spatial ecology of infectious diseases.				-
1.9 Host East African CCHF Symposium.				-
Task 2. Determine CCHFV infection patterns, risk factors and incidence in humans.				
2.2 Conduct a cross-sectional study in people within the study area.				
2.3 Conduct serological assays for the presence of anti-CCHFV antibodies				
2.4 Analyze human serosurvey results				
2.5 Conduct incidence sampling among cross-sectional study participants				
Task 3. Determine CCHFV infection patterns in cattle across varying environments.				
3.1 Obtain local permits and permissions.	T			
3.2 Conduct a cross-sectional serosurvey in cattle across two levels of environmental				
disturbance.				
3.3 Collect and identify <i>Hyalomma</i> spp. ticks from sampled cattle				
3.4 Conduct laboratory analyses on cattle ticks and sera				
3.5 Analyze cattle serosurvey results.				
Task 4. Determine CCHFV seroprevalence and infection patterns in wildlife and ticks.				
4.1 Obtain local permits and permissions.				
4.2 Conduct cross-sectional study in small mammals.				
4.3 Collect ticks from vegetation at study sites.				
4.4 Identify ticks collected from small mammals and transects.				
4.5 Conduct laboratory analyses for CCHFV antibodies and viral RNA.				
4 6 Test banked serum from wild ungulates				
4.7 Analyze wildlife serosurvey results				
4-8 Confirm setopositive wildlife samples with virus neutralization assays				
Task 5. Disseminate reports to relevant stakeholders.				
5.1 Submit reports, including sample repository data, to DTRA.				
5.2 Complete annual report to local stakeholders.		70	1	ד נד נד
5.3 Host annual partners' and stakeholders' meeting.	10			
5.4 Conduct presentations/meetings at times and places specified in the grant schedule.	T			
meluding DTRA Annual Technical Review.	」			<u> </u>
5.5 Maintain samples in biobanks.	」			
5.6 Complete reports on results of human, cattle and wildlife cross-sectional studies and	_			
comparison across the gradient.				<u> </u>
Task 6. Identify environmental correlates with CCHFV seroprevalence.				
6.1 Access appropriate remote sensing data.				
6.2 Conduct spatial analysis to identify correlates between environmental and ecological				
factors and CCHFV seronositivity				

Budget Documentation for EHA Prime Budget for FRBAA14-6-2-0356 Crimean-Congo Hemorrhagic Fever: Reducing an Emerging Health Threat in Tanzania

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symposium	
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Documentation of example of Internet/Communications bill	
Documentation of server costs	
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EcoHealth Alliance Salaries

Paygroup: 5D7 Paygroup	Name: Ecohealth Alliance Ir	nc Report: Earning	s Record Check	Dates From : 07/11/2019	To: 06/30/2020
	<u> </u>	I	L		
07/01/2019- 06-30-2020	Andre, Amanda	000083	Regular	55,706.00	
07/01/2019- 06-30-2020	Karesh, William	100015	Regular	284,108.00	
07/01/2019- 06-30-2020	Rostal, Melinda	100014	Regular	101,556.00	
07/01/2019- 06-30-2020	Zambrana Torrelio, Carlos	100011	Regular	11 9 ,070.00	
07/01/2019- 06-30-2020	Research Assistant TBD		Regular	58,500.00	
07/01/2019- 06-30-2020	Post Doc/Field Coord TBD		Regular	65,000.00	

Rental car vs purchase of vehicles

Holiday Autos

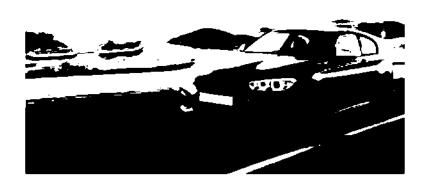
Your car hire to Dar International Airport - complete your booking November 4, 2019 at 12:39 PM



Book now



Book now



\$103.74 per day

Total: \$3112.27

Toyota Prado or similar



Thu, 14 Nov 2019 12:00 Return date:

Pick-up date:

Dar International Airport

Dar International Airport

Sat, 14 Dec 2019 12:00











X Pick-up location:

In terminal counter, shuttle to car



Fuel Policy:

Fuel: Pick up and return full.



Important information



Fuel policy

Full to Full

Your vehicle will be supplied with a full tank of fuel. To avoid incurring fuel charges, you will need to return it with the same amount of fuel as it had when you collected it. You may be required to leave a fuel deposit reserved or charged on your credit card, this will be released or refunded when you return the car full. Missing fuel will be charged on your return. The price per litre charged by the rental agent may be significantly higher than the price at the local service station. A refuelling charge may also be applicable.

Fuel charges are payable at the rental desk unless otherwise stated in the top section of rate details.

Mileage policy

Limited

Charge: 0.8 per kilometer. (Includes tax)

Kilometers included per day: 120

Special equipment/optional extras

Booster seat: 10 USD (Excludes tax); On request

Child toddler seat: 10 USD (Excludes tax); On request

Infant child seat: 10 USD (Excludes tax); On request

GPS: 10 USD per day. Includes 14% tax; On request

Special equipment/optional extras may be requested at the time of booking, but they are not included in the rental price. They are paid in the local currency at the rental desk.

Conditions of optional extras

Please note the following: The price of optional extras is subject to change without notice.

We use cookies to give you the best experience on our website. By using our website you agree to our use of cookies in accordance with our

Accept





Kliometers included per day: 120

Special equipment/optional extras

Booster seat: 10 USO (Excludes tax): On request

Child todd'er seat: 10 USD (Excludes tax): On request

Infant child seat: 10 USD (Excludes tax); On reduest

GPS, 10 USD per day, Includes 14% tax: On request

Special equipment/opt onal extras may be requested at the time of booking, but they are not included in the rental price. They are paid in the local currency at the rental desk.

Conditions of optional extras

Please note the following. The price of options: extras is subject to change without notice. Optional extras are subject to availability. Charges made at the desk may be subject to local/airport surcharges.

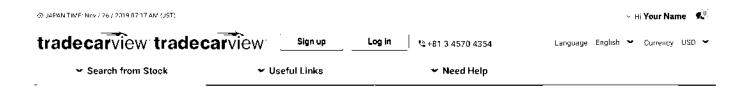
Travel Restrictions

All international/State cross-border travel is disallowed.

Vehicles are prohibited to enter or be driven through the National Parks and Game Reserves within Tanzania. Should the renter drive the rented vehicle into the national park, a penalty of \$1000 (non-refundable) will be charged. For a comprehensive list of all National Parks and Game Reserves kindly visit the Tanzania National Parks website.

Car types 5

The vehicle displayed and models listed are the most common vehicles used by our car rental partners. We cannot



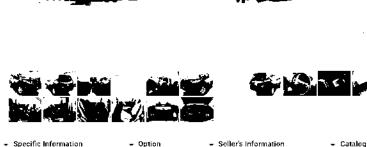




Japan's largest online used car marketplace.

 $\underline{\mathsf{capth.lsec.cov}}, \underline{\mathsf{pachese.uscd.car}} \times \underline{\mathsf{Teyeta}} \times \underline{\mathsf{Land.Cruiser.Frado}} \times \underline{\mathsf{2018}} \times \underline{\mathsf{Teyeta.Land.Cruiser.Frado.2018}}$





Specific information

VIN (vehicle certification Number) / Serial No TRU150-0084***

Model Code TRU150W

Registration Year / Month 2018/03

2018 Toyota Land Cruiser Prado



Manufacture Year / Month Confirm with the Seller

M leage 24,200 km Transmission Automatic Engine Capacity (Displacement) 2,700cc

Fuel Gasoline/Petrol

BodyStyle1 SUV

BodyStyle2

Steering Right Exterior Color Black Interior Color Black

Drive Type 4wheel grive

5 Door Number of Seats

Dimension 476cm×189cm×185cm=16.64m3

Condition Used

5/2150 191124120615 10

Remarks (Any Problems)

Very clean interior

Comment Looks & runs great Low mileage

Dec / 24 / 2019 (JST) Expiry Date

Options

Safety Driver Airbag Anti-Lock Brakes Passenger Airbag Alarm

Side Airbag

Comfort

A/C:front Power Steering Remote Keyless Entry Navigation System A/C:rear Cruise Control Digital Meter Till Steering

Sound System

CD Player AM/FM Radio AM/FM Stereo DVD CD Changer Aftermarket Speaker Hard Disc Satellite Radio

Windows

Power Windows Rear Window Defroster **Tinted Glass** Rear Window Wiper

Other Features

Alloy Wheels Power Door Locks Power Mirrors Sunroof

Third Row Seats Power Slide Door

Other selling points

No Accident history Maintenance Records Available One Owner New Tires Non-Smoker Fully Loaded Performance Tires Custom Wheels Repainted Car Turbo Upgraded Sound System

Seat

Leather Seats Power Seats Child Seat Bucket Seat



EcoHealth Alliance, Inc.

Materials and Supplies - Example of shipping supplies 18087

Payee	DHL Airways	to Africa			18087
/endor ID	DHL		Account #:		8/7/2019
			-	~ " ·	_

Discount Description Amount Invoice \$0.00 ZYP0004758177 \$5,010.78 Shipping for AL to Brazzaville

> Total: \$0.00 \$5,010.78

DHL Express OUTBOUND INVOICE

DHL Express USA INC 16416 Northchase Dr Houston TX 77060

ECOHEALTH ALLIANCE ACCOUNTS PAYABLE 460 W 34TH ST FL 17 NEW YORK NY 10001



9

Invoice Number: ZYP0004758177 Account Number: (b)(6)

Invoice Date: 07/31/2019 Payment Due Date: 08/15/2019 Number of Pages: 1 of 1

For Invoice Inquiries:

Telephone: 1-800-722-0081 Website: www.mybill.dhl.com

Waybill Account Ship Date 5034393110 954514698 \$7/17/2019

Origin Shipper

460 W 34TH ST FL 17 NEW YORK NY 10001 Receiver

Brazzavil e Brazzaville 00000

Pcs / Tend Billed Wgt Cd Wgt Wgt 178.00 110.00

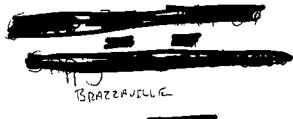
Extra Charge Total Charge Description EXPRESS WORLDWIDE NONDOC 4,537.22 DUTIES TAXES PAID 15.00 NON STANDARD PICKUP 4.40 FUEL SURCHARGE 454.16

Description of Contents: Dimens ons:

Solar Panel Donations

44.00 x 30.00 x 4.80, 44.00 x 30.00 x 4.00, 4.00 x 10.00 x 13.00, 31.00 x 23.00 x 19.00

Destination





Total Due (USD): \$ 5,010.78





20 Forge Street Keene, NH 03431 603.357.1459 Fax: 603.357.1542 www.barcode-labels.com

Date Wed, Nov 6, 2019 756164 Estimate No.*

*This is not your part number. It will be given at first order

Account No.



Here is Your Custom Quotation

Customer

Mindy Rostal (212) 380-4489 EcoHealth Alliance, Inc. 460 West 34th Street 17th Floor New York, NY 10001 US

Printer Labels

Application-

685 2.75" x 0.6875" clear Sens-A-Mark® CryoLabel®, 1.0" x 0.6875" silver

Product Size-

2.75 X 0.6875 Rectangle with 0.078125 C. Radius

Colors-

Silver

Materials-

Stock#685 2.0 mil Gloss Clear TT CryoLabel® Plastic W/Permanent Acrylic Adhesive

Best Used Within 12 Months Of Manufacture

S	ev.	ر و	٧i	ot	6 5	ī.	 -		
							 	_	

Finishing-Finished in Rolls of 5,000, 1 Across, on a 3" Core.

See Note, 6.2" OD

Notes-

Quantity

50,000 Price (1000): \$26.69

Total Grand Total

\$1,334.50 \$1,334,50

SHIP DATE: 7-10 business days ARO (After Receipt of Order). Prep fees may change when design received. Valid 30 days. E-mailed POs requested; Confirmed by e-mail. All EXW (Ex Works) Keene, NH. Qty may vary +/-10% w/order considered complete. End-User responsible for thorough Product testing. Customer is responsible for paying all applicable shipping charges, sales/use taxes and for all applicable import taxes/duties/customs fees.

ALL SALES ARE EXPRESSLY LIMITED TO THESE TERMS AND THE TERMS AND CONDITIONS AT BARCODE-LABELS.COM/TERMS. SELLER OBJECTS TO ANY DIFFERENT OR ADDITIONAL TERMS.

Thank You. Ed August Account Manager



20 Forge Street Keene, NH 03431 Fax: 603.357.1542 603.357.1459 www.barcode-labels.com

Estimate

Prepared: 11/6/2019

Estimate No. 831471 Customer PO No.

Printer, Resin and Software

Ordered By -

EcoHealth Alliance, Inc.

Attn: Mindy Rostal (212) 380-4489

460 West 34th Street

17th Floor

New York NY 10001 US

Ship To -

EcoHealth Alliance, Inc. 460 West 34th Street

17th Floor

New York, NY 10001

US

Attn: Mindy Rostal

We Would Like To Confirm Your Estimate With The Following:

Ordered	Product Number	Description	Price		Prod. Total
1	95123	Zebra ZT230 printer, 300dpi, USB & serial ports ZPL, US power cord & plug, tear bar, USB cable, 6ips, 4.09" print width	\$1,290.20	Each	\$1,290.20
1	95131	Zebra ZT230 printer, 300dpi, USB/parallel & Ethernet ZPL, USB cable, tear bar, US power cord & plug, 6ips, 4.09" print width	\$1,625.45	Each	\$1,625.45
4	T68433300	4.33" x 300 meter EIMINC® T68 premium resin ribbon note: 1 ribbon per 14,537 (685 2.75" x 0.6875") labels	\$28.89	Each	\$115.56
1	SEA-BTP-1	Seagull BarTender® 2019 Professional Application license plus one Printer license, includes one-year standard support	\$450.45	Each	\$450.45
1	MISC2	FREE, FAST, FUN, FRIENDLY & FLEXIBLE TECH SUPPORT techsupport@eiminc.com or (800) 535-6987	\$0.00	Each	\$0.00
1	MISC5	Shipping & handling not included. Customer is responsible for paying all applicable sales/use taxes and import taxes/duties/customs fees.	\$0.00	Each	\$0.00

ALL SALES ARE EXPRESSLY LIMITED TO THESE TERMS AND THE TERMS AND CONDITIONS AT BARCODE-LABELS.COM/TERMS. SELLER OBJECTS TO ANY DIFFERENT OR ADDITIONAL TERMS.

Ed August

Sales Representative

Emily De Maria

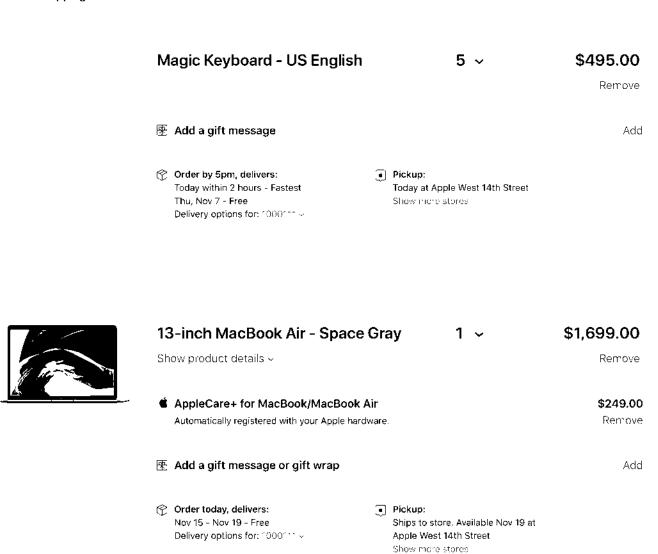
Customer Service

Bag

Computer (with AppleCare), mouse and keyboard unit: \$2126 each

Here's what's in your bag.

Get free shipping and free returns on all orders.





Magic Mouse 2 - Silver

5 ~

\$395.00

Remove

★ Add a gift message Add

Order by 5pm, delivers: Today within 2 hours - Fastest Thu, Nov 7 - Free Delivery options for: 1000 '`` ∨ Fickup:
Today at Apple West 14th Street
Show more stores



13-inch MacBook Air - Space Gray 1 v \$1,699.00

Show product details > Remove

♣ AppleCare+ for MacBook/MacBook Air
 Automatically registered with your Apple hardware.

Remove

Order today, delivers:
Nov 15 - Nov 19 - Free
Delivery options for: 1000111 >

Pickup: Ships to store. Available Nov 19 at Apple West 14th Street Show more stores



13-inch MacBook Air - Space Gray 1 v \$1,699.00

Show product details < Remove

 € AppleCare+ for MacBook/MacBook Air
 \$249.00

 Automatically registered with your Apple hardware.
 Remove

图 Add a gift message or gift wrap Add

Order today, delivers:
Nov 15 - Nov 19 - Free
Delivery options for: 1000111 >

Pickup:
Ships to store. Available Nov 19 at Apple West 14th Street
Show more stores



13-inch MacBook Air - Space Gray	1
----------------------------------	---

\$1,699.00

Show product details ~

Remove

★ AppleCare+ for MacBook/MacBook Air Automatically registered with your Apple hardware. \$249.00 Remove

🗷 Add a gift message or gift wrap

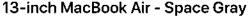
Add

Order today, delivers:

Nov 15 - Nov 19 - Free Delivery options for: 1000111 > Pickup:

Ships to store. Available Nov 19 at Apple West 14th Street

Show more stores



\$1,699.00

Show product details ~

Remove

★ AppleCare+ for MacBook/MacBook Air

\$249.00

Automatically registered with your Apple hardware.

Remove

Add a gift message or gift wrap

Add

Order today, delivers:

Nov 15 - Nov 19 - Free Delivery options for: 10001111 v Pickup:

Ships to store. Available Nov 19 at Apple West 14th Street

Show more stores

Subtotal \$10,630.00

FREE Shipping

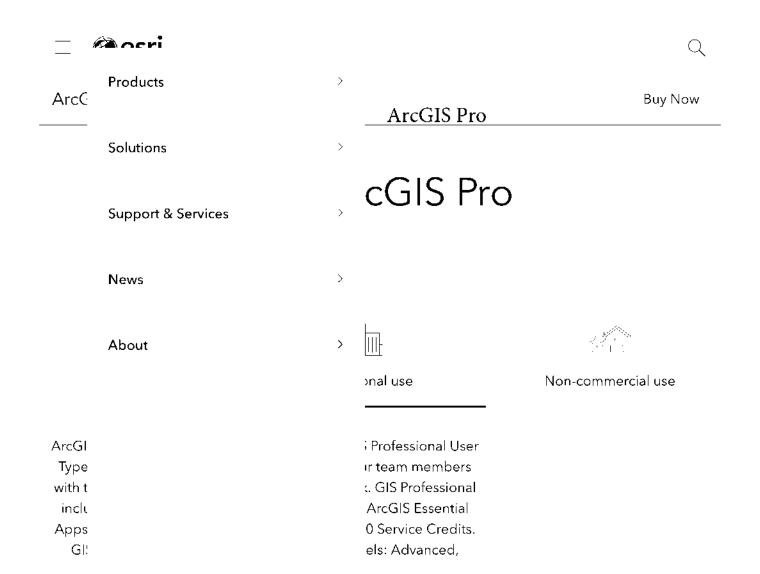
Estimated tax for: 10001++ > \$943.41

Have a promo code? Enter it now ~

Total \$11,573.41

Get 3% Daily Cash with Apple Card, or get special financing >

A few recommendations.



Basic

- Create beautiful maps
- Visualize in 2D and 3D
- Analyze geographic information
- Edit and manage geospatial data
- Publish and share

\$700 / year

Quantity - 0 +

Standard

- Create beautiful maps
- Visualize in 2D and 3D
- Analyze geographic information
- Enable multiuser editing
- Perform advanced geospatial data management
- Publish and share

\$2,750 / year

Quantity = 0 +

Advanced

- Create beautiful maps and advanced cartographic products
- Visualize in 2D and 3D
- Analyze geographic information with advanced tools
- Enable multiuser editing
- Perform advanced geospatial data management
- Publish and share
- Utilize extensive database management tools

\$3,800 / year

Quantity - 0 +

Field Supplies

Cart

Account:	884930003	EcoHealth	Alliance

ltem		Price	Qty	Subtotal	Order Summary	
	item	FILE	Qty	Subtotal	Subtotal	\$61,326.04
i.	Vacutainer™ Venous Blood Collection Tubes: Vacutainer Plus™ Plastic Serum Tubes, Silicone-Coated, with	\$42.25 / Pack of 100	9	\$2,984.94 •	 Shipping and leading the state of the state	\$1,134,08 rial charge \$23,25
	Conventional Stopper Catalog number 23-021-018 by BD 368045 Regulated Diameter (Metric) Outer:	\$331.66 / Case of 10 PK			Shipping charge Shimated Tax	\$1,106.38 \$0.00
		In Stock 11/08/201	(4) - Estimat 9	ed delivery	*Extra charge apply for prod	=
		On Orde 11/20/201		ited delivery	require specia	al services.
7	Nunc™ Biobanking and Cell Culture Cryogenic Tubes	\$241.93 / Pack of	9	\$8,709.57	*Additional ha charges deter direct ship manufacturer apply.	mined by
	Catalog number 12-565-171N by Thermo Scientific™ 368632	450			Generate a Web Qu	
	Capacity (Metric): 1.8mL, Thread Style: Internal, Length (Metric): 49mm, Desc	\$967.73 / Case of 4 PK			View All Quotes FAQ	What's this?
		In Stock 11/07/201	(3) - Estimat 9	ed delivery		
		On Orde 11/20/201		ited delivery		

	Item	Price	Qty	Subtotal
	Vacutainer™ Venous Blood Collection Tubes: Vacutainer Plus™ Plastic Serum Tubes, Silicone-Coated, with Conventional Stopper Catalog number 02-657-27 by BD 366668 Regulated Diameter (Metric) Outer:	\$34.00 / Pack of 100 \$261.62 / Case of 10 PK	3	\$784.86 ●
		In Stock (3 11/07/2019) - Estimated	delivery
₹ 7	PC MTUBE 1.3ML SERUM/PK100 Catalog number NC9444309 by Sarstedt Inc 41.1501.105	\$36.50 / Pack of 100	10	\$365.00
		Ships from Ships in 2 Busi	ı manufactu ness Days	rer - Usually
الر	Vacutainer™ Tube Holder Catalog number 22-289-953 by BD 364815 Regulated HLDR 1-USE NOSTCKBL 250/PK RX	\$22.99 / Pack of 250 \$91.90 / Case of 4 PK	5	\$459.50 •
		In Stock (5 11/07/2019) - Estimated	delivery
J. J.	Vacutainer™ Eclipse™ Blood Collection Needle Catalog number 02-683-101 by BD 368607 Regulated Gauge: 21g, Includes: Built-	\$42.55 / Pack of 48 \$339.50 /	5	\$1,697.50 •
	in safety shield, Color: Green hub	Case of 10 PK		

	Item	Price	Qty	Subtotal
		In Stock (5 11/07/2019		ed delivery
	Monoject™ Supra/Hone™ Thin Wall Blood Collection Needles Catalog number 22-030573 by Covidien 8881216066 Regulated Needle Gauge: 22 G	\$31.83 / Pack of 100 \$270.89 / Case of 10 PK	2	\$541.78
		On Order 12/13/2019		ited delivery
Ţ [3cc Syringes Catalog number 14-840-77 by Exel International 26200 Regulated Termination: Luer-lock	\$24.00 / Pack of 100 \$196.73 / Case of 10 PK	3	\$590.19
		11/07/2019	(1) - Estima	ed delivery ited delivery
7	Monoject™ Softpack Hypodermic Needles with Polypropylene Hub Catalog number 05-561-22 by Covidien 8881250222 Regulated Needle Gauge: 22 G, Length (English) Needle: 1 in., Length (Metric) Needl	\$25.86 / Pack of 100 \$218.36 / Case of 10 PK	3	\$655.08

	Item	Price	Qty	Subtotal
		In Stock (1 11/11/2019) - Estimated	delivery
		On Order (2) - Estimated	d delivery
		11/26/2019		
• .	Syringe with Sub-Q Needle Catalog number 14-829-10F by BD 309597 Regulated	\$35.25 / Pack of 100	2	\$426.42 •
	SYRINGE TB 26GX58 1CC 100PK RX	\$213.21 / Case of 8 PK		
		In Stock (2 11/07/2019) - Estimated	delivery
	Graham Field Thumb Dressing Forceps Catalog number 19-027503 by Graham-Field™ 2750 Length (English): 5 in., Length (Metric): 127 mm	\$9.00 / Each	4	\$36.00
		On Order (12/13/2019	4) - Estimated	d delivery
_	Fisherbrand™ 50mL Graduated Polypropylene Centrifuge Tube Catalog number 14-375-150 CENT TB FREESTNDNG 50ML 500/CS	\$415.00 / Case of 500	6	\$2,490.00
		In Stock (6 11/07/2019) - Estimated	delivery

Biosafety Equipment

Item	Price	Qty	Subtotal
Fisherbrand™ Extended Cuff Nitrile Exam Gloves Catalog number 19-041-170D Size: X-Large	\$39.05 / Pack of 50	5	\$1,662.50
	\$332.50 / Case of 10 PK		
	In Stock (5 11/07/2019	5) - Estimated	i delivery
Fisherbrand™ Extended Cuff Nitrile Exam Gloves Catalog number 19-041-170B Size: Medium	\$39.05 / Pack of 50 - \$332.50 / Case of	7	\$2,327.50
	On Order 11/15/2019	(7) - Estimate	ed delivery
Fisherbrand™ Extended Cuff Nitrile Exam Gloves Catalog number 19-041-170A Size: Small	\$39.05 / Pack of 50	4	\$1,330.00
	\$332.50 / Case of 10 PK		
	In Stock (4 11/07/2019	4) - Estimated	l delivery
Sharps Disposal Containers Catalog number 14-830-124 by Covidien 8970 Capacity (English): 2 gal., Capacity (Metric): 7.6 L, Closure Type: Rotor Lid	\$228.33 / Case of 20	3	\$684. 9 9

Item	Price	Qty	Subtotal
	In Stock (11/07/2019	3) - Estimated	d delivery
Red Color Polyethylene Liner Printed with BioHazard Symbol, 2 mil Thick, 16 x 14 x 36 Inch Bags, 50 per Package Catalog number 50-998-764 by Research Products International Corp 246107	\$38.13 / Pack of 50	3	\$114.39
	Ships from Ships in 1 Bus		u re r - Usually
KleenGuard™ A60 Bloodborne Pathogen and Chemical Splash Protection Coveralls Catalog number 19-057-404B by Kimberly-Clark Professional™ 45023 Closure Type: Zipper front, Description: Hooded, seamless zi	\$470.00 / Case of 24	22	\$10,340.00
	On Order 12/10/2019	(22) - Estima	ted delivery
KleenGuard™ A60 Bloodborne Pathogen and Chemical Splash Protection Coveralls Catalog number 19-057-404A by Kimberly-Clark Professional™ 45022 Closure Type: Zipper front, Description: Hooded, seamless zi	\$470.00 / Case of 24	23	\$10,810.00
	In Stock (* 11/07/2019	10) - Estimato	ed delivery
	On Order 12/10/2019	(13) - Estima	ted delivery

	Item	Price	Qty	Subtotal
	Comfort Plus Disposable Filtering Facepiece Respirator, N95 Catalog number 19-120-299 by 3M™ 8211 Certifications/Compliance: NIOSH 42 CFR Part 84, N95, NIOSH TC-84A-1299, Design T	\$44.41 / Pack of 10 \$314.00 / Case of 8 PK	14	\$4,396.00
		11/07/2019	i) - Estimated (11) - Estimal	•
		11/27/2019		,
in the	Qualitative Fit-Test Kit, Bitter Catalog number 19-002-720 by 3M™ FT30 Product Type: Bitter Fit Test Kit, Quantity: 1	\$436.00 / Each	1	\$436.00
		In Stock (1 11/11/2019) - Estimated	l delivery
	Metaliks™ Eyewear Catalog number 19-810-520 by 3M™ 115540000020 Frame Color: Bronze, Lens	\$32.30 / Each	10	\$323.00
	Type: Anti-fog, Lens Tint: Clear	\$282.50 / Case of 20 EA		
		On Order 9	(10) - Estimat	ted delivery

	Item	Price	Qty	Subtotal
пе	Ethanol, 70% Solution, Molecular Biology Grade, Denatured, Fisher BioReagents™	\$82.00 / Each	1	\$82.00
	Catalog number BP82031GAL Quantity: 1 gal., Packaging: Poly Bottle	\$264.00 / Case of 4 EA		
		On Order	(1) - Estimat	ed delivery

On Order (1) - Estimated delivery 11/11/2019

Items for Building TVLA Capacity



TSG Series Countertop
Refrigerator
Catalog number TSG205SA
by Thermo Scientific™
TSG205SA
TSG CT SOLID DOOR, 5-15P

\$2,740.00 \$2,740.00 / Each

Ships from manufacturer - Usually Ships in 3 Business Days



Fisherbrand™ Traceable™
Refrigerator/Freezer Plus
Thermometer
Catalog number 15-077-721
5ML VACCN THRMTR .5
DEG 1EA

\$101.00 / Each \$101.00

On Order (1) - Estimated delivery 11/21/2019



Lamp Assembly for FLx800[™] Microplate Reader
Catalog number BT7080500
by BioTek[™] 7080500
LAMP ASSEMBLY FOR
FLX800

\$174.10 / Each \$174.10

This item is not returnable. View return policy

Ships from manufacturer - Usually Ships in 5 Business Days

Item	Price	Qty	Subtotal
LMC-2000 Series Compound Microscope Catalog number LMC2PH1 by Laxco™ LMC2PH1 Head Style: Binocular, Lighting Type: 3w LED, Phase Contrast, Magnification Power: 10X, 20X, 4	\$3,347.30 / Each	1	\$3,347.30
	Ships fron Ships in 18 Bu	n manufactu Isiness Days	ı re r - Usually
[DW-20] Deionized Water Distiller with Gauge Catalog number 50-187-1175 by Labomed Inc DW20	\$2,458.50 / Each	1	\$2,458.50
	Ships fron Ships in 40 Bu	n manufactu usiness Days	i rer - Usually
24006 ISFET POCKET PH METER Catalog number NC1478483 by Deltatrak Inc 24006	\$257.92 / Each	1	\$257.92
	Ships from Ships in 2 Bus	n manufactu iness Days	ı rer - Usually

♣ Add all items to a list



Home (A. Micropioto Washers) L. Copply ashi, Micropiote Washer 47,184.



CappWash™ **Microplate Washer**, APS BE

J. J. M. APS 30

CappWash" is the idea washing too for small scale immuno assays

- Compact and made for small-scale work.
- Unique two-in-one design.
- 5 niple washing matches all well types
- Ne programming and no einstrical wiring connection required

The vacuum pump is available for 115V connections

Fitting into even the tightest budget, Capa/Noshi^{all} is a perfect a ternative for washing micro plates and strips



ORDER Gland A

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Description	Supplier No.	VWR Catalog Number	Unit	Availability	Price	Quantity
CappWash* Kit Includes W-12 WP-115V WB-1, WB-3 WB-4, and W-1000 (3 meters)	W-12KIT-115V	490015-894	Fach	Ordered Upon Request	\$2,513.48	6
					Ad	d to Cart
Generate parendes Baranse Label Formati - Av	ery 5161 - 1" x 4"	لنة	Add	to Shopping List	Add to Quote	
laws rate (1) Cotax o Page				Existing	List to New Le	t

Enter List Name.

Tablets and case: \$228.98 each

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Ecohealth Alliance Inc Whole Foods Browsing History

Melinda's Amazon.com

Hello, Melinda **Account & Lists**

Orders Try Prime

Cart

Shop new HoliDeals



Shopping Cart

Get a \$15 credit

when you purchase \$50 or more in Amazon Gift Cards (restrictions apply)

Learn More

Price

\$26.99

\$201.99

Page 1 of 4

Note we will order 8, only 5 were allowed to be ordered at a time. This adds another

Your order qualifies for EREE Shipping. Choose this option at checkout. See cetails

Subtotal (13 items): \$1,225.87

This order contains a gift

Proceed to checkout



SupCase Unicorn Beetle Pro Series Designed for Galaxy Tab A 10.1 (2019 Release), Full-Body Rugged Heavy Duty Protective Case with Built-in Screen Protector for Galaxy Tab A 10.1 Inch 2019 (Black)

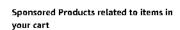
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Compare with similar items.





Fire HD 10 Case 2017... 26 S29.99

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Galaxy Tab A 10.1 Case... 14

S16.99

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Amazon Fire / Tablet... 1.625

\$14.99

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Soke Galaxy Tab A., 296

\$19.99

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Samsung Galaxy Tab A 10.1 32 GB Wifi

Tablet Black (2019)

Eligible for FREE Shipping

Gift options not available. I carn more

Qty: 5 Delete Save for later

Compare with similar items

Subtotal (13 items): \$1,225.87 Updated Subtotal (16 items): \$1,831.84

\$605,97 to the total

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Do you have a gift card or promotional code? We'll ask you to enter your claim code when it's time to pay.

Customers who shopped for SupCase Unicorn Beetle Pro Series Designed for... also shopped for:



SupCase [Unicom Beetle... 675

\$26.99 Add to Cart



Galaxy Tab A 10.1 2019... 122

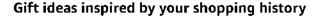
Add to Cart



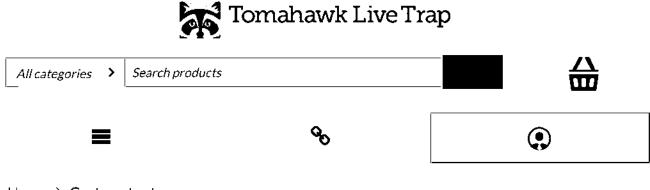
Cantis Galaxy Tab A 10.1... 123

\$13.99

Add to Cart



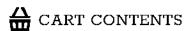
Traps



Home > Cart contents

Ordering multiple items? We may be able to reduce shipping cost for your order. Please read this memo. Thank you!

If you are ordering many different items our website may not accurately calculate shipping for you. We can combine products and ship them together in boxes to save shipping cost. During the final stage of the checkout process select the "Double Check My Shipping Cost" option as your payment method. We will contact you with a quote for reduced shipping. You can also call us at 800-272-8727 and we can quote you by phone.



CONTINUE SHOPPING

CLEAR CART

PROCEED TO CHECKOUT



LFAHD - 9 x 3 x 3.5 - Folding, Aluminum Trap \otimes CODE: LFAHD

\$27.23

- 33 +

\$898.59



200 - Collapsible Squirrel Trap with Two Trap Doors \otimes CODE: 200

ADD POWDER COATING. :

(+15%)

ADD A PLASTIC TRAP COVER FOR THIS TRAP. **9**:

(+\$16.45)

\$44.82

- 40 +

\$1,792.80



205 - Collapsible Cat, Opossum, Rabbit Trap with One Trap Door \otimes CODE: 205

ADD POWDER COATING. :

(+15%)

ADD A PLASTIC TRAP COVER FOR THIS TRAP. $oldsymbol{0}$:

(+\$25.95)

\$63.45

-60 +

\$3,807.00

Gift certificate or promo code



Subtotal FedEx (→ CHANGE)

\$6,498.39

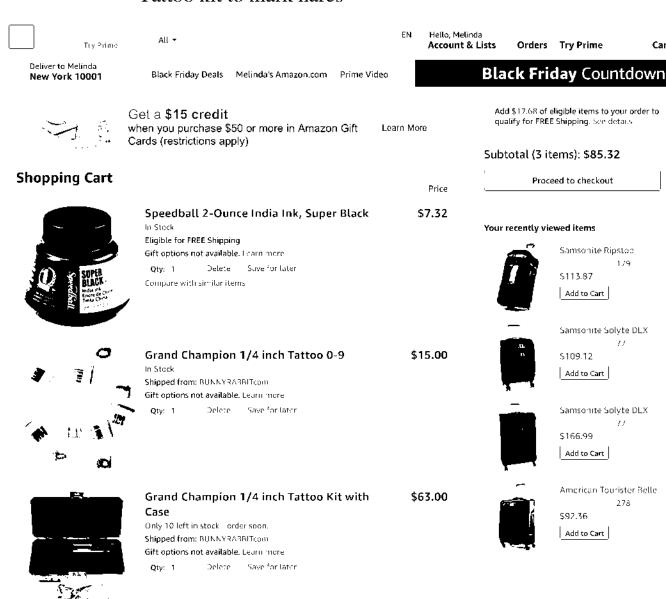
\$357.54

TOTAL COST

\$6,855.93

Cart

Tattoo kit to mark hares



Samsung Galaxy Tab A 10.1 32 GB Wifi Tablet Black (2019) was removed from Shopping Cart.

Subtotal (3 items): \$85.32

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Do you have a gift card or promotional code? We'll ask you to enter your claim code when it's time to pay.

Sponsored Products related to items in your

cart What's this?



ZZKOKO Calligraphy Ink Bottle, 12 Calars Dip.



Daveliou Pink Calligraphy Pens Set 117 Piece Kit

Page 1 of 3

278



Rodent Ear tags

Products

Items (1) Summary

50	
10001	
10000	

Laser Etched Ear Tags, One-Sided

1,000 Laser Etched Ear Tags (Custom Specified Numbering) Item #: INS1005-1LSZ **\$315 \$315**

1 ↓ \$ **x** Remove

Save for

later

Subtotal:

\$315

Shipping and tax will be calculated when we process your order and will be added to the amount you are charged.

Total:

\$315

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password

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Discount Code

Apply

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Anesthesia Machine



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(https://www.harvardapparatus.com/wishlist/) (https://www.harvardapparatus.com/wishlist/) (https://www.harvardapparatus.com/checkout/cart/)

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Estimate Shipping and Tax

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SURGICAL

BEHAVIÓRAL RESEARCH

MICRODIALYSIS

Subtotal

Grand Total

SAMPLE PREP

Shopping Cart

	Product Name	Move to Quote	Unit Price	Qty	Subtotal
(https://www /universal- rebreathing- anesthesia- f-circuit- 1.html)	.h <u>arraedag</u> paeatusiድርያው in (https://www.harvardapparatus.com/universal- rebreathing-anesthesia-f-circuit-1.html)		\$30.00	1	\$30.00
(https://www /tabletop- anesthesia- systems.html	(https://www.harvardapparatus.com/tabletop- anesthesia-systems.html)		\$2,963.00	1	\$2,963.00
(https://www /cat- anesthesia- masks.html)	Cat Ventilation/Anesthesia Mask, Small, 5.1 cm (2 in) diameter molded on 15 mm standard male connections (https://www.harvardapparatus.com/cat-anesthesia- masks.html)		\$15.00	1	\$15.00
Continue S	hopping			Up	date Shopping Cart

Discount Codes

Enter your coupon code if you have

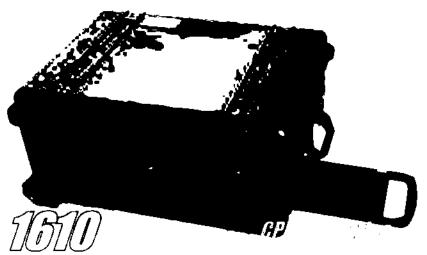
\$3,008.00

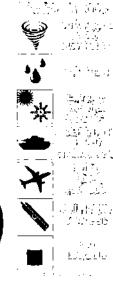
\$3,008.00

1-800-882-4730 **PELICAN CASES** Small Pollum Case: Medium Pelicen Care Lorge Pulliran Case CAMCORDER CASES HARDIGG CASES **HÖMELAND SECURITY** LAPTOP & COMPUTER **CEM CASES** RACK CASES TRADESHOW CASES STORM CASES

rencan case idiu

Order your pelican case now! 1-800-882-4730





22.25 L x 17.12 W x 2 Ltd over 8.5 Base 24.56 L x 19.31 W x 11 93 H Empty 20 lbs. Case with Fram: 22.5 lbs

TAN 6 OF GREEN PLAN CHICK AVAILABBITS

Pelican 1610 roll model case

With Fold Down Handle & Wheels, Available in **Black and** ready for shipping in 24 hrs, or less, **Desert Tan** and **OD Green** colors are available upon request (longer lead time and minimum quantities applies).





LARGER

Case to carry anesthesia machine

1610 Case Part Numbers:



APP-1610E Price \$215.95



IN STOCK

Empty case, no foam (E suffix) (No re stocking charge applies)



Strongestic use on the dalance to sustante for rugged equipment that does not require additional train protection.



Director

APP-1614PD Price \$332.14



Pelican case [fig] with Padded Dividers (No re steeking charge applies)



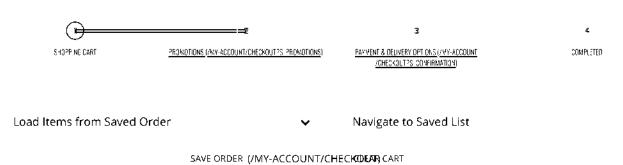
An alse the rive to organizing your goal. Made of dutable tylon and from Individual compartments are adjustable durings a fook and loop Vellin, is system.



Anesthesia Medications

CHECKOUT

HOME (/) > MY ACCOUNT (/MY-ACCOUNT) > CHECKOUT



CHECKOUT (/MY-ACCOUNT/CHECKOUT?S=PROMOTIONS)

Estimate total: \$3,072.98



REMOVE

()

Q





_(/Product?sku=029405)





(/Product?sku=029404)

ISOTHESIA (ISOFLURANE) SOLUTION

Availability This item is scheduled to arrive the next business day. It is not for transportation by air.

Brand Products
 Practice Preferred

Unit Price \$27.83 Unit Total \$1,141.03



Size 250mL Case Qty 6

In Stock In Stock: 1620



41

ISOTHESIA (ISOFLURANE) SOLUTION

Availability This item is scheduled to arrive the next business day. It is not for transportation by air.

Brand Products
 Practice Preferred

Unit Price \$17.82 Unit Total \$1,283.04

72 \$\hat{\(\frac{1}{2}\)} REMOVE ()

 SKU
 029404

 Size
 100mL

 Case Qty
 6

In Stock In Stock: 116











KETATHESIA INJECTION, 100MG/ML C3N

DIAZEPAM INJECTION, 5MG/ML, C4

Equipment

Cart

Account: 884930003 EcoHealth Alliance

	ltem	Price Ot	Qty Subto		Price Otv Subtotal	Subtotal	Order Sumr	mary
	item	11100	Ari	Subtotal	Subtotal	\$22,310.00		
t in a	Sorvall™ ST 16 Centrifuge Series	\$6,680.00 / Each	1	\$6,680.00	Shipping and H	\$424.99		
	Catalog number 75-004-240 by Thermo Scientific™ 75004240 Description: Sorvall ST 16 Centrifuge, Capacity:				Shipping charge Estimated Tax	\$424.99 \$0.00		
	4 x 400mL, Electrical Requirements: 230V 50/60Hz				*Extra charges apply for prod require specia	ucts that		
		Ships from	manufactu	rer - Usually				
		Ships in 27 Busi	ness Days		*Additional ha charges deter direct ship manufacturers apply.	mined by		
	Fisherbrand™ Isotemp™ -86°C Ultra-Low	\$15,630.00 / Each	1	\$15,630.00	SPP-IJ.			
	Temperature Chest Freezers, 20 cu. ft.				Generate	e a Web Quc		
	Catalog number 1920CD Electrical Requirements: 208 - 230 V 60 Hz				View All Quotes FAQ	What's this?		
		Ships from Ships in 35 Busi		rer - Usually				

≜ Add all items to a list

Melinda Rostal DVM, MPH

Senior Research Scientist

PREDICT 2 Surveillance Coordinator for EcoHealth Alliance EcoHealth Alliance 460 West 34th Street, Suite 1701 New York, NY 10001

Generator

1.212.380.4489 (direct) www.ecohealthalliance.org

Genset Model

C22 D5, 22kVA Standby, 20kVA, Diesel, Open

Bill of Material

Emergency Standby Power (ESP)
Emissions Level: No Certification
Local Codes and/or Regulation : CE
Output Voltage: 200/115, 3 Phase, Wye, 4 Wire
Engine
X2.5G2
Engine Air Cleaner - Duty Rating : Heavy Duty
Engine Oil Heater: None Supplied
Engine Speed Governing: Mechanical Droop Governor
Engine Coolant Heater: None Supplied
Sub-Base Anti-Vibration Mounts
None Supplied
Main Generator
S0L2G1, 50 Hertz (Hz), 200V and 400V, 163C, Emergency Standby Power (ESP)
Generator Accessories
Voltage Regulator - Torque Match
Main Generator Heater: None Supplied
Exhaust System
Silencer Grade: Residential, Flange On Connection Inlet 3 Inch, Outlet 3 Inch, Side Entry
Exhaust System Accessories: Bellows, System Fixing Kit
Cooling System
Genset Mounted Radiator, 50C / 122F, Genset Mounted
Engine Coolant Mixture: 50% Antifreeze, 50% Water
Primary Electrical Isolation Device
One Circuit Breaker
Primary Electrical Isolation Device
80A MCB, 440V IEC, 4 Pole, 100%, Left
Entrance Box / Terminal Housing
Cable Entrance Box Required : None Supplied
Control System Options
PowerStart 0600
Control Panel Mounting (Viewed From Generator End) : Left Facing

Control Language: English Warning - Low Battery Voltage Emergency Stop Switch - External Control Cabinet Heater: None Supplied Starting Batteries Pure Lead-Tin Thin Plate Valve Regulated Lead-Acid (VRLA) Battery - Maintenance Free Battery Charger Set Mounted, 6A, 110 - 240 V Genset Testing Genset Testing: Standard Factory Test Test Records: Certified Test Warranty Standby, 40 Months, 800 Hours Literature Language English Packing Cover - Shipping

Net package price, \$ 7.900.00 + applicable taxes

Notes:

- 1. Spec sheet provided to quote
- 2. Price includes freight Factory via standard ground to nearest port of generator manufacturer, Shipping to final destination Tanzania by others and not included in this quote.
- 3. Price does not include field connections, installation or rigging.
- 4. This proposal is based on information supplied to Cummins which may or may not have been correct or complete. The customer is responsible for reviewing this proposal for compliance with the complete and final drawings and specifications.
- 5. All quotations automatically expire thirty (30) days from date issued.

We thank you for giving us the opportunity to quote this equipment. If you need any further assistance or clarification, please do not hesitate to contact us

Sincerely,

Colm Kelly

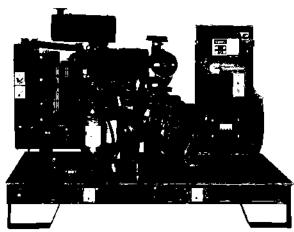
Senior Sales Representative

Specification sheet



Diesel generator set X2.5 series engine

15 kVA - 28 kVA 50 Hz 10.8 kW - 20 kW 60 Hz



Description

This Cummins® commercial generator set is a fully integrated power generation system, providing optimum performance, reliability, and versatility for Stationary Standby, Prime Power, and Continuous Duty applications.

Features

Cummins heavy-duty engine - Rugged 4-cycle industrial diesel delivers reliable power, low emissions and fast response to load changes.

Optional excitation boost system (EBS) Offers enhanced motor starting and fault
clearing short circuit capability.

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings; low waveform distortion with non-linear loads and fault clearing short-circuits capability.

Cooling system - Standard integral setmounted radiator system, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat.

Control system - PowerStart control, microprocessor-based generator set monitoring and control system provides a simple operator interface to the generator set, manual and remote start/stop control and shutdown fault indication.

Enclosures - Optional weather-protective and sound-attenuated enclosure.

Warranty - Backed by a comprehensive warranty and worldwide distributor network.

	3-Phase	ratings			1-Phase ratings*					
	Standby	rating	Prime ra	ting	Standby	y rating	Prime ratin	9	Data sheet	
Model	50 Hz kVA (kW)	60 Hz kW (kVA)	50 Hz kVA (kW)	60 Hz kW (kVA)	50 Hz kVA (kW)	60 Hz kW (kVA)	50 Hz kVA (kW)	60 Hz kW (kVA)		
C17 D5	16.5 (13)		15 (12)		13 (13)		11.8 (11.8)		DS338-CPGK	
C22 D5	22 (18)		20 (16)		17 (17)		15.5 (15.5)		DS340-CPGK	
010 00	Z1.0 (EE)		25 (20)		22 (22)		20 (20)		D\$342-CPGK	
C12 D6		12 (15)		10.9 (13.6)		12 (12)		10.9 (10.9)	D\$339-CPGK	
C16 D6		16 (20)		15 (18)		16 (16)		14.5 (14.5)	DS341-CPGK	
C20 D6		20 (25)		18 (22)		20 (20)		18.1 (18.1)	DS343-CPGK	

^{*1.0} PF

Generator set specifications

Governor regulation class	ISO 8528 G2
Voltage regulation, no load to full load	± 2.5%
Random voltage variation	± 2.5%
Frequency regulation	Droop
Random frequency variation	± 0.75 %
Radio frequency emissions compliance	BS EN 61000-6-1 / BS EN 61000-6-3

Engine specifications

Design	4 cycle, in-line, naturally aspirated
Bore	91.4 mm
Stroke	127 mm
Displacement	2.5 liter (153 in ³)
Cylinder block	Alloy cast iron, in-line, 3 cylinder
Battery charging alternator	36 A
Starting voltage	12 volt, negative ground
Fuel system	Direct injection
Fuel filter	Spin on fuel filters with water separator
Air cleaner type	Dry replaceable element
Lube oil filter type(s)	Spin on full flow filter, filtration efficiency 25 micron 99% (min)
Standard cooling system	122 °F (50 °C) ambient radiator with coolant recovery system

Alternator specifications

Design	Brushless, single bearing
Stator	2/3 pitch
Insulation system	Class H
Standard temperature rise	125-163 °C
Exciter type	Self excited
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower fan
AC waveform Total Harmonic Distortion (THDV)	No load to full linear load < 5%. For any single harmonic < 2.5%
Telephone Influence Factor (TIF)	< 75 (for 60 Hz)
Telephone Harmonic Factor (THF)	< 2% (for 50 Hz)

Available v 50 Hz Line-Lir	oltages ne/Line-Neutral		60 Hz Line–Li	ne/Line-Neutral	
0 phass		1-phase	3-phase		1-phase
• 416/240 • 400/230 • 380/220	• 208/120 • 200/115 • 190/110	• 230	• 480/277 • 440/255 • 416/240	• 220/127	• 240

Note: Consult factory for other voltages.

Generator set options

Engine

- Electronic engine governing
- Coolant heater 120/240 V

Cooling

• Antifreeze 50/50 (Ethylene glycol)

Enclosure

· Optional silent power canopy

Base frame

• Dual skin fully contained fuel tank

- 500 litre fuel tank
- Set mounted battery

Alternator

- Alternator heater
- Control panel
- PowerCommand 1.1
- 2/4 pole main circuit breaker
- Aux 101

Warranty

- 2 years for Prime application
- 5 years for Standby application
- 1500/3000 hours service kit
- Optional language literature
- Engine oil heater 120/240 V
- External fuel fill (3 way valve)

Note: Some options may not be available on all models - consult factory for availability.

Control system

Generator set control PowerStart 600 – The PowerStart contol is a microprocessor-based generator set monitoring and control system. The control provides a simple operator interface to the generator set, auto/ manual and remote start/stop control and shutdown fault indication. The integration of all control functions into a single control provides enhanced reliability and performance compared to conventional generator set control systems. This control has been designed and tested to meet the harsh environment in which gensets are typically applied.

- The PowerStart generator set control is suitable for use on a wide range of generator sets in nonparalleling applications. It is suitable for use with reconnectable or non-reconnectable generators, can be configured for either 50 Hz or 60 Hz and voltage and power connection from 190-600 VAC line-to-line.
- This control includes an intuitive operator interface that allows for complete genset control as well as system metering, fault annunciation, maintenance alarm, over imbalance current, configuration and diagnostics. The interface includes seven generator set status LED lamps with both internationally accepted symbols and English text to comply with customer needs. The interface also includes an LED backlit LCD display with tactile-feel softswitches for easy operation and screen navigation. The manual/auto/stop switch function is integrated into the interface panel.
- All data on the control can be viewed by scrolling through screens with the navigation keys. The control displays the current active fault and a timeordered history of the five previous faults.
- Power for this control is derived from the generator set starting batteries and functions over a voltage range from 8VDC to 16 VDC.

Major Features

- Integrated 128x64 Pixel monochrome graphic LCD Display
- 12 and 24V battery operation
- Genset monitoring-monitor status of all critical engine and alternator functions
- Digital genset metering (AC and DC)
- Genset battery monitoring system to warn against a weak battery connection
- Configurable for single phase or three phase or split phase AC metering
- Engine starting includes solid state output to operate external relay to start the engine, fuel shut off (FSO) and glow Plug
- Genset Protection: protects engine and alternator
- Real time clock for fault and event stamping
- Fuel level measurement using 4-20mA input sensor

- Exerciser clock and time of delay start/stop initiate a test without load.
- Maintenance due alarm based on engine running time and real time clock
- Auto Main Failure (AMF) Provides load transfer operation in open transition mode
- AMF Test with or without load options
- Utility Voltage monitoring and protection
- Remote start capability in Auto mode
- Advanced service ability using Inpower™ a PC based Software service tool
- Modbus interface for interconnecting to customer PLC/BMS
- Configurable Inputs and Outputs
- Environmental protection: The Control is designed for reliable operation in harsh environment
- Warranty and service backed by a comprehensive warranty and worldwide distributor service network
- Certification-suitable for use on generator sets that are designed, manufactured, tested and certified relevant ISO, IEC and CE standards.

Base control functions LCD capability LED INDICATING LAMPS

 For Genset Running, Remote Start, AMF Test Active, Genset Shutdown, Warning, Load connected to Genset, Load connected to Utility, Manual Mode, Stop Mode and Auto Mode.

LCD display

■ 128 x 64 Pixel Monochrome Graphics display

OPERATION INTERFACE

Six tactile-feel soft switches for LCD navigation, genset operation and control setup. These switches are indicated by internationally accepted symbols and English text.

OPERATOR ADJUSTMENTS

- The LCD includes provisions for necessary set up and adjustment functions.
- Data Log includes engine run time and controller ontime Fault History.
- Provides a record of the most recent fault Condition with Engine run time stamp, RTC stamp and occurances
- Up to 5 events are stored in the control nonvolatile memory.

AMF FUNCTIONALITY

When Auto Mains Failure is enabled and controller is in Auto Mode and if utility goes off then control starts the Genset automatically and transfers load onto Genset. If Utility returns and is healthy then load again gets retransferred onto Utility. AMF provides load transfer operation in Open Transition transfer mode.

FUEL LEVEL FEATURE

The Control will show the warning fault when the fuel level in the tank goes below the predefined threshold. Control includes time delays to prevent nuisance warning signals.

Exercise Scheduler

It is used only when genset is in Auto mode. It is used to start a Scheduler schedule at No Load condition. A trim Exercise Scheduler Enable is available to enable or disable the feature.

Maintenance

Maintenance due alarm based on Engine Running Time or Real time clock

Control data

Access to the control software part number and software version are provided from the LCD or InPower™.

Alternator data

- Voltage (single or three phase line-to-line and line-to- neutral)
- Current (single or three phase)
- kVA, kVAR, kW, Power Factor (Three phase and total)
- Frequency
- Totalized positive and negative kWH, kVARH, kVAH

Utility AC data

 Voltage (three/single phase LL and LN) -Frequency

ENGINE DATA

- Starting battery voltage
- Engine running hours
- Engine temperature
- Engine oil pressure

Service adjustments

 The control includes provisions for adjustment and calibration of generator set control functions. Functions include:

- Voltage selection
- Frequency selection
- Genset and Utility AC Meter Calibration

ENGINE CONTROL

- CT ratio, and Genset ratings setup
- Start/Stop time delay setup
- Real time clock setup with daylight saving
- AMF Setup with test mode and transfer/retransfer time delays
- Modbus baud rate, parity setup
- Exercise scheduler repeat interval, Day, time and duration setup
- Maintenance due setup
- LCD brightness and contrast control

Battery operation

Control will operate on 12V/24V batteries

Auto start mode

Accepts a ground signal from remote devices to automatically start the generator set. The remote start signal will also wake up the control from sleep mode. The control can incorporate a time delay start and stop.

Emergency stop

The control annunciates when an emergency stop signal is received and the generator set immediately shuts down. The generator set is prevented from running or cranking with the switch engaged E-stop switch.

Sleep mode

The control includes a configurable low current draw state to minimize starting battery current draw when the genset is not operating.

Engine starting

The control supports automatic engine starting.

Primary and backup start disconnects are
achieved by battery charging alternator feedback
or main alternator output frequency. The control
also supports configurable glow plug control when
applicable.

Cycle cranking

Configurable for the number of starting cycles (1 to 7) and duration of crank and rest periods. Control includes starter protection algorithms to prevent the operator from specifying a starting sequence that might be damaging.

Time delay start and stop (cooldown) Configurable for time delay of 0-300 seconds prior to starting after receiving a remote start signal and for

time delay of 0-600 seconds prior to shutdown after signal to stop in normal operation modes. Default for both time delay periods is 0 seconds.

Auto Mains Failure functions

AMF primarily means that the genset controller is controlling both the genset breaker and a utility breaker in a transfer pair arrangement. AMF is only for use in a single genset / single utility arrangement. AMF's primary job is to keep loads powered. AMF completely manages the system by automatically starting the genset and transferring load when it detects utility failure. AMF has numerous built-in configurable sensors to determine the availability of the utility and genset sources. Sensors include under voltage, overvoltage, over/under frequency and breaker failure. PS0600 control supports only open transition (Break before Make) AMF functionality.

AMF Test mode

AMF supports test mode with or without load options along with test mode duration.

Load Transfer Switch Type

AMF breaker outputs can be continuous (contact pair) or pulsed (GTEC) type based on load transfer switch selection.

Undervoltage sensor

 Three phase LL and LN undervoltage sensing for pickup 85-100% and dropout adjustable from 75-98% of nominal and dropout adjustable delay from 0.1-30 sec

Overvoltage sensor

 Three phase LL and LN overvoltage sensing for dropout adjustable from 105-135% of nominal and dropout adjustable delay from 0.5-120 sec

Over/under frequency sensor

- Underfrequency sensing for pickup 85-100% and dropout adjustable from 70-85% of nominal and dropout adjustable delay from 0.1-15 sec
- Overfrequency sensing for dropout adjustable from 105-115% of nominal and dropout adjustable delay from 0.1-15 sec

Timers

- Control provides transfer time delays including Time delay engine start (0-3600 sec), time delay normal to emergency (0-300 sec) and programmed transition delay (0-600 sec).
 impending failure.
- Cranking lockout The control will not allow the starter to attempt to engage or to crank the engine when the engine is running.

■ Control provides retransfer time delays including time delay emergency to normal (0-1800 sec) and programmed transition delay (0-600 sec), time delay engine cooldown (0-3600 sec)

Protective functions:

On operation of a protective function, the control will indicate a fault by illuminating the appropriate status LED, as well as display the fault code and fault description on the LCD. The nature of the fault and time of occurrence are logged in the control. The service manual and InPower™ Service Tool provide service keys and procedures based on the service codes provided. In Power is used to configure settings.

Configurable alarm input

The control accepts maximum three alarm inputs (contact closed to ground) to cause a shutdown or warning response from the control.

Emergency stop

 Annunciate whenever an emergency stop signal is received from external switch.

Engine protection

- Low lube oil pressure warning/shutdown -Level is pre-set to match the capabilities of the engine used. Control includes time delays to prevent nuisance shutdown signals.
- High coolant temperature warning/shutdown -Level is pre-set to match the capabilities of the engine used. Control includes time delays to prevent nuisance shutdown signals.
- Low coolant temperature warning Indicates that engine temperature may not be high enough for 1 min. and start or proper load acceptance.
- Sensor failure indication Logic is provided on the base control to detect analog sensor or interconnecting wiring failures.

General engine protection:

Low Fuel Level Warning - Indicates that engine fuel level reached the Low Fuel Level Warning Threshold (30% by default).

Charging Alternator Failure Warning - Indicates that engine charging alternator voltage reached the low/high charging alternator threshold when charging alternator enable trim is enabled.

- Low and high battery voltage warning -Indicates status of battery charging system (failure) by continuously monitoring battery voltage.
- Weak battery warning The control will test the battery each time the generator set is signaled to start and indicate a warning if the battery indicates

 Fail to start shutdown - The control will indicate a fault if the generator set fails to start by the completion of the engine crack sequence.

ALTERNATOR PROTECTION

Battleshort Mode

When enabled and Battle short switch is active, the control will allow non-critical shutdown faults to be bypassed. If a bypass shutdown fault occurs, the fault code and description will still be annunciated, but the genset will not shutdown. This will be followed by a fail to shutdown fault. Emergency stop critical shutdown faults are not bypassed.

Please refer to control service and operator manual for list of critical faults

High AC voltage shutdown (59)

Output voltage on any phase exceeds preset values. Values adjustable from 105-125% of nominal voltage, with time delay adjustable from 1-10 seconds. Default value is 110% for 5 seconds.

Low AC voltage shutdown (27)

 Voltage on any phase has dropped below a preset value. Adjustable over a range of 50-95% of voltage, time delay 2-20 seconds.
 Default value is 90% for 5 seconds.

Under frequency shutdown (81 u)

 Generator set output frequency cannot be maintained. Settings are adjustable from 2-10 Hz below nominal governor set point, for a 500-2000 half cycles delay. Default: 5 Hz, 1000 half cycles.

Over frequency shutdown/warning (81 o)

 Generator set is operating at a potentially damaging frequency level. Settings are adjustable from 2-10 Hz above nominal governor set point for 100-2000 half cycles delay. Default: 5 Hz, 1000 half cycles.

Loss of sensing voltage shutdown

 Shutdown of generator set will occur on loss of voltage sensing inputs to the control.

Current Imbalance Warning Fault

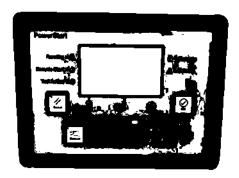
■ Issues warning when current imbalance is observed per phase when genset is in running state.

High Current warning/shutdown (51)

 Implementation of the thermal damage curve with instantaneous trip level calculated based on current transformer ratio and application power rating.

Auto Mains Failure Protections:

- Breaker/ATS Switch fail to close warning when the control signals a ATS switch to close, it will monitor the ATS switch feedback contacts and verifies that switch is closed. If the control does not sense ATS switch closure within an adjustable time period of ter the close signal, the fail to close warning will be initiated.
- Breaker/ATS Switch fail to open warning when the control signals a ATS switch to open, it will monitor the ATS switch feedback contacts and verifies that switch is opened. If the control does not sense ATS switch opened within an adjustable time period after the open signal, the fail to open warning will be initiated.



Environment

The control is designed for proper operation without recalibration in ambient temperatures from -15 °C (5 °F) to +70° C (158 °F), and for storage from -20 °C (-4 °F) to +80 °C (176 °F). Control will operate with humidity up to 95%, non-condensing.

The control board is conformal coated to provide resistance to dust and moisture. The single membrane surface, which is impervious to effects of dust, moisture, oil and exhaust fumes. This panel uses a sealed membrane to provide long reliable service life in harsh environments. The control is specifically designed and tested for resistance to RFI/EMI and to resist effects of vibration to provide a long reliable life when mounted on a generator set. The control includes transient voltage surge suppression to provide compliance to referenced standards

FIELD CONTROL INTERFACE

Input signals to the control include:

 configured to AMF specific outputs (Utility/ Genset CB Open/ Close driver) when Auto mains failure is enabled.

Communications connections include:

Control provides one RS-485 port which can be used either for PCTool interface or Modbus master interface based on protocol selection from LCD or InpowerTM.

- Modbus RS485 port: Allows the control to communicate with external devices such as PLCs using Modbus protocol.
- PC tool interface: This RS-485 communication port allows the control to communicate with a personal computer running InPower™ software.
- Note An RS-485 or USB to RS-232 converter is required for communication between control and PC.

Software

InPower (beyond 11.5.2.0 version) is a PC-based software service tool that is designed to directly communicate to Power Start generator sets and transfer switches, to facilitate service and monitoring of these products.

Certifications

PowerStart meets or exceeds the requirements of the following codes and standards:

- Remote start
- Emergency stop
- Configurable customer inputs:

Control includes (1 Control includes 3 input signals which can be configured for diagnostic inputs. Out of which 1st input can also be configured as Battle short input. 2st and 3st inputs gets configured to Utility CB status and Genset CB status when Auto mains failure is enabled.)

Output signals from the control include:

Control includes 6 configurable outputs which can be configured to Diagnostic Output, Glow Plug, Ready to load, L series governor.

Configurable output 3, Configurable output 4, Configurable output 5 and Configurable output 6 get

- CE marking: The control is suitable for use on generator sets to be CE-marked. EN 50081-1,2 residential/light industrial emissions or industrial emissions.
- EN 50082-1,2 residential/light industrial or industrial susceptibility.
- ISO 7637-2, level 2; DC supply surge voltage test.
- PowerStart control and generator sets are designed and manufactured in ISO 9001 certified facilities.

Warranty

All components and subsystems are covered by an express limited one year warranty. Other optional and extended factory warranties and local distributor maintenance agreements are available.

Ratings definitions

Emergency Standby Power (ESP):

Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-Time Running Power (LTP):

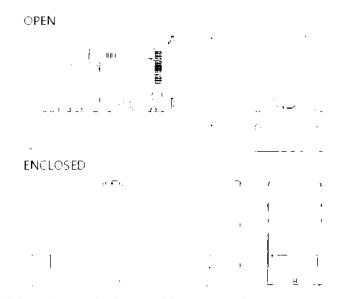
Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

Prime Power (PRP):

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base Load (Continuous) Power (COP):

Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.



This outline drawing is to provide representative configuration details for Model series only.

See respective model data sheet for specific model outline drawing number.

Do not use for installation design

		Open					Enclosed				
	Model	Length "A" mm	Width "B" mm	Height "C" mm	Dry wt.* kg	Wet wt.* kg	Length "A" mm	Width "B" mm	Height "C" mm	Dry wt.* kg	Wet wt.* kg
	C47 D5	1007	020	1000	620 5	C44 E	2082	987	1524	942.5	964.5
L	C22 D5	1667	930	1282	650.5	672.5	2082	987	1524	970.5	992.5
	C28 D5	1667	930	1282	694.3	716.3	2082	987	1524	1014.3	1036.3
	C12 D6	1667	930	1282	601.5	623.5	2082	987	1524	921.5	943.5
	C16 D6	1667	930	1282	633.5	655.5	2082	987	1524	953.5	975.5
	C20 D6	1667	930	1282	633.5	655.5	2082	987	1524	953.5	975.5

^{*} Note: Weights represent a set with standard features. See outline drawings for weights of other configurations.

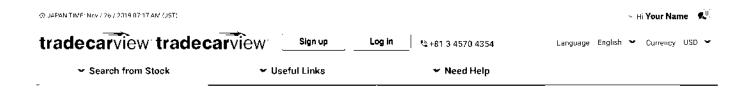
Codes and standards



This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.



The 50 Hz generator sets are available with CE certification.



Vehicle: Note this is the same quote as used to compare the rental car option to the purchase option





Japan's largest online used car marketplace.

Specific Information

VIN (vehicle certification Number) /Serial No

TRJ150-0084***

TRJ150W

TRJ150W

2018/03

<u>.gaphilised.com/gaphese used.car > Teyera > Land Cruiser Frado > 2018 > Teyera Land Cruiser Frado 2018</u>

2018 Toyota Land Cruiser Prado TOYOTA LAND CRUISER PRADO TX 4WD 24,200 km | Automatic | No Accident | Gasoline/Petrol | 2,700cc STOCK 🖍 1 incurres for this car Car Price (FOB) US\$32,216 **Estimated Total Price** US\$34,098 *The price is not fixed. Let's try to negotiate: C&F + Pre-ship inspection Nearest port DAR ES SALAAM ♣ Change destination Tarchino needs Contact syuel trading (I want to negotiate the best price I want to know the shipping schedule I want to know about the condition of the car * Add to Favorite Send ! If you do not have a login ID, bloase <u>register</u> for tredit ist

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Indoerative Joban's Temps of Uzer.

Registration Year / Month

Manufacture Year / Month Confirm with the Seller

M leage 24,200 km Transmission Automatic Engine Capacity (Displacement) 2,700cc

Fuel Gasoline/Petrol

BodyStyle1 SUV BodyStyle2 Steering Right Exterior Color Black

Drive Type 4wheel grive

5 Door Number of Seats

Dimension 476cm×189cm×185cm=16.64m3

Black

Condition Used

5/2150 191124120615 10

Remarks (Any Problems)

Very clean interior

Comment Looks & runs great Low mileage

Dec / 24 / 2019 (JST) Expiry Date

Options

Interior Color

Safety Driver Airbag Anti-Lock Brakes Passenger Airbag Alarm

Side Airbag

Comfort

A/C:front Power Steering Remote Keyless Entry Navigation System A/C:rear Cruise Control Digital Meter Till Steering

Sound System

CD Player AM/FM Radio AM/FM Stereo DVD CD Changer Aftermarket Speaker Hard Disc Satellite Radio

Windows

Power Windows Rear Window Defroster **Tinted Glass** Rear Window Wiper

Other Features

Alloy Wheels Power Door Locks Power Mirrors Sunroof

Third Row Seats Power Slide Door

Other selling points

No Accident history Maintenance Records Available One Owner New Tires Non-Smoker Fully Loaded Performance Tires Custom Wheels Repainted Car Turbo Upgraded Sound System

Seat

Leather Seats Power Seats Child Seat Bucket Seat



HummingbirdIRB payments are made every 6 months 1/2



Hummingbird IRB

c/o NEIRB, 197 1st Avenue, Suite 250 Needham, MA 02494 US (855) 447-2123 ddennett@hummingbirdirb.com http://hummingbirdirb.com

BILL TO

Melinda Rostal EcoHealth Alliance (2) 460 West 34th Street - 17th floor New York, NY 10001 DATE 12/16/2015
DUE DATE 12/31/2015

TERMS Net 15

Continuing Review (phase II-IV)

Continuing Review for Sponsor: Defense Threat Reduction Agency, Investigator: William Karesh, D.V.M.

Thank you for your business.

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1,000.00

\$0.00

1,000.00

HummingbirdIRB payments are made every 6 months 2/2



Hummingbird IRB

c/o NEIRB, 197 1st Avenue, Suite 250 Needham, MA 02494 US (855) 447-2123 ddennett@hummingbirdirb.com http://hummingbirdirb.com

BILL TO

Emily Hagan EcoHealth Alliance 460 West 34th Street - 17th floor New York, NY 10001 INVOICE # 1065

DATE 06/17/2016

DUE DATE 07/02/2016

TERMS Net 15

Initial Review (Phase II-IV)

New Investigator (Karesh) & Site - Hummingbird IRB #2014-25/Defense Threat Reduction

Agency - 2nd installment

Thank you for your business.

1,000.00

1,000.00

PAYMENT BALANCE DUE 1,000.00

\$0.00

Ethical Clearance in Tanzania

Ethical Clearance in Tanzania

For KCMC application the following is required:

- 1/ Pay Slip (500\$ if it is an Ordinary study / 700 \$ if it is a Clinical Trial.)
- 2/ Cover letter
- 3/ Application Form CRERC FORM 2
- 4/ Full Protocol
- 5/ Questionnaires / Informed Consent forms (in English and Swahili)
- 6/ Investigators CVs CRERC FORM 13

For NIMR application the following is required: (See next page)

- 1/ Pay Slip (600 USD if it is an Ordinary study / 2,100 USD if it is a Clinical Trial)
- 2/ Cover letter
- 3/ NIMR Application Form
- 4/ KCMC EC Approval Certificate. (Approval from international collaborating institution if applicable)
- 4/ Full Protocol
- 5/ Investigators CVs CRERC FORM 13
- 6/ Letter from RMO
- 7/ Material Transfer Agreement (if samples will be transferred)
- 8/ Data Transfer Agreement (if data will be transferred)
- 9/ Informed Consent forms (in English and Swahili)
- 10/ Questionnaires (in English and Swahili)

Please make sure to use the following format while preparing the submission to KCMC and NIMR:

- 1. Abstract
- 2. Introduction
- 3. Literature review
- 4. Problem statement
- 5. Rationale of the study
- 6. Broad Objective and specific objectives should clearly be stipulated
- 7. Methodology which should include 1. Study design, study area, study population, inclusion and exclusion criteria, sample size and sample size techniques, data collection methods and tools, study variables
- 8. Ethical considerations and limitation of the study
- 9. Dissemination of the results
- 10. The budget (and Budget justification) should have 10% 25% overhead costs

National Health Ethics Review Committee (NatHREC) Payment Rates as from October 2013

	TANZANIAN TSHS	INTERNATIONAL US\$	TANZANIAN TSHS	INTERNATIONAL US\$
Registration Fee	100,000.00	100	100,000.00	100
Clearance for Health Research Proposal (Ordinary)	300,000.00	500	150,000.00	250
Clearance for (Clinical Trial)	2,000,000.00	2,000	1,000,000.00	750
Renewal of Ethical Approval (Ordinary)	100,000.00	100	100,000.00	100
Renewal of (Clinical Trial)	200,000.00	200	200,000.00	200
Expedited Review (Ordinary)	600,000.00	1,000	-	-
Expedited Review (Clinical Trial)	3,000,000.00	4,000	-	-
Amendment (Ordinary)	200,000.00	300	100,000.00	150
Amendment (Clinical Trial)	500,000.00	500	250,000.00	250

[❖] Always indicate the name of Principal Investigators and please attach the Deport Slip to your proposal on submission to the Secretariat National Ethics Review Committee

LOGICAL PRESENTATION OF REQUIREMENTS FOR APPLICATION OF RESEARCH CLEARANCE AND PERMIT AT COSTECH

The objective of the analysis that led to this presentation was to find a much more easier to understand presentation of the requirements to the prospective applicants.

GENERAL REQUIREMENTS: These apply to all applications

	Item	Foreigners Affiliated to Local Research and Higher Learning Institutions	Others (Tanzanian, Non Tanzanians, affiliated in a foreign country, affiliated locally, etc)
1	Detailed curriculum vitae	Required for all involved researchers	Required for all involved researchers
2	Full research proposal	Required	Required
3	Sponsor cover letter	Required	Required
4	Support letter from local collaborating institution / contact person	Required	Required
5	Recommendation letter for endorsement of the proposed research within the institution	Required	Not applicable
6	Front-page of passport	Required	Required
7	Proof of payment non- refundable application fees	50 USD	50 USD
8	Application form	Required	Required

REQUIREMENTS FOR SPECIFIC SCENARIOS

- a) Research related to medical, public health, drugs, clinical trials, and wildlife issues require special clearance from relevant authorities i.e National Institute of Medical Research (NIMR) for the study that involves medical, public health and / or human subject (health); Tanzania Food and Drug Authority for Clinical Trials; and Tanzania Wildlife Research Institute (TAWIRI) for the study that involves wildlife and natural resources conservation.
- b) In case of joining a new researcher to an on-going research which has already been granted a research permit, a Principal Investigator shall submit a request of research permit for a new member to COSTECH at least 2 months prior to his/her joining the research team with detailed curriculum vitae, clear justification and roles for an additional staff / researcher to the on-going project.
- c) It is anticipated that the PI will remain responsible for the entire lifetime of the project, unless circumstances necessitate a change of PI. In such rare situation the head of hosting research institution shall write to notify COSTECH within 6 months since termination of outgoing PI. This will be done in writing explaining the reason for the changes and suitability of a newly identified PI. The letter requesting for amendment, accompanied by an up to date progress report shall be subjected to approval process before continuing with the research. It is the responsibility of the hosting institution to submit the request for change of PI within specified time.

POST CLEARANCE

a) After the research has been cleared, the PI will be notified by email. All FOREIGNERS who then wishes to undertake research activities in the country under the cleared research project will be required to apply for permit by presenting a proof of payment of research permit fees (300 USD) and three passport size photos.

- b) All researchers granted research permit that involve collecting human, plant or animal materials / data that will be exported outside Tanzania must submit a signed Material Transfer Agreement (MTA) / Data Transfer Agreement (DTA) between Tanzania host institution and the foreign counterpart. The MTA/DTA will indicate terms for collecting, storing/managing, transporting, disposal or returning of the materials/DATA to Tanzania after the closure of the research project.
- c) An Applicant who has been permitted to conduct research in Tanzania is obliged to submit soft and two (2) hard copies (printed) and soft copy of his/her research report /thesis with COSTECH on completion of research.
- d) COSTECH will have an access to data and research premises of the permitted research projects.
- e) A Principal Investigator (PI) permitted to conduct research in Tanzania is obliged to submit a quarterly/annually report.
- f) Persons who have not submitted satisfactory final reports / thesis on previous research work in Tanzania may not be cleared for new projects. Attention will be drawn to the sponsoring institutions and referees on shared responsibility of making sure that researchers sponsored by them observe the foregoing regulations. A breach of the regulations could result in refusal of permits for other researchers sponsored by same institutions or referees.
- g) Any patent or intellectual property and royalty emanating from any research approved by the National Research Registration Committee (NRRC) should be owned by the respective research institutions involved.



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MINISTRY OF NATURAL RESOURCES AND TOURISM

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General Description

Research for for Leisz Hankester to undertake his research Project: Ecosystera Health in Terzania

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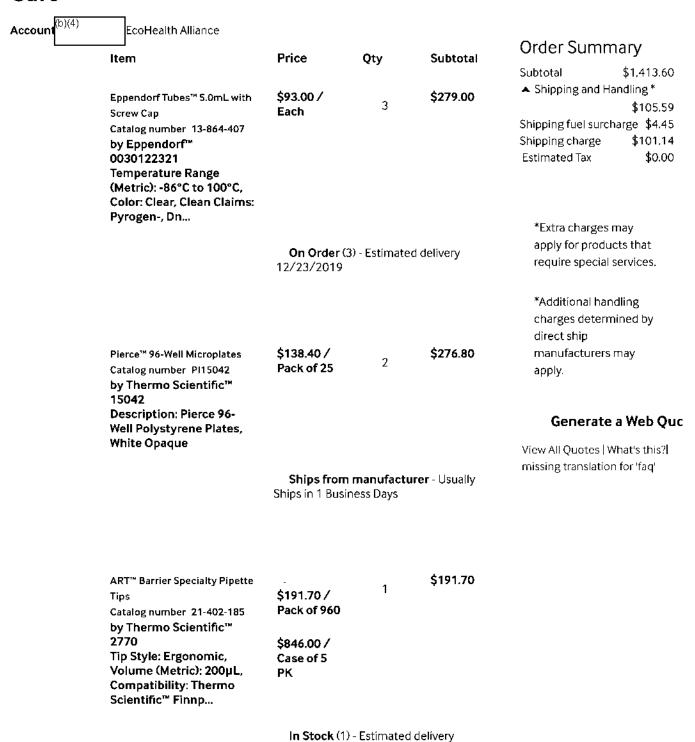
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Supplies for Y3 Workshops

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11/29/2019

Item	Price	Qty	Subtotal
ART™ Barrier Specialty Pipette Tips Catalog number 21-236-85 by Thermo Scientific™ 2279 Tip Style: Ergonomic, Volume (Metric): 1000µL, Compatibility: Thermo Scientific™ Finn	\$227.00 / Pack of 800 \$839.00 / Case of 4 PK	1	\$227.00
	In Stock (1) 11/29/2019) - Estimated	d delivery
ART™ Non-Filtered Standard Hinged Rack Pipette Tips Catalog number 13-811-159 by Thermo Scientific™ 310105HR Volume (Metric): 1000µL, Description: ART Non- filtered Low Retention, Sterility	\$129.10 / Pack of 768 \$471.00 / Case of 4 PK	1	\$129.10
	On Order (12/05/2019	1) - Estimate	ed delivery
Fisherbrand™ Sure One™ Low Retention Non-Filtered Pipette Tips, 200 µL, Standard Length Catalog number 02-707-019 Packaging: Hinged Rack, Sterility: Sterile	\$79.00 / Pack of 960 \$356.00 / Case of 5 PK	2	\$158.00
•	On Order (2) - Estimate	ed delivery

Item	Price	Qty	Subtotal
Fisherbrand™ Sure One™ Low Retention Non-Filtered Pipette Tips, 10 µL, Micro Length	. \$76.00 / Pack of 960	2	\$152.00
Catalog number 02-707-011 Packaging: Hinged Rack, Sterility: Sterile	\$342.00 / Case of 5 PK		

On Order (2) - Estimated delivery 01/03/2020

[♣] Add all items to a list

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- 5. The article is presented in an intelligible fashion and is written in standard English
- 6. The research meets all applicable standards for the ethics of experimentation and research integrity.
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After passing quality control, each manuscript is placed with a member of the Editorial Board who conducts peer review and makes the decision to accept, invite revision, or reject the submitted manuscript. Read the detailed Editorial and Peer Review Process overview.

Ready to Submit?

Submission Guidelines

Submission System

About

Publication fees

PLOS ONE publication fees are US\$1595 per manuscript and will be billed upon acceptance. Authors' ability to pay publication fees will never be a consideration in the decision whether to publish. Read more about publication fees and publication fee support.

Indexing and archiving

See publishing details for all PLOS journal titles, including ISSN and indexing and archiving information.

PLOS

PLOS is a nonprofit Open Access publisher, innovator and advocacy organization with a mission to advance progress in science and medicine by leading a transformation in research communication.

Contact

Visit the Contact page for details about whom to contact with different queries.

Give Feedback



Software Fees

Quotation

Quote #	115815
Terms	NET 30
	Megan Walsh
Contact	walsh@ecohealthalliance.org
	(212) 380-4462
Quote Date	8/19/2019
Expires	8/26/2019

Sales Rep: Tom Haven

tom.haven@ccbtechnology.com p. (800) 342-4222

EcoHealth Alliance Megan Walsh 460 W 34th St FL 17 New York, NY 10001 UNITED STATES (212) 380-4462 walsh@ecohealthalliance.org EcoHealth Alliance Accounts Payable 460 W 34th St FL 17 New York, NY 10001 UNITED STATES (212) 380-4462 walsh@ecohealthalliance.org EcoHealth Alliance Megan Walsh 460 W 34th St Fl 17 New York, NY 10001-2317 UNITED STATES (212) 380-4460 walsh@ecohealthalliance.org

Ado	be subscription renewal					Electro	onic Delivery	
	Adobe Acrobat Pro DC for Teams 12 month substrenewal		\$177.00	\$4,425.00	2019-	09-18	2020-09-17	
15	Adobe Creative Cloud for Teams 12 month substrenewal	cription	\$370.00	\$5,550.00	2019-	09-18	2020-09-17	

Sub Total: \$9,975.00

Shipping and Handling: \$0.00 Tax Rate: (0.08875) \$0.00

> Total \$9,975.00

Please note:

Return policies vary per manufacturer. (Apple and McAfee both have a no returns policy)

Custom configured items/built-to-order items are non-returnable.

Start dates and end dates for renewals may change based on the manufacturer's guidelines, policies, renewal order date, or date of activation.

Price is subject to change based on potential fluctuation of trade tariff regulation.



Dropbox Inc. 333 Brannan Street San Francisco, CA 94107 United States billing-support@dropbox.com

Invoice for EcoHealth Alliance

то	DATE	INVOICE ID
Megan Walsh walsh@ecohealthalliance.org 10001 United States	February 25, 2019 6:50 AM GMT	SLSWTLNSKN5J

PRODUCT	PRICE	DISCOUNT	AMOUNT
Dropbox Business Advanced Plan (includes 3 licen	nses) + 60 Additional Licer	nses +	
Unlimited API Call Rate Limit + Unlimited Extende	ed Version History (2/25/2	2019 to	
2/25/2020)			
Dropbox Business Advanced Plan (includes 3	\$600.00	30%	\$420.00
licenses)			
60 Additional Licenses	\$12,000.00	30%	\$8,400.00
Unlimited API Call Rate Limit	\$0.00	30%	\$0.00
Unlimited Extended Version History	\$0. 00	30%	\$0.00
Total			\$8,820.00

All amounts shown are in USD.



Clarivate Analytics

Philadelphia, PA 19130 1500 Spring Garden Street, Suite 400 Philadelphia, PA 19130

To: Megan Walsh, Department Head, EcoHealth Alliance

Re: Your EndNote X9 Upgrade License Quote

Sent by e-mail: 10/16/2018

Thank you for your interest in our products. Please accept this letter (via e-mail) as our quote for Endnote X9.

License Type	Total Users	Total Price (excludes state tax, if applicable)
Endnote X9 Upgrade License (US\$99.95 each)	40	U\$\$3,998.00

Promotional Pricing Valid 11/16/2018

Purchasing Instructions:

If applicable, send Bill Durant your institution's Tax-Exempt Certificate for your state's tax to be excluded from your order

Contact Bill at 215-823-1797 or william.durant@clarivate.com to receive EndNote.

Premium access to EndNote Web – **Free**Training and support - \$0.00 – **Free**Shipping – Digital Download - \$0.00 – **Free**

You may place your order on a purchase order (terms are Net 30), by check/money order drawn on a U.S. bank or Visa/MasterCard/American Express.

Regards,

Bill Durant
Account Manager
(215) 823-1797
William.Durant@clarivate.com



Invoice IN88282-1

Order #	88282
Terms	NET 30
	Megan Walsh
Contact	walsh@ecohealthalliance.org
	(212) 380-4462
Invoice Date	4/11/2018
Due Date	5/11/2018

Sales Rep: Tom Haven tom.haven@ccbtechnology.com p. (800) 342-4222

EcoHealth Alliance Megan Walsh 460 W 34th St FL 17 New York, NY 10001 UNITED STATES (212) 380-4462 walsh@ecohealthalliance.org EcoHealth Alliance Accounts Payable 460 W 34th St FL 17 New York, NY 10001 UNITED STATES walsh@ecohealthalliance.org (212) 380-4462

CCB Technology Accounts Receivable 2823 Carlisle Ave. Racine, WI 53404 (800) 342-4222

(10)	Office 2016 Standard Ed	lition licenses		Per Phone		
1	Microsoft Corporation	021-10552	10	Microsoft Office 2016 Standard Edition license	\$94.00	\$940.00

Sub Total: \$940.00

Shipping and Handling: \$0.00 Tax Rate: (0.00000) \$0.00

> \$940.00 Total

Credits/Payments: \$0.00 \$940.00

Total Due:

Shipping Location

- 1	EcoHealth Alliance Megan Walsh 460 W 34th St Fl 17 New York, NY 10001-2317 UNITED STATES [212] 380-4460 walsh@ecohealthalliance.org	10	\$940.00

Shipping Detail

4/10/2018 Microsoft Corporation 02	21-10552

Tracking Numbers

4/10/2018	Other	VIRTUAL (Unrecognized Number)

Please note:

Return policies vary per manufacturer. (Apple and McAfee both have a no returns policy)

Custom configured items/built-to-order items are non-returnable.

Start dates and end dates for renewals may change based on the manufacturer's guidelines, policies, renewal order date, or date of activation.

Fringe Benefits

Fringe Benefits Allocation Policy

Compensated absences, including vacations, sick, holidays and personal days are considered salaries and wages and, as such, are recorded as salaries and wages when used.

No separate claims are made for those costs under fringe benefits costs category. Compensated absences earned, but not used, are not carried over to the next fiscal year. There is a grace period of using the earned compensated absences by September 30.

All employees are covered for Social Security, NYC commuter taxes, payroll transit taxes, Worker's compensation insurance and unemployment.

Employees working 35 hours or more per week are eligible:

- Health Insurance, including medical, dental and vision;
- Life Insurance;
- 403(B) pension plan (After nine (9) months of employment);
- Short and long term disability.

Employees working more than 20 hours but less than 35 hours per week are eligible for the following fringe benefits:

- Life Insurance;
- Short-Term/long-Term Disability;
- 403(B) pension plan (After nine (9) months of employment).

Fringe Benefits are tracked by employees and charged directly or indirectly in the same manner as employees' salaries and wages.

Although, the costs principles policy for fringe benefits has not changed, effective fiscal year 2020 starting July 1, 2019, EcoHealth Alliance no longer negotiates a fringe benefits rate with the Department of Defense.

For funding proposals, fiscal year 2019 actual data will be used to budget fringe benefit costs. For billing, invoicing and reporting purposes to federal and non-federal donors the actual benefits will be allocated and requested.

ECOHEALTH ALLIANCE, INC. YEAR ENDED JUNE 30, 2019

Schedule of Fringe Benefits

Categories		Amount	
Salaries and Wages	\$	4,426,650	A
Fringe Benefits			
Health Insurance		782,523	
Health Insurance payments in lieu of benefit		11,898	
Vision Care		2,509	
Washington DC Family Leave Ins		218	
Washington Unemployment Insurance		133	
Life Insurance ST/LT Disability/Dental		121,563	
NYS Unemployment Ins (NYSUI)		9,483	
NYS Disability Insurance		2,276	
Pension Expense		305,704	
Tuition Reimbursement expense		12,834	
NYS Commuter Tax		14,145	
Payroll Transit Tax - Federal		12,734	
Payroll Transit Tax New York		5,457	
FSA Fees		32,723	
Social Security Employor Expense		295,392	
Washington DC Unemployment Tax		243	
Workers Compensation		19,173	
Total	\$	1,629,007	В
Frindge Benefits Rate	%	36.80	B/A

Negotiated Indirect Rate



DEPARTMENT OF THE NAVY

OFFICE OF NAVAL RESEARCH 675 NOR OFFICAL DOUBH STREET SUITE 1425 ARLINGTON VAI 2220 1995

et d ≥. Nor + 1: 10,

Agreement Date: July 17, 2019

NEGOTIATION AGREEMENT

INSTITUTION:

ECOHEALTH ALLIANCE, INC. 460 WEST 34TH ST. 17TH FLR NEW YORK, NY 10001-2320

The Indirect Cost rate contained herein is for use on grants, contracts and/or other agreements issued or awarded to the EcoHealth Alliance, Inc. by all Federal Agencies of the United States of America, in accordance with the provisions and cost principles mandated by 2 CFR Part 200. The rate shall be used for forward pricing and billing purposes for the EcoHealth Alliance, Inc. Fiscal Year 2020. This rate agreement supersedes all previous rate agreements/determinations for Fiscal Year 2020.

Section I: RATES - TYPE: PROVISIONAL (PROV)

Indirect Rates:

TYPE FROM TO RATE BASE APPLICABLE TO LOCATION Prov. 07/01/19 06/30/20 32.0% (a) All All

DISTRIBUTION BASES

(a) Total direct costs excluding capital expenditures (buildings, individual items of equipment; alterations and renovations), the portion of each subaward in excess of \$25,000, participant support costs, and flow-through funds.

SECTION II - GENERAL TERMS AND CONDITIONS

A. LIMITATIONS: Use of the rate set forth under Section I is subject to availability of funds and to any other statutory or administrative limitations. The rate is applicable to a given grant or contract or other agreement only to the extent that funds are available. Acceptance of the rate agreed to herein is predicated upon the following conditions: (1) that no costs other than those incurred by the organization were included in this indirect cost pool as finally accepted and that such costs are legal obligations of the organization and allowable under governing cost principles; (2) that the same costs that have been treated as indirect costs are not claimed as direct costs; (3) that similar types of costs have been accorded consistent accounting treatment; and (4) that the information provided by the organization which was used as a basis for acceptance of the rate agreed to herein, and expressly relied upon by the Government in negotiating and accepting the said rate is not subsequently found to be materially incomplete or inaccurate.

- B. ACCOUNTING CHANGES: The rate contained in Section I of this agreement is based on the accounting system in effect at the time the agreement was negotiated. Changes to the method(s) of accounting for costs, which affect the amount of reimbursement resulting from the use of the rate require the prior written approval of the authorized representative of the cognizant agency for indirect costs. Such changes include but are not limited to changes in the charging of a particular type of cost from indirect to direct. Failure to obtain such approval may result in subsequent cost disallowances.
- C. **PROVISIONAL RATES:** The provisional rate contained in this agreement is subject to unilateral amendment by the Government or bilateral amendment by the contracting parties at any time.
- D. USE BY OTHER FEDERAL AGENCIES: The rate set forth in Section I is negotiated in accordance with and under the authority set forth in 2 CFR Part 200. Accordingly, such rate shall be applied to the extent provided in such regulations to grants, contracts, and other agreements to which 2 CFR Part 200 applies, subject to any limitations in part A of this section. Copies of this document may be provided by either party to other federal agencies to provide such agencies with documentary notice of this agreement and its terms and conditions.
- E. SPECIAL REMARKS: The Government's agreement with the rate set forth in Section I is not an acceptance of the EcoHealth Alliance, Inc.'s accounting practices or methodologies. Any reliance by the Government on cost data or methodologies submitted by EcoHealth Alliance, Inc. is on a non-precedence-setting basis and does not imply Government acceptance.

Accepted: FOR ECOMEALTH ALLIANCE, INC.: FOR THE U.S. GOVERNMENT: ARMINE ARUSTAMYAN Chief Financial Officer Contracting Officer 7/17/19 Date Date

For information concerning this agreement contact:

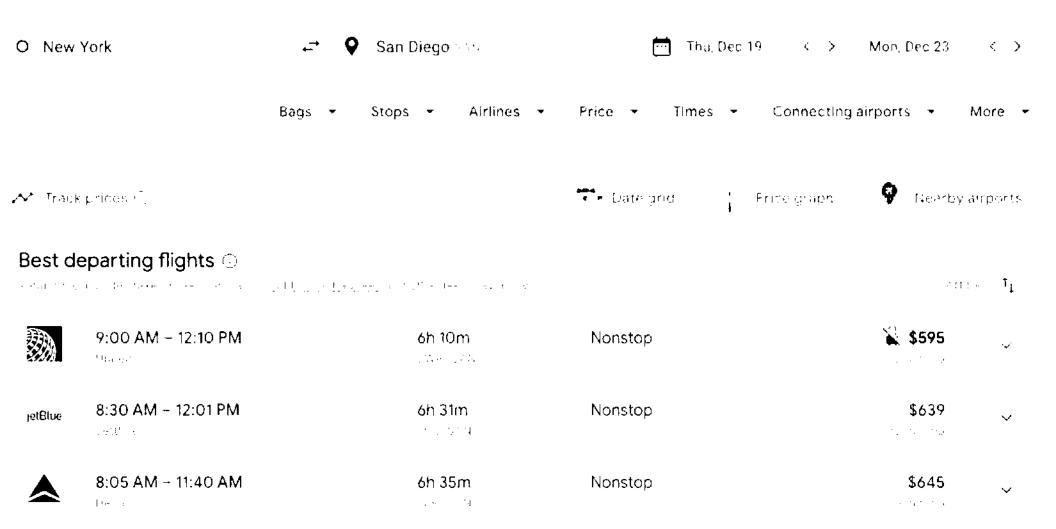
Sharon Gales Phone: (703) 696-8559
Office of Naval Research E-mail: sharon.gales@navy.mil

875 North Randolph Street Arlington, VA 22203-1995

APHA 2019 REGISTRATION FEES Meals are not included in registration fees

Full Conference Registration Member perks! Members save up to \$100 more on registration!	Early-Bird Aug. 8	Advance Sept. 12	Final After Sept. 12	Membership Dues
Regular Member	\$546	\$606	\$ 665	\$225
Company/Consultant Individual	\$546	\$606	\$665	\$145
Agency Individual ⁺	\$ 546	\$606	\$665	\$70
Discounted Regular (salary < \$45,000)	\$337	\$372	\$407	\$110
Retired	\$337	\$372	\$407	\$100
Student*	\$247	\$282	\$292	\$85
Early-Career Professional**	\$ 345	\$390	\$435	\$135
Non-Member	\$871	\$931	\$990	
Non-Member Student	\$382	\$417	\$427	
Guest (Non-Public Health)***	\$345	\$380	\$415	

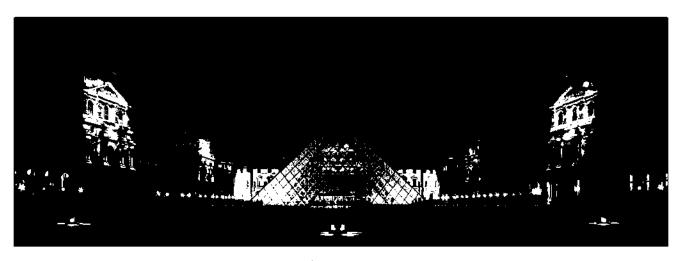
Example of cost of flight costs for domestic conference APHA.



Conferences / 2020 / July 2020 in Paris / Epidemiology and Infectious Diseases

ICEID 2020: 14. International Conference on Epidemiology and Infectious Diseases

July 20-21, 2020 in Paris, France



Conference Code: 20FR07ICEID	Submit Your Paper	Author Registration	Listener Registration
About Call For Papers Important Dates	Committees <u>Registration F</u>	<mark>ees</mark> Canforence Pho	otos E.yer ⊡
<u>Program</u> ⊠			
Participation Type	Early Registra	tion Fees R	egistration Fees
Non-Student Oral/Poster Presenter Registration	€ 450	€	500
Student Oral/Poster Presenter Registration	€ 350	€	400
Listener Registration	€ 250	€	-300
Additional Paper Publication	€ 100		

All conference materials and services will be delivered digitally to the participant with the online conference management system. Conference registration includes the following digital materials and services:

- e-certificates [for Authors: Certificate of Attendance and Presentation; for Listeners: Certificate of Attendance; for Chairs:
 Certificate of Attendance and Appreciation; for Presenters: Certificate of Best Presentation (if conferred based appraisat)]
- e-program
- e-book
- e-name badge
- e-receipt
- · e-presentation

Presentation Types:

- **Physical presentation** is an oral conferencing presentation that is made using digital technology including embedded digital elements (texts, tables, graphs, or videos) for PowerPoint sharing.
- **Digital presentation** is a digital conferencing presentation that is made using digital technology including embedded digital elements (texts, tables, graphs, or videos) for PowerPoint sharing.

Early Bird Registration

Early Bird registration is valid until 2020-06-19 23:59:59

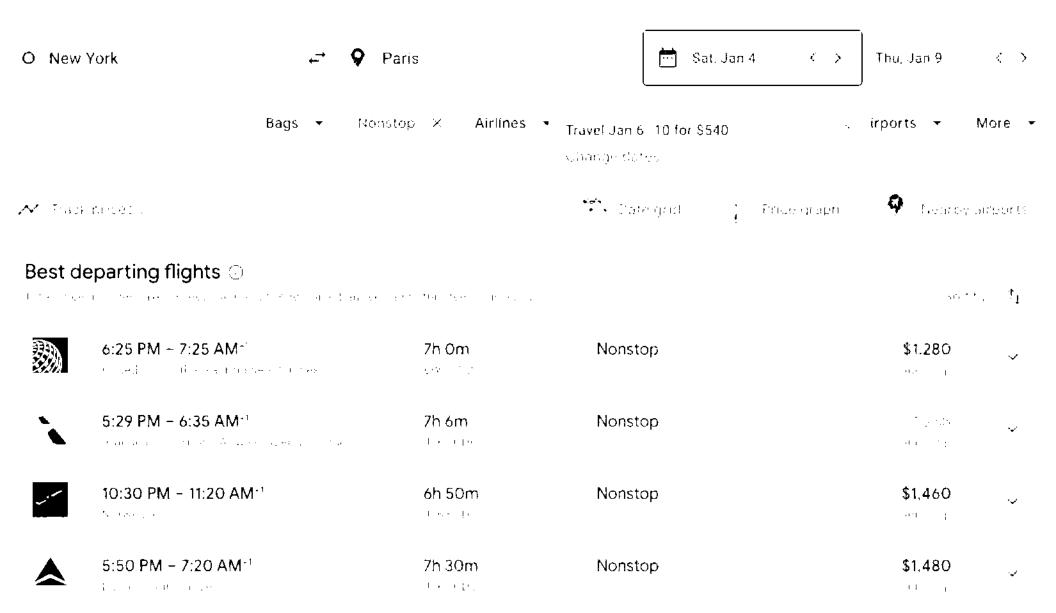
Online Credit Card Processing

Online payment option available for author and listener delegates.

Conference participants can make online credit card payments for conference registration fees.







7h 10m

 1.06 ± 1.02

Nonstop

\$1,480

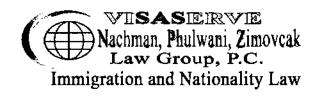
20.0

11:55 PM - 1:05 PM-1

An Edgings of Dealth

AF/

Invoice for legal services associated with an O-1 Visa



Nachman Phulwani & Zimovcak (NPZ) Law Group, P.C 487 Goffle Road RIDGEWOOD, NJ 07450 (201) 670-0006x109 christoph_jenke@visaserve.com http://www.visaserve.com

BILL TO

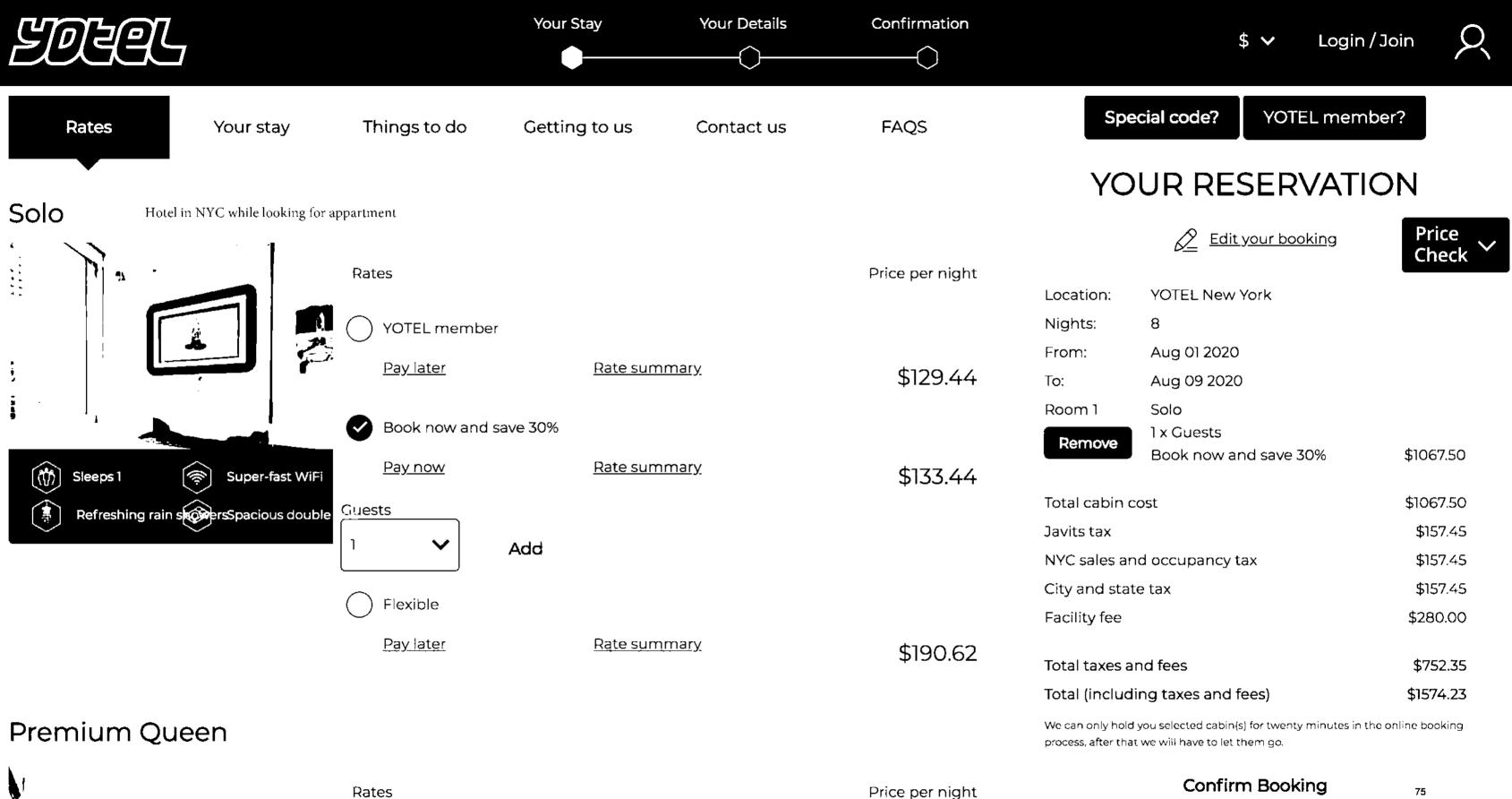
EcoHealth Alliance 460 West 34th Street 17th Floor New York, NY 10001-2320 INVOICE #

DATE 12/29/2016
DUE DATE 01/28/2017
TERMS Net 30

ATTORNEY

PARALEGAL

O-1 Visa by EcoHealth Alliance for		4,500.00	4,500.00
FEDEX International Shipping Charge 12/15/2016		142.26	142.26
P	PAYMENT		4,500.00
For your convenience you can pay online at:			4,500.00
https://secure.lawpay.com/pages/npzlawgroup/operating	BALANCE DUE		\$142.26



Log in

Q!

Zones and Rates

Parcel Delivery Quote

Log in and select a UPS account to receive the most accurate rate and delivery time Information.

Log In

Freight Print 🖨 Find Locations 🖆 Package Please provide information about your shipment including destination, origin, shipment date, and weight. Required fields are indicated with . . Where and When? Showing Results For: DAR ES SALAAM ILALA, 12101, Tarizania to New york, 10001, United Shie To. States NEW YORK, 10001 United States Cost ▼ (Ali Packages) Residential Service Time 🔻 513.71 USD UPS Express Plus [7] Delivered By: Ship From: -B:30 A.M. Tuesday Latest Pickup Time: Billable Weight: DAR ES SALAAM ILALA, 12101 5 November 2019 4:00 P.M. Friday 15.0 kg √anzania_ 1 November 2019 Commercial View Details Schedule by : Ship Now Shipment Date: 3:00 P.M. Friday 1 November 2019 UPS Express 🛂 Delivered By: 409.65 USD Customs Value: 10:30 A.M. Tuesday Latest Pickup Time: Billable Weight: 100 USD 5 November 2019 4:00 P.M. Friday 15.0 kg Duty Type: 1 November 2019 View Details 09 - Low value Schedule by : Ship Now 3:00 P.M. The Enter Detail to Show Cost 389.65 USD UPS Express Saver [2] Delivered By: By End of Day Tuesday Packaging: Billable Weight: Latest Pickup Time: 5 November 2019 My Packaging 4:00 P.M. Friday 15.0 kg 40 x 20 x 40 cm 1 November 2019 View Details Package Weight: Schedule by : Ship Now 3:00 P.M. 15 kg Number of Packages: Rate estimates are based on export rates from the origin (Ship From) country or territory. Result estimates calculated by UPS: Friday 1 November 2019 1:15 P.M. Declared Value: Eastern Time (USA) 500 USD Rate includes a fuel surcharge ② . For a breakdown of charges, select View Details beside each service. Additional Resources / Tools

Standard-sized 1st bag is free and 2nd bag fee applies when returning back to Cuba

Charges

Transpacific	Transattantic	South America (except Brazil, Colombia, Ecuador, Guyana, and Venezuela)	Venezuela	Guyana	Ecuador	Colombia	Brazil	Central America (except Panama)	Panama	Caribbean	Haiti	Mexico	Domestic	Region
\$0	\$0/\$60^	\$ 0	\$ 0	\$ 30	\$ 0	\$0/\$30*	\$ 0	\$30*	\$ 0	\$30*	\$ 0	\$30	\$ 30	Bag 1
\$ 0	\$100	8	\$ 55	\$40	\$40	\$ 55	\$0	\$40/\$55**	\$40	\$40/\$70**	\$40**/70**	\$ 40	\$40	Bag 2
\$ 200	\$200	\$ 150	\$150	\$ 150	\$150	\$ 150	\$ 150	\$ 150	\$15 0	\$ 150	\$ 150	\$ 150	\$ 150	Bag 3
\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$150	\$ 200	\$200	\$200	\$200	\$200	\$200	Bag 4+

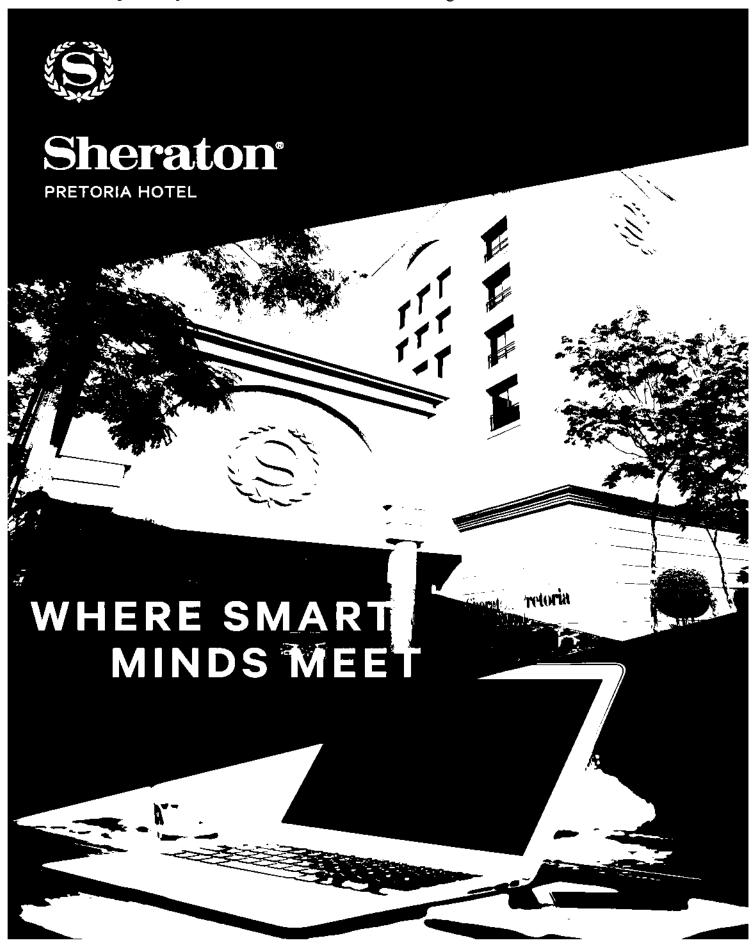
19, 2019 for travel on June 15, 2020 - August 12, 2020 or for tickets issued on / after August 20, 2019 for travel on June 1, 2020 - August 19, 2020. on December 8 - 24, 2019 or for tickets issued on / after April 18, 2019 for travel on December 7, 2019 - January 12, 2020. Seasonal pricing also applies for tickets issued on / before August All published bag fees are base rates according to travel dates and destination; applicable taxes are not shown. Seasonal pricing applies for tickets issued on / before April 17, 2019 for travel

There is no 1st bag fee to / from Call, Colombia for tickets issued on or after April 3, 2019. *For travel to / from El Salvador, the 1st bag fee of \$30 applies seasonally. For travel to / from Call, Colombia the 1st bag fee applies seasonally for tickets issued on or before April 2, 2019.

Port au Prince and Cap Haitlen 12, 2018 (no seasonal increase for Cap Haiten) and a year-round 2nd bag fee of \$70 applies for tickets issued on I after November 13, 2018 and for travel beginning January 14, 2019 for "For travel to / from Honduras, a \$55 2nd bag fee applies seasonally. For travel to / from Port au Prince, Haitr a \$55 2nd bag fee applies seasonally for lickets issued on / before November

*\$60 1st bag fee applies to Transattantic Basic Economy tickets

Optional service fees »



T: +27 12 429 9999

E: groups@sheratonpretoria.com

Quotation



Attention: Melinda Rostal DVM, MPH

Company: EcoHealth Alliance Telephone: 1.212.380.4489

Email: rostal@ecohealthalliance.org

Quotation date: 07 October 2019

Quotation in respect of: EcoHealth Alliance

Dear Melinda,

Thank you for the opportunity and for considering the Sheraton Pretoria as a destination for your event.

I'm excited to share with you our proposal.

Attached a detailed quotation to ensure we deliver on all your goals and ideas. I'm looking forward to be working with you and should you require any additional information, please contact me directly.

Please note that no venue or rooms have been blocked off on your behalf and this quote is only valid for 48 hours.

Have an excellent day and I'm looking forward to your response.

Best regards,

Paseka Matjila Sales and Marketing Coordinator +27 12 429 9999



T: +27 12 429 9999

E: groups@sheratonpretoria.com

Quotation



DATE	DAYS	PAX	DESCRIPTION	AMOUNT	DEBIT
			ACCOMODATION REQUIREMENTS		
16-21 NOV 2019	5	1	Classic King Room / Single occupancy	R1 050.00	R5 250.00
18-22 NOV 2019	4	3	Classic King Room / Single occupancy	R1 050.00	R12 600.00
19-20 NOV 2019	1	2	Classic King Room / Single occupancy (Including Breakfast)	R1 350.00	R2 700.00
19-21 NOV 2019	2	1	Classic King Room / Double occupancy (Including Breakfast)	R1 750.00	R3 500.00
19-22 NOV 2019	3	2	Classic King Room / Single occupancy (Including Breakfast)	R1 350.00	R8 100.00
20-21 NOV 2019	1	4	Classic King Room / Single occupancy (Including Breakfast)	R1 350.00	R5 400.00
20-21 NOV 2019	1	1	Classic King Room / Single occupancy	R1 050.00	R1 050.00
				TOTAL	R38 600.00
			EVENT REQUIREMENTS		
20-Nov-19	1	80	Full Day Conference Package(Including Lunch) Jacaranda 1	R430.00	R34 400.00
19-Nov-19	1	6	Buffet Dinner (Magnolia Restaurant)	R330.00	R1 980.00
	1	6	1x Saftdrink	R45.00	R270.00
19-Nov-19	1	1	Venue Hire for 12 PAX MOPANI	R3 500.00	R3 500.00
	1	1	Screen	R500.00	R500.00
20-Nov-19	1	2	Buffet Dinner (Magnolia Restaurant)	R330.00	R660.00
	1	2	1x Softdrink	R45.00	R90.00
21-Nov-19	2	1	Buffet Dinner (Magnolia Restaurant)	R330.00	R660.00
	2	1	1x Softdrink	R45.00	R90.00
22-Nov-19	2	2	Buffet Dinner (Magnolia Restaurant)	R330.00	R1 320.00
	2	2	1x Softdrink	R45.00	R180.00
			Classroom		
				TOTAL	R43 650.00

NOTE: The Day Conference Package Includes the following;

Arrival Tea/Coffee/Juice/Pastries

Mid-morning Tea/Coffee/Juice/Savoury Snacks Buffet Lunch in Magnolia - Chef's Choice (12:30 - 14:00)

1 x Refreshment included with Lunch Afternoon Tea/Coffee/Juice/Biscuits

Water, Mints, Pens, Paper

Parking

Venue Hire included

Wi-Fi, Screen, Data Projector, Flipchart and Markers

PA System & Microphone included

Rates are inclusive of VAT

TOTAL

R82 250.00

TERMS & CONDITIONS

The Sheraton Pretoria Hotel reserves the right to change its rates without prior notification; to review rates and conditions offered in this quotation in instances where full disclosure on the conference/group booking is not given, example being - name of conference, type of conference, number of overall delegates attending the conference, specific dates, etc.

Venues are subject to availability. The allocation of a suitable venue for the event is to the discretion of the hotel.

Should you require me to reserve a venue on your behalf, kindly forward me written confirmation as soon as possible whereupon a contract and payment details will be sent to you. Please note that we work on a live system and availability changes on a daily basis.

Please note that no venue or rooms have been blocked off on your behalf and this quote is only valid for 48 hours.

CANCELLATION POLICY

Between 60 to 31 days prior to arrival, a charge of 50% of the contracted value will be levied. Between 30 to 15 days prior to arrival, a charge of 75% of the contracted value will be levied. Between 14 to 0 days prior to arrival, a charge of 100% of the contracted value will be levied. (Full Cancellation Policy will be sent with the contract)

If you have any questions please call: Conferencing - +27 12 429 9999

December 4th, 2019

To Whom it May Concern,

We estimate that the monthly proportion of the Altice Business bill that will be charged to the CCHF grant for communication and internet access is \$333.33.

Sincerely,

Megan Walsh

Human Resources and Office Manager

walsh@ecohealthalliance.org

212-380-4477



AlticeBusiness.com

Monthly Summary	Page 1 of 2
Account Number	(b)(4)
Invoice Date	11/01/19
Invoice Number	100207378
Previous Balance	\$3,934.66
Current Charges	\$3,931.54
Total Amount Due	\$3,931.54
Total Amount Due December 1	, 2019

To contact Altice Business, please call (866) 611-3434 or (516) 803-6000, or feel free to e-mail us at Care@AlticeUSA.com

Enhanced Caller ID!

Altice Businesses newest enhancement is now included in Altice Business Voice services at no additional cost. Not only do we help take the guesswork out of who?s calling you, but now we can help detect robocalls too.

Visit the Customer Portal

View your invoice, service inventory, pay online, see Call Detail reports and more. Simply go to portal alticebusiness.com. New access is available through the Request Access button. In person payments can no longer be accepted.

ECOHEALTH ALLIANCE

Usage From: 10/01/19 - 10/31/19

Important Messages:

New! Call Recording is now available for Business Hosted Voice services. Contact your Account Executive for details.

New York Sales Tax Breakdown For Our Common Bundles Internet/Voice Bundle

66% of the total charge is attributable to internet access service and 34% is attributable to voice service. For purposes of calculating the NY sales tax, 24.5% of the voice fee is attributable to interstate/international service.

Toll Free Bundle or Audio Conference Bundle

For purposes of calculating the NY sales tax, 76% of the fee is attributable to interstate/international service.

Enterprise Voice Bundle

For purposes of calculating the NY sales tax, 24.5% of the fee is attributable to interstate/international service.





AlticeBusiness.com

ECOHEALTH ALLIANCE	Page 2 of 2
Account Number	(b)(4)
Usage From	10/01/19 - 10/31/19

PAYMENTS, CREDITS AND ADJUSTMENTS:

Description		Total
10/22/2019 Payment - Thank You		-3,934.66

SERVICES:

Description	From Date • To Date	Qty	Non-Recurring	Recurring	Total
Managed Router	11/01/2019 - 11/30/2019	1	\$0.00	\$0.00	\$0.00
100Mb/50K Internet/Voice Bundle	11/01/2019 - 11/30/2019	1	\$0.00	\$3,549,00	\$3,549.00
Primary Rate Interface - ISDN	11/01/2019 - 11/30/2019	1	\$0,00	\$0.00	\$0.00
DID Reserve 20 Numbers - 3 yr	11/01/2019 - 11/30/2019	_7_	\$0.00	\$60.00	\$60.00
TOTAL SERVICE CHARGES			\$0 .00	\$3,609.00	\$3,609.00

TAXES AND SURCHARGES:

Description	Total
911 Surcharge(s) Federal Excise Tax Local Utility Gross Receipt Tax MTA Surcharges State and Local Gross Receipts Taxes Universal Service Fund Surcharge	24.00 1.92 82.76 27.71 112.22 73.93



system**76**

Server needs

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Base Price	\$5,899.00
Ubuntu Server 18.04 LTS (64-bit)	
1× 20 Cores Gold 6230 (2.1 up to 3.9 GHz - 40 Threads - Max memory speed 2933 MHz)	\$2,229.00
1× 512 GB Quad Channel DDR4 @ 2933 MHz (8x 64GB)	\$2,699.00
1× 20 Cores Gold 6230 (2.1 up to 3.9 GHz - 40 Threads - Max memory speed 2933 MHz)	\$2,519.00
1× 512 GB Quad Channel DDR4 @ 2933 MHz (8x 64GB)	\$2,829.00
1× 4,352 Cores 11GB GeForce RTX 2080 Ti with 4352 CUDA Cores	
1× 2 TB NVMe Install on PCI SSD	\$1,329.00
1× 16 TB HDD 7200 RPM (8x 2TB)	\$2,759.00
10 Gb Dual Port Ethernet Network Adapter (Included)	

Product total: \$20,263.00

Consumer Price Index





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Consumer Price Index Overview Table - New York-New Jersey

Consumer Price Index for All Urban Consumers, all items, in the U.S., Northeast, Middle Atlantic, and a metropolitan area, not seasonally adjusted

(1982-84=100 unless otherwise noted)

					Perce	nt change	
		Annual			Annual	12 months ended	
Area	Back	average	Sep	Oct	2017 to	Sep	Oct
(Links provide news releases)	data	2018	2019	2019	2018	2019	2019
U.S. City Average	1.750	251.107	256.759	257.346	2.4	1.7	1.8
Northeast region ⁽¹⁾	[8]	265.139	270.563	270.348	2.2	1.4	1.5
Northeast City Size Class (population)							
A (greater than 2,500,000)	j. See	268.112	274.058	273.930	2.0	1.5	1.5
B/C (2,500,000 or less)	i.c.	156.258	159.106	158.912	2.5	1.4	1.4
Middle Atlantic(<u>Z</u>)	1.5	101.578	103.535	103.518		1.3	1.4
Metropolitan area							
New York-Newark-Jersey City	0£1	273.641	279.338	279.255	1.9	1.4	1.5

Footnotes

Source: Canadiner Price Index

⁽¹⁾ The Northeast region includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

⁽²⁾ The Middle Atlantic division includes New Jersey, New York, and Pennsylvania.

The Consumer Price Index (CPI) measures of anges in prices of all goods and services purchased for consumption by urban households.

99 7001 (b)(4) **JUSTINE A ASSENGA** 99-001 02/08/2023 TGS/J/1

DESCRIPTION	BALANCE	AMOUNT
Basic Salary		3,360,000.00
PSSSF		-168,000.00
Income Tax		-809,460.00
Natl Health Ins FundEmployee	*****	-100,800.00
NET AMOUNT DUE	31/10/2019	2,281,740.00

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62 3001 (b)(4) **JUBILATE B MINJA** 42 153 17/10/2040 TGHS/E/1

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NET AMOUNT DUE	44 4161.00
AMOUNT DOE	30 Mary 2010 1,041,020 00

One Health Coordination Desk (OHCD-PMO) Budget Justification

A. Senior Personnel

We request a total of \$14, to support Key Personnel over the five years of the proposed project.

Dr. Justine Assenga, Research Scientist, Molecular Epidemiologist, will commit 0 months per year for which we request salary support of \$2 in

Year 1, with a 3% increase per annum (p.a.). Dr. Justine Assenga is the Animal Health Focal Person at the Ministry of Livestock and Fisheries One Health Coordination Desk and will join meetings, assist with keeping the government ministries apprised of our activities, contribute to the development of the epidemiological plan as well as facilitate communication to stakeholders. In order to prepare for and facilitate the policy workshop and CCHF Symposium, Dr. Assenga's time will increase in Y for a total of \$7,2 over the five years of the project.

Dr. Jubilate Bernard, Research Scientist, Public Health Specialist, will commit 0 months per year for which we request salary support of \$25 in Year 1, with a 3% increase p.a. Dr. Jubilate Bernard is the Animal Health Focal Person at the Ministry of Livestock and Fisheries One Health Coordination Desk will join meetings, assist with keeping the government ministries apprised of our activities, contribute to the development of the epidemiological plan as well as facilitate communication to stakeholders. In order to prepare for and facilitate the policy workshop and CCHF Symposium, Dr. Bernard's time will increase to months per year in

- for a total of \$7, over the five years of the project.

D. Travel

We request a total of \$3,185 to support local travel for them in Tanzania over the five years of the proposed project.

We request \$600 in Y1 so that both Dr. Assenga and Dr. Bernard may attend project meetings held in Tanzania and take other meetings to improve One Health stakeholder relationships.

Travel expenses will increase at a rate of 3% per year over the five years of the project.

H. Indirect Costs

We request a total of \$, 5 in overhead over the five years of the project. The rate of overhead will be 10% each year, starting with \$11 in \$11.

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Budget Documentation – Public Health England

1.	Salaries2
	 Neil McLeod, Project Manager
	Roger Hewson, Virologist
	Stuart Dowall, Virologist
	Kevin Richards, Technician
	James Pitman, Technician
2.	Other Direct Costs (excluding facilities)3
	 International Travel, London to Dar es Salaam, Tanzania
	Materials and supplies
	Sample shipment
3.	Appendix 15
	 Screen shot of international travel, London to Dar es Salaam, Tanzania
4.	Indirect cost rate6
5.	Rate agreement7
6.	Facilities cost10
	Overall cost
	 Cost allocation for BSL-4 laboratory



National Infection Services Manor Farm Road Porton Down Salisbury, Wilts SP4 0JG T +44 (0)1980 612642

www.gov.uk/phe

Date: 4th November 2019

Melinda Rostal DVM, MPH
Senior Research Scientist
PREDICT 2 Surveillance Coordinator for EcoHealth Alliance
Rift Valley Fever Virus Project Manager
EcoHealth Alliance
460 West 34th Street – 17th Floor
New York, NY 10001

Dear Melinda

Salary confirmation for DTRA CCHF Grant

I hereby confirm that the current per annum salary of our key personnel as of today's date is as follows:

Neil McLeod - £66,609.96

Roger Hewson - £94,889.04

Stuart Dowall - £75,891.24

Kevin Richards - £56,501.28

James Pitman - £53,813,64

Above salaries include oncosts (NI & Pension). Please note the above salaries are subject to annual inflation.

Yours Sincerely

lan Lang

Senior Finance Manager



National Infections Service Public Health England Porton Down Salisbury Wilts SP4 0JG UK

www.gov.uk/phe

Date: 4th November 2019

Melinda Rostal DVM, MPH

Senior Research Scientist
PREDICT 2 Surveillance Coordinator for EcoHealth Alliance
Rift valley Fever Virus Project Manager
EcoHealth Alliance
460 West 34th Street – 17th floor
New York, NY 10001

Dear Melinda.

PHE Other Direct Costs (exc. Facilities) confirmation for DTRA CCHF Tanzania grant:

PHE have costed £6,600 (which converted \$7,119 in original justification) for materials and supplies to conduct 100 CCHFV virus neutralization assays to confirm the positive ELISA results on the wildlife samples

This budget is broken down as follows:

1. Travel Budget £1500

This would be for senior PHE scientist to attend meeting in the field in Tanzania. The costing is based on a projected flight cost of approx. £800 (see Appendix 1- page 3) with the remainder for travel to/from airports and accommodation and sustenance. PHE involvement would be in 2023/24 so it is not possible at this moment to forecast accurate costs for these items but any shortfall in budget will be covered by PHE.

2. Materials and supplies £3600

Agreed with to supply 100x CCHF virus neutralisation tests for £36 per test.

Materials include CCHF antibodies, IgG, cells and general laboratory consumables.

3. Postage of samples

Samples would be taken from the field laboratory and shipped on dry ice under UN packing code 3373 to PHE Porton Down site. The quotation provided by Dangerous Goods International for each delivery would be £525.60.

This postage cost is £1051.20.

The grand total for all other direct cost would be £6119.34. The costs of the items are based on the current prices. The reason to request the additional £~480 is to cover the inflationary costs over the 4 years between now and when we anticipate activity to start.

Your Sincerely,

Mace

Neil McLeod

Senior Scientific Project Manager

Tel: + 44 (01980 619907

Email: neil.mcleod@phe.gov.uk



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National Infections Service Public Health England Porton Down Salisbury Wilts SP4 0JG UK

www.gov.uk/phe

Date: 4th November 2019

Melinda Rostal DVM, MPH
Senior Research Scientist
PREDICT 2 Surveillance Coordinator for EcoHealth Alliance
Rift valley Fever Virus Project Manager
EcoHealth Alliance
460 West 34th Street – 17th floor
New York, NY 10001

Dear Melinda,

PHE Briefing Note on current agreements and submissions with DCAA and DCMA for DTRA CCHF Tanzania grant:

PHE have an agreed rate of 37.8% for indirect costs for use on grants, contracts and other agreements with the Federal Government. This is enclosed with email dated 5th November 2019 (Public Health England RA). Please note this is an increase from the 37.5% rate the original costings were based upon, the rate has since been updated since the original proposal was submitted.

This agreement was with the US federal government on behalf of the Department of Health and Human Services. PHE is currently undertaking several contracts funded via US federal agencies NIAID, BARDA and FDA on a range of projects in the area of infectious disease research.

PHE also have a current submission for US-DTRA FRCWMD funding as follows:

Grant agreement: 12753455

Title: Ecological and Epidemiological Investigation of Crimean-Congo hemorrhagic fever virus (CCHFV) in Azerbaijan.

This application is in final stage and is still under consideration. The rate of 37.5% indirect costs was used in the submission.

Your Sincerely,

Neil McLeod

Senior Scientific Project Manager

Tel: + 44 (01980 619907

Her Meur

Email:

NONPROFIT RATE AGREEMENT

EIN: 1900215920A1 DATE:08/05/2019

ORGANIZATION: FILING REF.: The preceding

Public Health England agreement was dated

Porton Down, Salisbury 12/06/2017

Wiltshire, England SP4 OJG

The rates approved in this agreement are for use on grants, contracts and other agreements with the Federal Government, subject to the conditions in Section III.

SECTION I: INDIRECT COST RATES

RATE TYPES: FIXED FINAL PROV. (PROVISIONAL) PRED. (PREDETERMINED)

EFFECTIVE PERIOD

<u>TYPE</u>	<u>FROM</u>	<u>TO</u>	RATE(%) LOCATION	APPLICABLE TO
FINAL	04/01/2017	03/31/2018	37.80 On-Site	All Programs
PROV.	04/01/2018	03/31/2021	37.80 On-Site	All Programs

*BASE

Total direct costs excluding capital expenditures (buildings, individual items of equipment; alterations and renovations) and subawards.

ORGANIZATION: Public Health England

AGREEMENT DATE: 8/5/2019

SECTION II: SPECIAL REMARKS

TREATMENT OF FRINGE BENEFITS:

Fringe benefits applicable to direct salaries and wages are treated as direct costs.

TREATMENT OF PAID ABSENCES

Vacation, holiday, sick leave pay and other paid absences are included in salaries and wages and are claimed on grants, contracts and other agreements as part of the normal cost for salaries and wages. Separate claims are not made for the cost of these paid absences.

In accordance with HHS Grants AAGAM, Part 3.01.101, no indirect cost is awarded on grants from the Department of Health and Human Services.

Equipment means tangible personal property (including information technology systems) having a useful life of more than one year and a per-unit acquisition cost which equals or exceeds the lesser of the capitalization level established by the non-Federal entity for financial statement purposes, or \$5,000.

Your next proposal for fiscal year ending 03/31/2019 is due in our office by 09/30/2019.

ORGANIZATION: Public Health England

AGREEMENT DATE: 8/5/2019

SECTION III: GENERAL

A. LIMITATIONS:

The rates in this Agreement are subject to any statutory or administrative limitations and apply to a given graph, contract or other agreement only to the extent that funds are available. Acceptance of the rates is subject to the following conditions: (1) Only costs incurred by the organization were included in its indirect cost pool as finally accepted; such costs are legal obligations of the organization and are allowable under the governing cost principles; (2) The same costs that have been treated as indirect costs are not claimed as direct costs; (3) Similar types of costs have been accorded consistent accounting treatment; and (4) The information provided by the organization which was used to establish the rates is not later found to be materially incomplete or inaccurate by the Federal Government. In such situations the rate(s) would be subject to renegotiation at the discretion of the Federal Government.

B. ACCOUNTING CHANGES:

This Agreement is based on the accounting system purported by the organization to be in effect during the Agreement period. Changes to the method of accounting for costs which affect the amount of reimbursement resulting from the use of this Agreement require prior approval of the authorized representative of the cognizant agency. Such changes include, but are not limited to, changes in the charging of a particular type of cost from indirect to direct. Failure to obtain approval may result in bost disallowances.

C. FIXED BATES:

If a fixed rate is in this Agreement, it is based on an estimate of the costs for the period covered by the rate. When the actual posts for this period are determined, an adjustment will be made to a rate of a future year(s) to compensate for the difference between the costs used to establish the fixed rate and actual costs.

D. USE BY OTHER PEDERAL AGENCIES:

The rates in this Agreement were approved in accordance with the authority in Title 2 of the Code of Federal Regulations, Part 200 (2 CFB 200), and should be applied to grants, contracts and other agreements covered by 2 CFB 200, subject to any limitations in A above. The organization may provide copies of the Agreement to other Federal Agencies to give them early notification of the Agreement.

E. GTHER:

BY THE INSTITUTION:

If any Federal contract, grant or other agreement is reimbursing indirect costs by a means other than the approved rate(s) in this Agreement, the organization should (1) credit such costs to the affected programs, and (2) apply the approved rate(s) to the appropriate base to identify the proper amount of indirect costs allocable to these programs.

ON BEHALF OF THE FEDERAL GOVERNMENT:

Public Health England	DEPARIMENT OF HEALTH A	AND HUMAN SERVICES		
(INSTITUTION)	(AGENCY) Darryl W. Mayes -	(AGENCY) Distributioned by Denylly Mayes is Distributioned by Denylly Mayes is Distributed by Denylly Mayes is Distributed by Denylly Mayes. Distributed by Denylly Mayes. Distributed by Denylly Mayes. Distributed by Denylly Mayes. Distributed by Denylly Mayes.		
(SIGNATURE)	(SIGNATURE)			
	Darryl W. Mayes			
NAME.)	(NAME)	(NAME)		
	Deputy Director, Cost	Allocation Services		
TOTOW)	(77773)			
	8/5/20:9			
DATE)	(DATE) 5552			
	HUS REPRESENTATIVE:	Edwin Miranda		
	T⊭lephore:	(212) 264-2069		



National Infections Service Public Health England Porton Down Salisbury Wilts SP4 0JG UK

www.gov uk/phe

Date: 4th November 2019

Melinda Rostal DVM, MPH
Senior Research Scientist
PREDICT 2 Surveillance Coordinator for EcoHealth Alliance
Rift valley Fever Virus Project Manager
EcoHealth Alliance
460 West 34th Street – 17th floor
New York, NY 10001

Dear Melinda.

PHE Facilities cost confirmation for DTRA CCHF Tanzania grant:

PHE have costed £5,896 for two weeks use of the high containment biosafety level 4 laboratory at PHE Porton Down site. The standard laboratory rental rate is set at £2948 per week for this laboratory.

The laboratory recharges are generated from a model that allocates a cost based on the specific lab or portion of a lab for the specific time period of use. The cost is a proportion of the total costs of the site allocated to the labs based on the weighted cost of subjective headings.

Table 1 (overleaf, page 2) shows a breakdown of the percentage cost allocations to each heading.

Your Sincerely,

Neil McLeod

Senior Scientific Project Manager

Tel: +44 (01980 619907

Her M(ea)

Email:

Table 1. Cost allocations for PHE High Containment BSL-4 laboratory

	%
EMCOR base contract	44.12
Equip Rep & Maint	24.40
Other - Engineering services	14.61
Telecom charges	
Rates	0.34
Gas Building 1	0.16
Gas Incinerator	-
Gas Process load / autoclave	6.09
Electricity share 1	0.55
Electricity share 2	0.47
Oil	_
Water	0.20
Accom hire	
Waste Disposal	-
SubCont Fac Mgt	
Other	-
Security	-
Soft Services Mgt	•
Capital Proj Mgt	2.36
FM Engineering	3.16
Site Mgt	_
Dep Alloc	_
Dep Site	0.40
Dep МВ	2.34
Dep all but MB	
Incinerator	0.50
Site share costs	0.28
	-
Total charge	100.00

Note: EMCOR are our Facilities managers

Public Health England-Porton Down Budget Justification

A. Senior Personnel

We request a total of \$ to support Key Personnel (KP) during the project.

Roger Hewson, Ph.D, Research Scientist, Virologist will commit 0. months in OY2 of the project. KP Hewson will engage with project partners, supervise and collate scientific reporting from PHE. We request a total of S

B. Other Personnel

We request a total of S to support Other Personnel during the proposed project.

Technicians. Two CL4 laboratory will commit 1 month each in OY2 in order to confirm 100 wildlife samples using virus neutralization assays. CCHFV is a Hazard Group 4 pathogen necessitating work with infectious substances to be carried out at Containment Level 4, and the UK operates a dual worker or buddy system for all laboratory work with HG4 pathogens. We request \$ per month for a total of

for both

Project Manager. The project manager will commit 0. 5 months in OY2 in order to manage staff and ensure efficient project progress. We request \$\sigma\$ in OY2. The project manager will also set up DEFRA license applications for sample transport and liaise with colleagues in Tanzania on sample details.

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F. Other Direct Costs

We request a total of \$1,1 for direct costs during the project.

Materials and Supplies

We will conduct 100 CCHFV virus neutralization assays to confirm the positive ELISA results on the wildlife samples, as this has not previously been assessed for this multispecies commercial ELISA. We request \$\\$ in OY2 to conduct the testing

Facility Rental

CCHFV is a Hazard Group 4 pathogen necessitating work with infectious substances to be carried out at Containment Level 4. We request \$\(\frac{1}{2}\) in OY2 to support the use of the CL-4 laboratory for 2 weeks in order to complete the testing indicated above.

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H. Indirect Costs

We are requesting the federally agreed indirect cost of % on all direct costs during the project. We request \$\\$in OY2.

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TAWIRI Budget Justification

Key Personnel

We request a total of \$13,273 to support Key Personnel over the five years of the proposed project.

Julius Dotto Keyyu, Research Scientist, Disease Ecologist, will commit 1.0 months per year. We request salary of \$2, in Year 1, with a 3% increase for Y2-Y5, respectively. Dr. Julius D. Keyyu is a Chief Research Officer who holds a PhD in coosystem and population health specifically on disease ecology. Dr Keyyu will support the wildlife sampling team, create the animal epidemiological study design, implementation and analysis and facilitate communication with stakeholders.

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Other Personnel

We request a total of S —— to support Other Personnel over the five years of the proposed project.

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will be paid \$60 per day for food an accommodation , working for 0 days (\$60 x 0 days) for a total of \$7,200, for Year 1 and Year 2 of the project.

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TravelWe request a total of \$1,59 to support international travel over the five years of the proposed project request \$300 in \$11. International travel expenses will increase at a rate of 3% per year throughout the project.

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We



Tanzania Wildlife Research Institute

Head Office P.O. Box 661, Arusha, Fanzania

Tel:: +255 (0) 27 254 9571 / 254 8240, Fax + 255 (0) 27 254 8240

E-mail: 1000

Website: www.tawiri.or.tz

Our Ref: HWRI RG 22 VOL 69 88 68

31 October 2019

Your Ref:

Date:

Melinda Rostal DVM, MPH

Senior Research Scientist PREDICT 2 Surveillance Coordinator for EcoHealth Alliance. Rift Valley Fever Virus Project Manager,

EcoHealth Alliance.

460 West 34th Street - 17th floor.

New York, NY 10001

Dear Melinda.

RE: SALARY FOR DR. JULIUS D. KEYYU AND SUBSISTENCE (NIGHT OUT) ALLOWANCE DURING FIELD WORK

Please refer to the above heading and also to communications regarding implementation of the Crimean Congo Haemorrhagic Fever (CCHF) project.

The Tanzania Wildlife Research Institute (TAWIRI) is a parastatal organisation under the Ministry of Natural Resources and Tourism (TAWIRI) established by Act. No. 4 of 1980 of the Parliament (CAP 260 R.E. 2002), with the mandate to conduct, promote and oversee wildlife research in Tanzania.

This letter is to confirm that the monthly salary of Dr. Julius D. Keyyu is Five Million Eighty Hundred and Eight Thousand Tanzanian Shillings (TZS 5.808.000/=); and that the rate for daily subsistence (night out) allowance during field work as per the Government is TZS 120,000 (USD 60) per day to cater for accommodation and food.

Do not hesitate to contact me in case you need any clarification

Yours sincerely.

TANZANIA WILDLIFE RESEARCH INSTITUTE

FOR: DIRECTOR GENERAL

TAWIRI is responsible for the co-ordination of all wildlife research in Tanzania

TVLA Budget Justification

A. Key Personnel

We request a total of S , to support Key Personnel over the five years of the proposed project.

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Dr. Furaha Mramba, Co-Pl, Entomologist, will commit 1 month per year. We request salary of Deleted: s

Dr. Furaha Mramba, Co-PI, Entomologist, will commit 1 month per year. We request salary of \$3,000 in Year 1, with a 3% increase for Y2- Y, respectively. Her time increase in Y3 to 6.0 months in order to support the testing of samples in the TVLA laboratory. Co-PI Mramba is the Chief Executive of TVLA and holds a PhD in medical entomology. Co-PI Mramba will conduct or supervise the identification and diagnostic testing of animals and ticks, oversee the design, implementation and analysis of the animal study and facilitate communication with stakeholders.

B. Other Personnel

We request a total of \$23, to support Other Personnel over the five years of the proposed project.

Laboratory Technicians.

There will be three technicians, who will who commit months per year in Y1 and Y2 to assist with the installation of the equipment purchased for the TVLA laboratory in Arusha (e.g. generator for the building, an ultrafreezer – see the EcoHealth Alliance Y1 part C for a full list of items to be installed), for which we are requesting \$. Salaries will increase 3% in subsequent years. They will commit to months for Y3 in order to assist with the diagnostic testing of samples. For this we are requesting \$ over the five years of the project.

During Year 3 we will hire three additional technicians to conduct the diagnostic testing of samples and tick identification. This includes one ELISA technician and one PCR technician that will be based in Arusha and who will commit 12 months per year for Y3 to assist with sera and ticks, respectively, for which we request \$5,00 per technician . The technician hired to identify ticks will be contracted for 12 months from the TVLA lab in Tanga, for which we request .

D. Travel

We request a total of S to support travel over the five years of the proposed project.

In order to complete the tick identifications in Y3 of the project, we request \$ 0 that will cover day trips to Arusha. Transportation is calculated at \$50 per day (\$50/day x trips \$ 00) and overnights are calculated at an average cost of \$ per day

, for trips of days each (S /day x days x trips = S).

Co-PI Mramba will require one trip per year during Y1, Y2, OY1, and OY2 for project meetings and to visit stakeholders, calculated at \$50 per day for transportation, and S per day for days for field visit (\$1 per year). During Y3 when there is active laboratory work and tick identifications ongoing, co-PI Mramba will make trips to visit the laboratory in Arusha.

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E. Participant Support Costs

We request a total of \$1,800 for a CCHF Diagnostics Training Workshop held at TVLA during Y3 of the project. These funds will be used to support the travel costs of trainces 5-day workshop during

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F. Other Direct Costs

We request a total of \$13, for other direct costs over the five years of the proposed project. We request \$123,89 for testing during Y3 of the project, including PCR testing and serology. We request \$30,656 for testing covering 1,200 cattle samples, 1,800 small mammal samples and 200 wildlife samples, at a discounted rate of \$9.58 (the rate is discount—as the University of Glasgow is providing the multispecies ELISA kits for analysis). We request

testing covering 200 wildlife samples and 3296 tick pools, at a cost of 60,000 Tanzanian Shilling, or \$26.67 USD, per test.

We request \$10,3-0 over the five years of the project for supplies. There will a cost of \$2,000 each year in fuel for the generator to maintain samples (which will begin to be collected in Year 1) at -80°C during power outages.

In Y3 only, we request

\$3 0 for a 100 pack of 20 mL Petri dishes.

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H. Indirect Costs

in overhead, a rate of 10% per year on other direct costs, over the We request a total of \$19, five years of the proposed project.

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Budget Documentation – Tanzanian Veterinary Laboratory Agency

1.	Salaries, Travel, ODCs,	2
	Salaries	
	i. Furaha Mramba, Medical Entomologist	
	ii. Other Personnel: General Laboratory Technician	
	Travel	
	i. Tanzanian Government per diem	
	ii. Travel to Arusha from Dar es Salaam	
	Other Direct Costs	
	i. Testing breakdown	
	ii. Generator usage and cost breakdown	
2.	Other Direct Costs	3
	Supplies: Petri dishes	
	Generator shelter cost estimate	

TANZANIA VETERINARY LABORATORY AGENCY

Tel: +255 22 2861152

Fax: +255 22 2864369

E-mail: furaha58@vahoo.com

All letters should be Addressed to Chief Executive

TVLA CONTROL TVLA

Veterinary Complex,
131 Nelson Mandela Road,
P.o. Box 9254,
15487 Dar es Salaam,
TANZANIA.

05/11/2019

Please quote Ref. No. BD/332/372/12

Dear Dr. Melinda,

RE: CONFIRMATION AND JUSTIFICATION OF THE TVLA BUDGET

Senior Personnel.

Dr. Furaha Mramba, a Co-PI, and a Medical Entomologist, will commit 1 month per year. Her monthy salary is documented below and is approximately \$3,000 in Year 1, with a 3% increase for Y2-OY2, respectively.

Other Personnel:

The average salary for a general laboratory technician at TVLA Laboratory in Arusha is \$450 per month or \$5,400 per year.

Travel

We confirm that the **Tanzanian Government Rate per night** is \$55 and transportation to Arusha is \$50.

Other Direct Costs

TVLA Arusha has agreed to the following diagnostic assay table for the CCHF project.

Assay	Number of Samples	Cost per Assay	Total Cost
ELISA	3200	\$9.58	\$30,656
PCR	3,496	S26.67	\$93,238

We estimate that we will need the generator for 26.6 hours per month (\$1.25/L*5hours/L*26.6 hours/month*12 months/year = \$2000). In Y3 only, we request \$300 for a 100 pack of 20 mL Petri dishes.

Grateful if this request will be considered Faithfully yours,

Dr Joseph Masambu

Cart

Account: 884930003 EcoHealth Alliance

Item	Price	Qty	Subtotal	Order Summary		
itom	11100	4.9	Subtotui	Subtotal	\$320.00	
Fisherbrand™ Petri Dishes	\$160.00 /		\$320.00	Shipping and Ha	ndling *	
Specialty	Case of	2	4320.00		\$26.39	
Catalog number FB0875711	325			Shipping fuel surch	arge \$4.45	
Type: Deep Dish, Size: 100				Shipping charge	\$21.94	
x 25mm				Estimated Tax	\$0.00	

In Stock (2) - Estimated delivery 12/03/2019

♣ Add all items to a list

Generate a Web Quo

View All Quotes | What's this? missing translation for 'faq'

^{*}Extra charges may apply for products that require special services.

TANZANIA VETERINARY LABORATORY AGENCY POBOX 1068 ARUSHA.

Being cost for The UD 1,500,00 1 construction of a Generalor shelter at TVLA, Arusha



1,500.00

University of Glasgow (UoG)

A. Senior Personnel

We request a total of S to support co-PI/Key Personnel (KP) over the five years of the proposed project.

Sarah Cleaveland, Ph.D., co-PI, will commit 1.2 months (mo.) per annum (p.a.) for all five years, with an increase of approximately (allowing for exchange rates) 3. % annually. We request \$1., in Y1 and \$9, 6 total. Co-PI Cleaveland will provide key support and oversight for the field epidemiological studies by contributing to the design and implementation of the field study, liaising with partner institutions and stakeholders in Tanzania and linking with policy makers at national, regional and international levels for the dissemination of findings and development of guidelines.

Brian Willett, Ph.D., Research Scientist, Viral Immunologist, will commit 0.6 mo. p.a. for all five years with an increase of approximately 3. % annually. We request \$, in YI and \$, for all five years. Key Personnel Willett will provide oversight, support and training for CCHFV serological and molecular analyses and will coordinate activities with collaborating laboratories (Public Health England, Pirbright Institute).

B. Other Personnel

We request a total of \$1 to support Other Personnel over the five years of the proposed project.

Technician. A full-time laboratory technician based in KP Willett's laboratory will commit 3 mo. per year in Y1 2 and OY1. We request \$, 5 in Y1 with a 4. % increase annually. The technician will commit 12 mo. per year in Y3 and OY1 as the incountry laboratory work will be conducted during these two years. We request \$, 6 in Y3, totalling \$, across all five years. The laboratory technician will support the laboratory analyses, including optimisation of assays, and establishment of laboratory diagnostic capacity in Tanzania.

John Claxton, Administrator, will commit 1.2 months p.a. for all five years with an approximately (allowing for exchange rates) — % increase annually. We request \$,56 in Y1 and a total of \$,8 for all five years. Mr. Claxton, a highly experienced international project manager, will provide support for financial management and reporting, sub-contracts and agreements, ethical clearance, procurement and shipment of supplies.

D. Travel

We request a total of \$ 3, 2 for international travel across all five years.

We request trips per year for either co-PI Cleaveland or the laboratory technician in YI-OYI. Each trip is estimated \$1, 3 flight

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In OY2 we request - trip for KP Willett

We request \$\\$, over five years for research visas. We request a permit for the technician in Y1 to assist with the installation of capacity building equipment at TVLA, 2 permits per year in Y2-OY1 for the technician and co-PI Cleaveland and one permit in OY2 for co-PI Cleaveland. We request \$2, 0 in Y1 with a 3% increase across all years.

E. Participant Support Costs

We request \$3, 00 in Y3 for travel subsistence costs for participants (\$5 per day * 5 days * 10 participants *2 trainings). Costs for the UoG trainer are covered by travel costs.

F. Other Direct Costs.

We request a total of S6, in other direct costs across 5 years.

In Y3 and OY1 we request \$ p.a. for the shipment of samples from Tanzania to the University of Glasgow. This is required for quality assurance of assays carried out in Tanzania and based on recent estimates for similar shipments provided by

We request a total of \$58,500 for laboratory across the 5 years. Materials and consumables costs are based upon the average actual annual expenditure (over 4 years) by researchers within this laboratory performing similar experiments to those in the project. These costs were extracted from the University of Glasgow purchasing system Agresso

, including antibody reagents, secondary antibody conjugates, specific control sera, buffers, blocking agents and substrates for ELISA. This will produce sufficient reagent to

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stakeholders

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eosts per year for a total of \$23,260 across four years.

Deleted: In Y3 and OY1 we request an additional \$28.52 per day for the technician to an extended stay (about 6 months and 2 months respectively) in Tanzania to support laboratory assays and establishment of diagnostic capacity (this amount covers rental costs for staying at the UoG research house at KCMC-KCRI). We request \$5,305(\$28.43)

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facilitate ELISA analyses at KCRI, UoG and the laboratories participating in the workshops. e funds will be used to purchase CCHF Multispecies ELISA kits The S (430 animals can be tested per kit at the end of Y2 for analyses at TVLA on the 3,200 animal samples in Y3 and a contingency of kits sufficient to process an additional 1000 samples in each of for confirmatory analyses and assay validation at UoG. Thus, we request a sufficient number of kits to test 5, 0 samples over the three years

cell culture plasticware/media for the synthesis and purification of recombinant antigens (for the human ELISA) culture flasks, plates. media and supplements, ELISA plates, plate sealers, reservoirs, pipettes, tips and tubes. This includes using pre-cast polyacrylamide gels, buffers and supplies for the iBlot transfer system, Sarstedt tubes and storage boxes for sera. for molecular biologicals, nucleic acid purification kits, restriction enzymes and kits for mutagenesis and sequencing for vector preparation and cloning, and transfection. Also included in this category are preparing primers and probes for viral detection by real-time PCR for TVLA to use, confirmatory testing primers for sub-cloning and mutagenesis, and small-scale sequence confirmation of general laboratory supplies, including microcentrifuge tubes, plasmid constructs plates, petri dishes, fine chemicals

H. Indirect Costs

We request a total of \$43, in overhead, a rate of 10% per year on other direct costs, over the five years of the proposed project.

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We request \$2,539 p.a. (Y2-OY1) for

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Budget Documentation – University of Glasgow

1)	Salaries	Pg. 2	
2)	 Glasgow to K 	rusha to Dar es Salaam ar es Salaam	8
3)	Other Direct Costs		16

One Health Approach to Understanding the Epidemiology of Crimean-Congo Haemorrhagic Fever virus in Tanzania

Dear Mindy,

Please see below salary information, as requested by DTRA.

Name	Basic Annual	Annual	Inflationary Uplift
	Starting Salary	Increment Date	2%
Professor Sarah	\$130,046	1 st August	1 st August
Cleaveland			
Professor Brian	\$100,642	1 st August	1 st August
Willets			
Ryan Carter	\$31,832	1 st May	1 st August
John Claxton	\$55,644	1 st December	1 st August

Dr Debbi MacMillan

Senior Project Coordinator

College of Medical, Veterinary and Life Sciences

Room 329, Wolfson Medical School Building University of Glasgow Glasgow, G12 8QQ

Email: Debbi.Macmillan@glasgow.ac.uk

Tel: +44 (0)141 330 4105

Web: http://www.gla.ac.uk/colleges/mvls/

The University of Glasgow, Charity Number SC004401

Flight costs

Trip Summary

Trip Summary >

Trip Total: \$1,437.96

Rates are quoted in US dollars

₽ 64502 customers protected their flight in the last 7 days. Add flight protection when you check out.

✓ Nice Job! You picked one of our cheapest flights. Book now so you don't miss out on this price!

Mon, Jan 13 From Glasgow Intl. (GLA)
To Kilimanjaro Intl. (JRO)

Qatar Airways

Cheapest

5:20pm GLA **→**

17h 45m, 2 stops

Arrives Tue, Jan 14

Show flight and baggage fee details \$

Mon, Jan 20 From Kilimanjaro Intl. (JRO)
To Glasgow Intl. (GLA)

British Airways

Cheapest

3:15pm JRO →

10:50am

2:05pm

JRO

22h 35m, 3 stops DAR, DOH, LHR Arrives Tue, Jan 21

Show flight and baggage fee details >

Change flights

Upgrade your flight

Get more comforts and benefits by adding an upgrade.



Kilimanjaro Intl. (JRO) → Glasgow Intl. (GLA)

22h 35m

· Relax while packing! Get free bags

• Enjoy more flexibility with free cancellation

· Choose seats at no extra charge

Show upgrades *

from + \$752.11

for all travelers

Standard Economy

Cabin: Economy/Coach

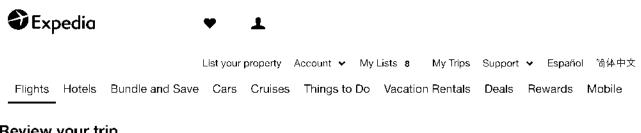
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Included



Review your trip

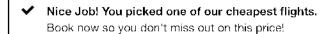
Trip Summary

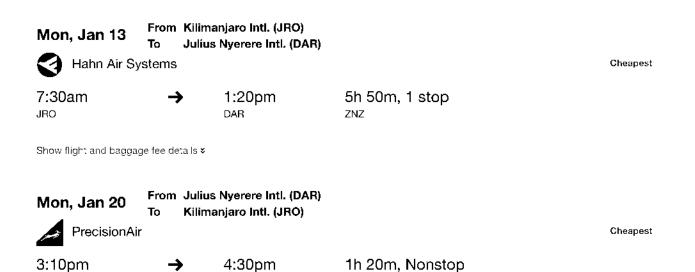
Trip Summary **₹**

Trip Total: \$320.65

Rates are quoted in US dollars

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Change flights

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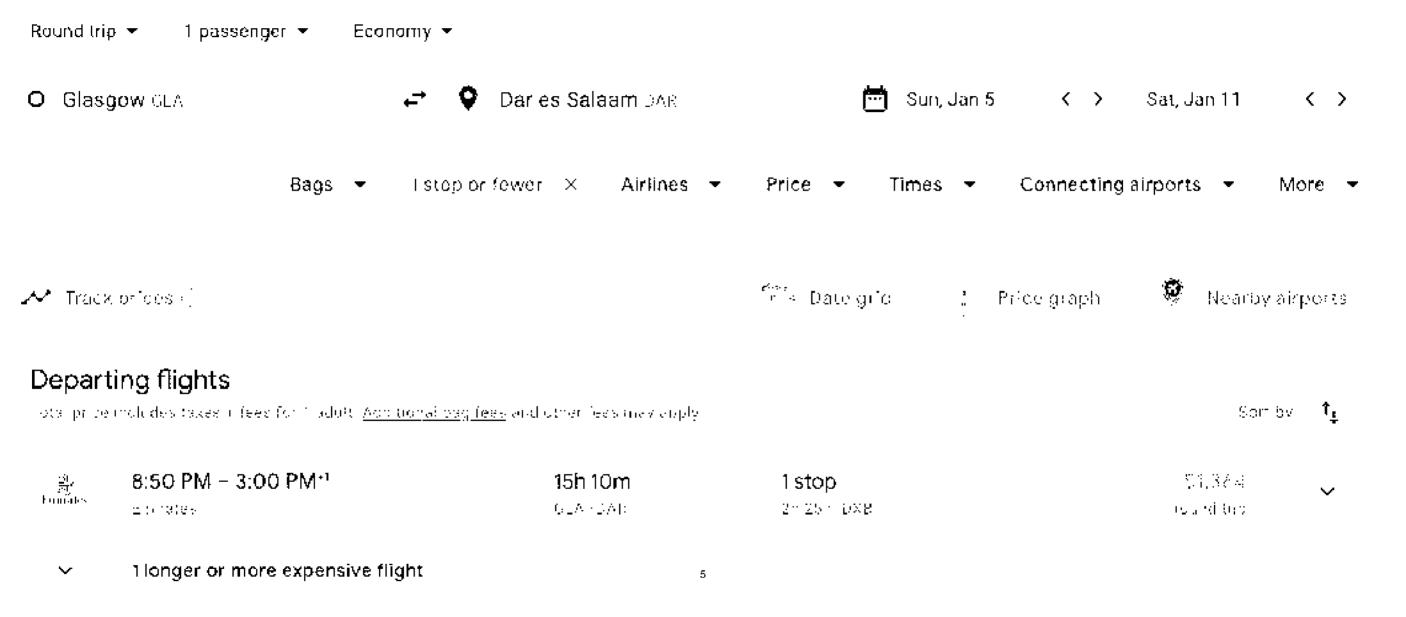
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f Important Flight Information

See more *

Continue Booking

№ 64520 customers protected their flight in the last 7 days. Add flight protection when you check out.



Permit Costs

LOGICAL PRESENTATION OF REQUIREMENTS FOR APPLICATION OF RESEARCH CLEARANCE AND PERMIT AT COSTECH

The objective of the analysis that led to this presentation was to find a much more easier to understand presentation of the requirements to the prospective applicants.

GENERAL REQUIREMENTS: These apply to all applications

	Item	Foreigners Affiliated to Local Research and Higher Learning Institutions	Others (Tanzanian, Non Tanzanians, affiliated in a foreign country, affiliated locally, etc)
1	Detailed curriculum vitae	Required for all involved researchers	Required for all involved researchers
2	Full research proposal	Required	Required
3	Sponsor cover letter	Required	Required
4	Support letter from local collaborating institution / contact person	Required	Required
5	Recommendation letter for endorsement of the proposed research within the institution	Required	Not applicable
6	Front-page of passport	Required	Required
7	Proof of payment non- refundable application fees	50 USD	50 USD
8	Application form	Required	Required

REQUIREMENTS FOR SPECIFIC SCENARIOS

- a) Research related to medical, public health, drugs, clinical trials, and wildlife issues require special clearance from relevant authorities i.e National Institute of Medical Research (NIMR) for the study that involves medical, public health and / or human subject (health); Tanzania Food and Drug Authority for Clinical Trials; and Tanzania Wildlife Research Institute (TAWIRI) for the study that involves wildlife and natural resources conservation.
- b) In case of joining a new researcher to an on-going research which has already been granted a research permit, a Principal Investigator shall submit a request of research permit for a new member to COSTECH at least 2 months prior to his/her joining the research team with detailed curriculum vitae, clear justification and roles for an additional staff / researcher to the on-going project.
- c) It is anticipated that the PI will remain responsible for the entire lifetime of the project, unless circumstances necessitate a change of PI. In such rare situation the head of hosting research institution shall write to notify COSTECH within 6 months since termination of outgoing PI. This will be done in writing explaining the reason for the changes and suitability of a newly identified PI. The letter requesting for amendment, accompanied by an up to date progress report shall be subjected to approval process before continuing with the research. It is the responsibility of the hosting institution to submit the request for change of PI within specified time.

POST CLEARANCE

a) After the research has been cleared, the PI will be notified by email. All FOREIGNERS who then wishes to undertake research activities in the country under the cleared research project will be required to apply for permit by presenting a proof of payment of research permit fees (300 USD) and three passport size photos.



72181296



The United Republic of Tanzania



MINISTRY OF NATURAL RESOURCES AND TOURISM

Tantan in W. dh.s. Research Institute. LAWIRG)

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General Description

Research for for Leisy Lankester to undertake his research Project: Ecosystem Health in Ecozopia

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Shipping Costs WC Quote Reference:: QED064190516 v2 Non haz RNA & DNA Samples Information: Quote for a shipment of:: Customer Account Name:: University of Glasgow Account Number:: Customer Contact:: John Claxton Contact Details: John.Claxton@glasgow.ac.uk Client Quote Reference: Content: 1 x GDI 30 L with Dry Ice & 1 x Biobag Packaging Supplies Temperature Frozen (Dry Ice) Date 17-05-19 Completed By Dionysios Papatheodorou This Quote is Valid for 6 Months from the date of Issue Conditions: Validity: Currency: GBP

diem basis.





All work is carried out subject to current terms and conditions shown on the HWB. Full conditions are available on http://www.worldcourier.com/wc-conditions-of-carriage By accepting this guote you enter into an agreement to pay according to these terms.

The current Fuel & Security surcharge is: 15.6%

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Description:	Origin City, Country	Destination City, Country	Routing:	weight	kg	Base Rate up to 1kg	Est Overweight Charge	Transfer	Origin Driveaway	Destination Driveaway	15.6%	Packaging Supplies	Export Brokerage	Other Charges	Tranship Surcharge	Temperature Monitor	Temperature	FSS:
Non haz RNA & DNA Samples	Moshi / TZA	Glasgow / GBR	Via Transfer	25.0 kg	17.08	870.00	819.84	93.00	319.00	72.00	339.12	295.00	150.00	-	-	N/A	Frozen (Dry Ice)	2,957.96

Conditions:

The above quote is subject to variation depending on the final weight of the shipment.

Terms:

If at the time of shipping the volumetric weight is found to be greater than the actual weight, overweight and the tranship surcharge will be applied using the volumetric weight, $v = (L \times W \times H) / 6000$, where the dimensions are in cm.

If additional attempts are required due to a rescheduled collection or delivery or to preposition / recover reusable packaging then additional charges

Please note our payment terms are 30 days from the date of invoice unless more restrictive terms are advised during account application. A

charge of 0.667% per month will apply to past due balances on a per

Final origin and destination drive charges are subject to variation based on exact pick up and delivery locations,

If this information was not provided during the quoting process then the displayed amount will be estimated based on a central point for the named city and subject to change.

Customs Taxes / Duty have not been included in this quote. Taxes/ Duty will be charged where applicable in line with declared incoterms and in line with Local Legislation

Airline Warehousing and storage charges will be charged in addition when applicable

This Quote is only valid if mentioned when booking

All rates shown are route specific and subject to change depending on any specific collection time and delivery requirements advised at booking The Fuel & Security surcharge is applied to the base, overweight and driveaway charges only. This rate is reviewed on a quarterly basis & will be charged at the current rate at the time of shipping.

All Quoted charges are exclusive of VAT. Export Brokerage has been added to this quotation if applicable. Any applicable Import Customs Brokerage charges have not been included in this quotation unless specified. Any brokerage services performed by WC will be charged at £81. If WC are invoiced by an external broker for this service then extra charges could apply in addition to this rate.

All Shipments Collected or delivered on a local weekend day or public holiday will incur a surcharge of £90 shipments collected or delivered between 1900-0700 will incur an after hours surcharge of £25

If additional attempts are required to either collect or deliver shipments or preposition / recover reusable packaging then a charge of £60 +

Applicable drive charges will be applied

Charges for reusable packaging (VIP / GTC) may be subject to Extra rental days if the shipment duration exceeds 7 days or if the packaging is not made available on delivery. Dry ice shipments will be monitrored and replenishments (if required) will be charged in addition to the above quoted amounts.

Materials and consumables costs are based upon the average actual annual expenditure (over 4 years) by researchers within this laboratory performing similar experiments to those in the project. These costs were

extracted from the University of Glasgow purchasing system Agresso

Ì	Account_T	date	Text	Amount GBP	Dollar cost
	OTHER LABORATORY SUPPLIE	10/11/17	20057290 Specimen bag	506.00	694.84
	MAIL COURIER AND FREIGHT :	10/11/17	carriage	8.55	1 1.74
	OTHER LABORATORY SUPPLIE	10/11/17	20056402 Thermal control unit fibreboard outer refu	16.70	22.93
	MAIL COURIER AND FREIGHT	10/11/17	20056402 Thermal control unit fibreboard outer refu	10.26	14.09
	PLASTICWARE	10/11/17	97256	36.30	49.85
	SMALL EQUIPMENT (AS CONS	10/12/17	S7108110010100ul 8 channel multichannel pipetteO	340.00	466.89
	PLASTICWARE	10/26/17	98215	112.53	154.53
	PLASTICWARE	10/26/17	98215	192.10	263.79
	BIOCHEMICALS	11/10/17	98695	177.60	243.88
	PLASTICWARE	11/14/17	100439	72.60	99.69
	PLASTICWARE	11/20/17	101801	73.18	100.49
	TISSUE CULTURE AND BACTER	11/20/17	101801	11.00	15.11
	OTHER LABORATORY SUPPLIE	11/20/17	101801	5.65	7.76
	PLASTICWARE	11/29/17	102403	146.07	200.58
	TISSUE CULTURE AND BACTER	11/29/17	102403	13.75	18.88
	STATIONERY AND OFFICE SUP	11/29/17	102403	0.40	0.55
	BIOCHEMICALS	11/30/17	HWB L4 Lab biochemicals Oct17 for N Logan	8.68	11.92
	ORGANIC CHEMICALS	11/30/17	HWB L4 Lab organic chemicals Oct17 for N Logan	0.43	0.59
	PLASTICWARE	11/30/17	HWB L4 Lab plasticware Oct17 for N Logan	2.89	3.97
	PLASTICWARE	11/30/17	HWB L4 Cell Culture plasticware Oct17 for N Logan	16.71	22.95
	OTHER LABORATORY SUPPLIE	11/30/17	HWB L4 Lab other lab supplies Oct17 for N Logan	0.59	0.81
	MAIL COURIER AND FREIGHT :	11/30/17	HWB L4 Lab freight Oct17 for N Logan	0.82	1. 1 3
	CLEANING MATERIALS	11/30/17	HWB L4 Cell Culture cleaning materials Oct17 for N I	1.87	2.57
	CLEANING MATERIALS	11/30/17	HWB L4 Lab cleaning materials Oct17 for N Logan	0.60	0.82
	WORKSHOP CONSUMABLES	11/30/17	HWB L4 Cell Culture workshop cons Oct17 for N Loga	13.33	18.30
	MAIL COURIER AND FREIGHT:	12/6/17	DHL/3746273661/GLASGOW UNITED KINGDOM	7.62	10.46
	MAIL COURIER AND FREIGHT	12/6/17	DHL/3746273661/GLASGOW UNITED KINGDOM	0.26	0.36
	MAIL COURIER AND FREIGHT	12/6/17	DHL/7574213301/LEEDS UNITED KINGDOM	0.26	0.36
	MAIL COURIER AND FREIGHT:	12/6/17	DHL/7574213301/LEEDS UNITED KINGDOM	7.62	10.46
	MAIL COURIER AND FREIGHT:	12/6/17	DHL/3746273661/GLASGOW UNITED KINGDOM	76.80	105.46
	PLASTICWARE	1/8/18	104669	73.18	100.49
	STATIONERY AND OFFICE SUP	1/8/18	104669	0.88	1.21

PLASTICWARE	1/24/18	105736	255.66	351.07
STATIONERY AND OFFICE SUI	P 1/24/18	105736	0.82	1.13
BONDED ALCOHOLS	1/31/18	HWB L4 Cell Culture bonded alchols Nov17 for N Log-	2.46	3.38
BONDED ALCOHOLS	1/31/18	HWB L4 Lab bonded alcohols Dec17 for N Logan	0.75	1.03
DISPOSAL OF CHEMICAL & RA	l 1/31/18	HWB L4 Cell Culture disp of chemical waste Nov17 fc	0.48	0.66
DISPOSAL OF CLINICAL WAST	E 1/31/18	HWB L4 Lab disp of clinical waste Nov17 for N Logar	3.31	4.55
ORGANIC CHEMICALS	1/31/18	HWB L4 Lab organic chemicals Nov17 for N Logan	2.32	3.19
PLASTICWARE	1/31/18	HWB L4 Lab plasticware Nov17 for N Logan	11.30	15.52
PLASTICWARE	1/31/18	HWB L4 Cell Culture plasticware Dec17 for N Logan	90.09	123.71
PLASTICWARE	1/31/18	HWB L4 Cell Culture plasticware Nov17 for N Logan	73.17	100.48
PLASTICWARE	1/31/18	HWB L4 Lab plasticware Dec17 for N Logan	5.79	7.95
OTHER LABORATORY SUPPLIE	1/31/18	HWB L4 Cell Culture other lab supplies Nov17 for N L	14.34	19.69
CLEANING MATERIALS	1/31/18	HWB L4 Cell Culture cleaning materials Dec17 for N	8.42	11.56
CLEANING MATERIALS	1/31/18	HWB L4 Cell Culture cleaning materials Nov17 for N	8.77	12.04
CLEANING MATERIALS	1/31/18	HWB L4 Lab cleaning materials Nov17 for N Logan	5.28	7.25
STATIONERY AND OFFICE SUI	P 1/31/18	HWB L4 Lab stationery Nov17 for N Logan	0.62	0.85
PLASTICWARE	2/5/18	106442	170.56	234.21
PLASTICWARE	2/8/18	106760	157.34	216.06
BIOCHEMICALS	2/27/18	X8 ZEOCIN 100MGML PACK OF 8 X 125ML	240.78	330.64
BONDED ALCOHOLS	2/28/18	HWB L4 Cell Culture bonded alcohols Jan18 for N Log	2.39	3.28
PLASTICWARE	2/28/18	HWB L4 Cell Culture plasticware Jan18 for N Logan	36.18	49.68
PLASTICWARE	2/28/18	HWB L4 Lab plasticware Jan18 for N Logan	5.05	6.93
COMPUTER CONSUMABLES	2/28/18	HWB L4 Lab computer consumables Jan18 for N Loga	4.07	5.59
CLEANING MATERIALS	2/28/18	HWB L4 Cell Culture cleaning materials Jan18 for N l	22.94	31.50
CLEANING MATERIALS	2/28/18	HWB L4 Lab cleaning materials Jan18 for N Logan	1.85	2.54
STATIONERY AND OFFICE SUI	P 2/28/18	HWB L4 Lab stationery Jan18 for N Logan	0.15	0.21
STATIONERY AND OFFICE SUI	P 2/28/18	HWB L4 Cell Culture stationery Jan18 for N Logan	0.10	0.14
WORKSHOP CONSUMABLES	2/28/18	HWB L4 Cell Culture workshop consumables Jan18 fc	83.33	114.43
PLASTICWARE	3/5/18	109015	205.03	281.55
PLASTICWARE	3/15/18	109649	109.77	150.74
TISSUE CULTURE AND BACTE	R 3/15/ 1 8	109649	9.00	12.36
TISSUE CULTURE AND BACTE	R 3/15/18	109649	2.75	3.78
BIOCHEMICALS	3/21/18	110057	120.71	165.76

BIOCHEMICALS	3/31/18	HWB L4 Lab biochemicals Feb18 for N Logan	19.25	26.43
BONDED ALCOHOLS	3/31/18	HWB L4 Lab bonded alchols Feb18 for N Logan	0.77	1.06
DISPOSAL OF CHEMICAL & RA	[3/31/18	HWB L4 Lab disp of chemical waste Feb18 for N Log	0.31	0.43
PLASTICWARE	3/31/18	HWB L4 Cell Culture plasticware Feb18 for N Logan	35.39	48.60
PLASTICWARE	3/31/18	HWB L4 Lab plasticware Feb18 for N Logan	6.21	8.53
OTHER LABORATORY SUPPLIE	: 3/31/18	HWB L4 Lab other lab supplies Feb18 for N Logan	9.96	13.68
CLEANING MATERIALS	3/31/18	HWB L4 Lab cleaning materials Feb18 for N Logan	7.20	9.89
CLEANING MATERIALS	3/31/18	HWB L4 Cell Culture cleaning materials Feb18 for N	1.87	2.57
STATIONERY AND OFFICE SUI	3/31/18	HWB L4 Lab stationery Feb18 for N Logan	0.62	0.85
BIOCHEMICALS	4/12/18	111183	192.66	264.56
TISSUE CULTURE AND BACTE	R 4/16/18	111305	15.29	21.00
STATIONERY AND OFFICE SUI	9 4/16/ 1 8	111305	7.10	9.75
BIOCHEMICALS	4/25/18	order number for oligo card required	90.00	123.59
BONDED ALCOHOLS	4/30/18	HWB L4 Cell Culture bonded alcohols Mar18 for N Lo	2.39	3.28
DISPOSAL OF CLINICAL WAST	E 4/30/18	HWB L4 Cell Culture disp of clinical waste Mar18 for	1.74	2.39
DISPOSAL OF CLINICAL WAST	E 4/30/18	HWB L4 Lab disp of clinical waste Mar18 for N Logar	0.87	1.19
PLASTICWARE	4/30/18	112103	54.89	75.37
PLASTICWARE	4/30/18	HWB L4 Cell Culture plasticware Mar18 for N Logan	74.40	102.17
PLASTICWARE	4/30/18	HWB L4 Lab plasticware Mar18 for N Logan	2.89	3.97
TISSUE CULTURE AND BACTE	R 4/30/18	112103	2.86	3.93
TISSUE CULTURE AND BACTE	R 4/30/18	HWB L4 Cell Culture tissue culture Mar18 for N Loga	12.6 6	17.38
OTHER LABORATORY SUPPLIE	: 4/30/18	HWB L4 Cell Culture other lab supplies Mar18 for N L	14.34	19.69
LAB EQUIPMENT MAINTENAN	l 4/30/18	Repairs	142.00	194.99
CLEANING MATERIALS	4/30/18	HWB L4 Cell Culture cleaning materials Mar18 for N	5.29	7.26
WORKSHOP CONSUMABLES	4/30/18	HWB L4 Cell Culture workshop consumables Mar18 f	1.67	2.29
BIOCHEMICALS	5/4/18	1934975 HIGH-FIDELITY MASTER MIX	106.75	146.59
BIOCHEMICALS	5/14/18	1937687 E6300S	124.25	170.62
BIOCHEMICALS	5/17/18	1938305 RABBIT ANTI-HUMAN & LIGHT CHAIN ANTI	98.00	134.57
PLASTICWARE	5/17/18	113025	146.07	200.58
TISSUE CULTURE AND BACTE	R 5/17/ 1 8	113025	8.25	11.33
MAIL COURIER AND FREIGHT	£5/17/ 1 8	1938305 RABBIT ANTI-HUMAN & LIGHT CHAIN ANTI	30.00	41.20
PLASTICWARE	5/23/18	113380	109.77	150.74
PLASTICWARE	5/30/18	113791	73.18	100.49

TISSUE CULTURE AND BACTE	R 5/30/18	113791	22.22	30.51
DISPOSAL OF CHEMICAL & RA	.[5/3 1/1 8	HWB L4 Cell Culture disp of chemical waste Apr18 fc	34.42	47.27
PLASTICWARE	5/31/18	HWB L4 Cell Culture plasticware Apr18 for N Logan	44.37	60.93
OTHER LABORATORY SUPPLIE	5/31/18	HWB L4 Lab other lab supplies Apr18 for N Logan	1.78	2.44
OTHER LABORATORY SUPPLIE	5/31/18	HWB L4 Cell Culture other lab supplies Apr18 for N L	2.03	2.79
CLEANING MATERIALS	5/31/18	HWB L4 Lab cleaning materials Apr18 for N Logan	1.50	2.06
CLEANING MATERIALS	5/31/18	HWB L4 Cell Culture cleaning materials Apr18 for N I	7.18	9.86
STATIONERY AND OFFICE SUI	P 5/31/18	HWB L4 Lab stationery Apr18 for N Logan	0.62	0.85
WORKSHOP CONSUMABLES	5/31/18	HWB L4 Lab workshop consumables Apr18 for N Log.	0.06	0.08
WORKSHOP CONSUMABLES	5/31/18	HWB L4 Cell Culture workshop consumables Apr18 fc	42.22	57.98
BIOCHEMICALS	6/6/18	114194	28.80	39.55
PLASTICWARE	6/6/18	114180	218.96	300.68
OTHER LABORATORY SUPPLIE	E: 6/7/18	114316	1 5.16	20.82
BIOCHEMICALS	6/13/18	114716	52.50	72.09
TISSUE CULTURE AND BACTE	R 6/13/18	114716	8.25	11.33
OTHER LABORATORY SUPPLIE	E: 6/13/18	114316	45.48	62.45
STATIONERY AND OFFICE SUI	P 6/13/18	114716	0.34	0.47
PLASTICWARE	6/18/18	114954	109.77	150.74
PLASTICWARE	6/26/18	115526	146.36	200.98
TISSUE CULTURE AND BACTE	R 6/26/18	115526	8.14	11.18
TISSUE CULTURE AND BACTE	R 6 /26/ 1 8	115526	16.50	22.66
PLASTICWARE	6/28/18	115713	133.68	183.57
BIOCHEMICALS	6/30/18	Transfer Garscube stores order 111897 for biochemi-	130.26	178.87
BONDED ALCOHOLS	6/30/18	HWB L4 Cell Culture bonded alcohols May18 for N Lo	1.08	1.48
INORGANIC CHEMICALS	6/30/18	HWB L4 Lab inorganic chemicals May18 for N Logan	0.73	1.00
PLASTICWARE	6/30/18	Transfer Garscube stores orders 99847/102244/1027	1103.06	1514.72
PLASTICWARE	6/30/18	HWB L4 Cell Culture plasticware May18 for N Logan	91.23	125.28
PLASTICWARE	6/30/18	HWB L4 Lab plasticware May18 for N Logan	6.67	9.16
TISSUE CULTURE AND BACTE	R 6/30/18	Part transfer Garscube stores order 104245 for tissue	10.10	13.87
OTHER LABORATORY SUPPLIE	E: 6/30/ 1 8	HWB L4 Lab other lab supplies May18 for N Logan	1.31	1.80
OTHER LABORATORY SUPPLIE	E: 6/30/ 1 8	HWB L4 Cell Culture other lab supplies May18 for N I	12.90	17.71
OTHER LABORATORY SUPPLIE	E: 6/30/ 1 8	CVR Communal Consumable Charge 2017/18 for B W	1000.00	1373.20
OTHER LABORATORY SUPPLIE	6/30/18	CVR Communal Consumable Charge 2017/18 for M F	667.00	915.92

CLEANING MATERIALS	6/30/18	HMD 14 Lab cleaning materials May 19 for N Logan	18.47	25.36
CLEANING MATERIALS	6/30/18	HWB L4 Lab cleaning materials May18 for N Logan HWB L4 Cell Culture cleaning materials May18 for N	18.90	25.5 0 25.95
BONDED ALCOHOLS			4.30	25.95 5.90
	7/31/18	HWB L4 Cell Culture bonded alcohols Jul18 for N Log-		
BONDED ALCOHOLS	7/31/18	HWB L4 Lab bonded alcohols Jul 18 for N Logan	2.44	3.35
BONDED ALCOHOLS	7/31/18	HWB L4 Lab bonded alcohols Jun18 for N Logan	3.08	4.23
DISPOSAL OF CHEMICAL & RA		HWB L4 Lab disp of chemical waste Jun18 for N Loga	45.64	62.67
DISPOSAL OF CLINICAL WAST		HWB L4 Cell Culture disp of clinical waste Mar18 adj	-3.48	-4.78
DISPOSAL OF CLINICAL WAST	· ·	HWB L4 Lab disp of clinical waste Mar18 adj for N Lc	-1.74	-2.39
DISPOSAL OF CLINICAL WAST	· ·	HWB L4 Lab disp of clinical waste Nov17 adj for N Lc	-6.62	-9.09
INORGANIC CHEMICALS	7/31/18	HWB L4 Cell Culture inorganic chemicals Jul18 for N	2.22	3.05
ORGANIC CHEMICALS	7/31/18	HWB L4 Lab organic chemicals Jul18 for N Logan	0.86	1.18
PLASTICWARE	7/31/18	HWB L4 Cell Culture plasticware Jun18 for N Logan	232.54	319.32
PLASTICWARE	7/31/18	HWB L4 Cell Culture plasticware Jul18 for N Logan	303.62	416.93
PLASTICWARE	7/31/18	HWB L4 Lab plasticware Jun18 for N Logan	15.40	21.15
PLASTICWARE	7/31/18	HWB L4 Lab plasticware Jul 18 for N Logan	9.73	13.36
TISSUE CULTURE AND BACTE	R 7/31/18	HWB L4 Lab tissue culture Jul18 for N Logan	61.02	83.79
OTHER LABORATORY SUPPLIE	E: 7/31/18	HWB L4 Cell Culture other lab supplies Jun18 for N Lo	0.54	0.74
CLEANING MATERIALS	7/31/18	HWB L4 Cell Culture cleaning materials Jul18 for N L	4.93	6.77
CLEANING MATERIALS	7/31/18	HWB L4 Lab cleaning materials Jun18 for N Logan	2.48	3.41
CLEANING MATERIALS	7/31/18	HWB L4 Lab cleaning materials Jul18 for N Logan	2.16	2.97
CLEANING MATERIALS	7/31/18	HWB L4 Cell Culture cleaning materials Jun18 for N L	19.28	26.48
STATIONERY AND OFFICE SU		HWB L4 Lab stationery Jun18 for N Logan	1.24	1.70
WORKSHOP CONSUMABLES	7/31/18	HWB L4 Cell Culture workshop consumables Mar18 a	-3.34	-4.59
WORKSHOP CONSUMABLES	7/31/18	HWB L4 Cell Culture workshop cons Oct17 adj for N L	-26.66	-36.61
WORKSHOP CONSUMABLES	7/31/18	HWB L4 Cell Culture workshop consumables Apr18 a	-84.44	-115.95
OTHER JANITORIAL COSTS	7/31/18	HWB L4 Lab other janitorial costs Jul 18 for N Logan	7.62	10.46
OTHER JANITORIAL COSTS	7/31/18	HWB L4 Cell Culture other janitorial costs Jul 18 for N	23.78	32.65
TISSUE CULTURE AND BACTE	R 8/20/18	119591	8.28	11.37
PLASTICWARE	8/29/18	120084	146.07	200.58
OTHER LABORATORY SUPPLIE	E: 8/30/18	Tempus Blood RNA Tube	2302.80	3162.20
BIOCHEMICALS	9/6/18	SP5020 10 X casein solution	78.00	107.11
PLASTICWARE	9/12/18	120748	133.68	183.57
TISSUE CULTURE AND BACTER 9/12/18		120748	3.08	4.23

OTHER LABORATORY SUPPLIE	9/12/18	120748	14.46	19.86
OTHER LABORATORY SUPPLIE	: 9/13/18	6066759 Steadylite plus 1000ml kit as per quote 215	982.13	1348.66
MAIL COURIER AND FREIGHT	9/13/18	6066759 Steadylite plus 1000ml kit as per quote 215	17.25	23.69
PLASTICWARE	9/21/18	121304	170.27	233.81
TISSUE CULTURE AND BACTE	R 9/21/18	121304	22.86	31.39
LAB EQUIPMENT MAINTENAN	l 9/27/18	1450-471/normalisation standard/QUOTE 21570833	390.00	535.55
MAIL COURIER AND FREIGHT	9/27/18	1450-471/normalisation standard/QUOTE 21570833	35.00	48.06
BIOCHEMICALS	9/30/18	HWB L4 Lab biochemicalsAug18 for N Logan	19.80	27.19
BONDED ALCOHOLS	9/30/18	HWB L4 Cell Culture bonded alcohols Aug18 for N Lo;	2.15	2.95
ORGANIC CHEMICALS	9/30/18	HWB L4 Lab organic chemicals Aug18 for N Logan	2.03	2.79
PLASTICWARE	9/30/18	HWB L4 Cell Culture plasticware Aug18 for N Logan	85.51	117.42
PLASTICWARE	9/30/18	HWB L4 Lab plasticware Aug18 for N Logan	13.64	18.73
TISSUE CULTURE AND BACTE	R 9/30/18	HWB L4 Lab tissue culture Aug18 for N Logan	19.96	27.41
OTHER LABORATORY SUPPLIE	: 9/30/18	HWB L4 Lab other lab supplies Aug18 for N Logan	0.23	0.32
CLEANING MATERIALS	9/30/18	HWB L4 Lab cleaning materials Aug18 for N Logan	1.25	1.72
CLEANING MATERIALS	9/30/18	HWB L4 Cell Culture cleaning materials Aug18 for N	3.64	5.00
OTHER JANITORIAL COSTS	9/30/18	HWB L4 Lab other janitorial costs Aug18 for N Logan	6.88	9.45
Total			£ 14,067.33	\$ 19,317.26



Document N°	Account Nr	Account name		Date
CD184356	(b)(4)	UNIGLASGOW	F	15/10/2018
Reference	Order confirmation			
4005640				

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1983619

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Attention:

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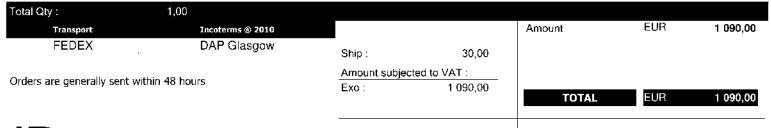
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	Code	Designation	Qty	Unit Price	% Discount	Net Price	Amount
001	CCHFDA-5P-E23	ID Screen® CCHF Double Antigen Multi-species	1,00	1 060,00		1 060,00	1 060,00
	Exp.: 09/2020	5 Plates - Double Antigen					



Coordonnées bancaires : Banque Dupuy de Parseval Montpellier

Code Banque 12939 Code Guichet 00031 N°Compte 40000760577 Clé 27 IBAN FR76 1293 9000 3140 0007 6057 727 SWIFT BIC : BDUPFR2S

New account in Dollars: HSBC Montpellier code banque 30056 code guichet 00967

Page 1/1

п°compte 09670001413 clé: 64

IBAN : FR76 3005 6009 6709 6700 0141 364 SWIFT BIC CCFRFRPP

Payment terms: Swift Bank Transfer at 30 days

310 rue Louis Pasteur - 34790 GRABELS - France SIRET 478 123 219 00022 APE 7211Z TVA FR 17478123219

Budget Justification

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Deleted: Budget Justification Washington State University / WSU Global Animal Health Tanzania (GAHT)

Note: Cost calculations are rounded to nearest dollar

Senior/Key Personnel

Dr. Felix Lankester, Co-Investigator, 2.4 cal. mo. (years

1-2); 2.0 cal. mo. (years 3-5). Dr. Lankester is a Clinical Assistant Professor at Washington State University's Paul G. Allen School for Global Animal Health. Now based in the UK, Dr. Lankester has conducted zoonotic disease research since 2009 and has extensive experience with project leadership within the African and One Health research contexts. He serves as Country Representative of WSU's non-profit subsidiary Global Animal Health Tanzania (GAHT), legally registered in Tanzania to facilitate in-country research and support research capacity-building activities on zoonotic infectious diseases. Dr. Lankester will commit 20% effort to the project in Years 1-2 and 16.67% effort in Years 3-5. He will oversee all GAHT activities and supervise GAHT project staff, assist in the coordination of the field activities, serve as liaison with high level Ministerial collaborators and interested parties within the Government of the United Republic of Tanzania, and will collaborate with the PI on data analysis and the drafting of manuscripts, reports and policy documents. Salary request for Dr. Lankester is \$26,192 in Year 1 and budgeted to inflate at 3% annually. Fringe benefits for Dr. Lankester are calculated at 18%

of salary. Year 1 request: \$4,715

Senior/Key Personnel Total, 5-year project period: \$147,198

B. Other Personnel

WSU Global Animal Health Tanzania (GAHT) maintains an office in Arusha, TZ, to support WSU investigators [1]

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Moved up [1]: Travel support within Tanzania is also requested for Dr. Lankester and the Project Coordinator to carry out project activities. Dr. Lankester's travel includes:

Two road trips, 3 days each in Years 1 and 2 to field sites to oversee animal health team activities and sampling procedures. Year 1 budget includes lodging and meal per diem (\$157/day x 3 days x 2 trips = \$942) and fuel for 720 km per trip (\$150 x 2 trips = \$300) = \$1,242; 3% inflation in Year 2.

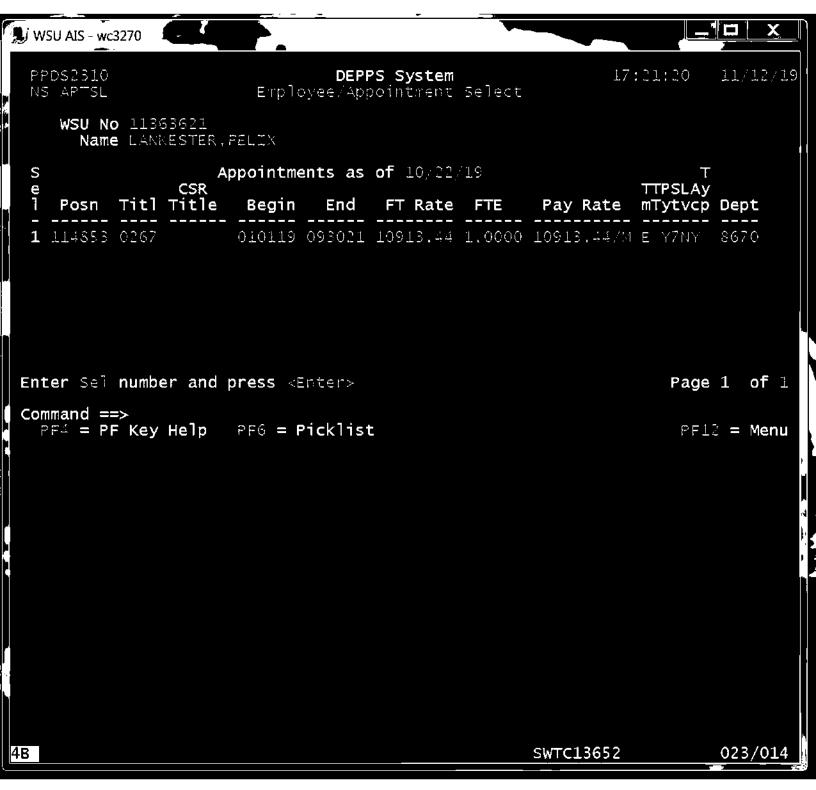
One 2-day trip in Years 1 and 2 to visit the wildlife sampling field team. Year 1 costs include return flight Arusha to Seronera (\$241) and lodging and per diem (\$157/day x 2 days = \$314): \$555; budgeted with 3% inflation Year 2.

Field visits, Years 1 and 2, total \$3,648.

One trip, 2 days each annually to Dar es Salaam and/or Dodoma for meetings with United Republic of Tanzania Ministry officials and other stakeholders. Year 1 costs

Budget Documentation – Washington State University

1)	Salaries2
	 Dr. Felix Lankester, Assistant Professor
	 Mr. Godfrey Kassanga, Administrative Manager, GAHT
	 Ms. Sarah Mollel, Program Coordinator, GAHT
	October 2019 GAHT Payroll information, with Tsh to USD exchange rate
	Draft employment contract, TBN, Project Veterinarian
	 Draft employment contract, TBN, Field Assistant
2)	GAHT Fringe Benefits13
3)	Other Direct Costs
	Permits
	Vehicle Maintenance
	Vehicle Insurance
	 Supplies
	Medical Waste Disposal, KCMC
	 Draft Personal Service / Consultant Contract, TBN, Mammologist
	Estimate of Translation Services
4)	Indirect Cost Rate39
5)	Travel45
	 London to Arusha, TZ
	 Arusha to Seronera, TZ
	 Arusha to Dar es Salaam, TZ
	London to Europe
	 Lodging and meal per diem rates, TZ





August 1st, 2019

Godfrey A. Kassanga Mjimwema Area/Kigamboni Dar es salaam TANZANIA

Dear Godfrey Kassanga,

RE: APPOINTMENT AS ADMINISTRATIVE MANAGER FOR GLOBAL ANIMAL HEALTH TANZANIA

The Washington State University-Global Animal Health Tanzania (GAHT) program is pleased to offer you the position indicated below.

Position Title:

Administrative Manager

Working Title:

Administrative Manager

Place of Recruitment:

Arusha

Location of work:

Global Animal Health Tanzania, Uzunguni Area, Sekou Toure

Road, Gymkhana, Arusha

Reporting:

School for Global Animal Health,

Director of Finance and Administration

Appointment Duration:

1st of September 2019 to 31st of August 2020

Gross Monthly Salary:

5,762,000 TZS

\$2,516.68

Start Date:

1st of September, 2019

Your position is responsible for the overall administrative coordination of Global Animal Health Tanzania (GAHT), a Non-Governmental Organization (NGO) in Arusha, Tanzania. In this position you will serve as the primary financial and personnel officer for GAHT and will operate with a broad level of independent judgment and decision making authority. You will report directly to the Paul G. Allen School for Global Animal Health, Director of Finance and Administration, an academic unit of Washington State University. You will manage the administrative functions of GAHT personnel, procurement, contracts, and finance units for GAHT. You will also manage the requisite NGO registrations and official documents, ensuring all are in order and filed with the respective United Republic of Tanzania agencies. Your responsibilities include assisting the Director of Finance and Administration and the President of

Global Animal Health-Tanzania: Improving Public Health and Catalyzing Human Opportunity Rivergardens Business Park, Usa River, Arusha PO Box 1642, Arusha, Tanzania Telephone: Office Line +255-688521020 www.globalhealth.wsu.cdu

GAHT in the development of long-and-short-term strategic plans for GAHT as a sustainable and responsive NGO, leading and managing administrative activities associated with the GAHT office, and ensuring operations are aligned with GAHT and Washington State University policies and procedures as well as in compliance with United Republic of Tanzania laws, regulations, and policies.

A detailed description of the position scope of work is provided in the position description that will be given to you upon reporting.

Note: See attached position description

The terms of engagement are as follows:

- 1. Engagement Duration: The period of service is for one (1) year from the start date indicated herein above (1st of September, 2019 to 31st of August, 2020), on a renewable basis upon consultation with and advice from the Director of Finance and Administration and approval of the officers of GAHT. Renewal is not automatic and no action or omission by the GAHT program or its management shall constitute or support any expectation of renewal, even where you may have had a previous renewal of contract.
- 3. Working Hours: The normal working hours are 40 hours a week from 8:00am to 5:00pm, with one-hour lunch break, from Monday to Friday. At times you will be expected to work outside of the normal working hours, however the position is not eligible for overtime due to the senior level of the employment. You will have teleconference meetings, normally weekly, with the Paul G. Allen School for Global Animal Health administrative team as well as with faculty engaged in research in Tanzania. These meetings, due to time zone difference, are likely to be scheduled outside of your normal working hours.
- 4. Salary: You will be paid a Gross Monthly Salary of 5,762,000 TZS. The salary is paid in arrears at the end of each working month for the duration of engagement as per the employment contract.

The said gross salary shall be subjected to statutory deductions as provided in relevant Legislation including but not limited to PAYE (income tax) and pension deductions.

- 5. Benefits: In addition to the salary, you will receive health insurance that you can enlist up to four immediate dependents who must be either your spouse or your legal child (biological child, legally adopted child or a child over whom you have a court mandated guardianship or custody).
- 6, Annual Leave: You will be entitled to annual leave of 22 days per year. These should be utilized within the duration of the contract through mutual agreement between you and your supervisor. You are also entitled to sick leave, maternity leave and compassionate leave as stipulated by law.
- 7. <u>Confidentiality:</u> During and after the term of employment (unless expressly authorized in writing) all information respecting the organization, management, policy, finances and others shall be confidential and not subject to disclosure to 3rd parties.

You will be required to complete training regarding prevention of discrimination and sexual harassment within six months of your date of hire. Information regarding this training is available at the following web site: <a href="https://dx.ncbi.nlm.ncbi.nl

All GAHT employees are required to adhere to the institution's policies and procedures. Please return a copy of this letter to Dr. Guy Palmer, President of GAHT, indicating whether you accept or decline the offer, not later than the 12th of August, 2019.

We are confident you will find this opportunity both challenging and rewarding, and we are delighted that you have chosen to pursue your career with the Global Animal Health Tanzania program.

Sincerely,

Dr. Guy Palmer Regents Professor

Senior Executive Director, Global Health

Washington State University

President, Global Animal Health-Tanzania

Rebecca Manning

Director of Finance and Administration School for Global Animal Health Secretary-Treasurer, Global Animal Health Tanzania

Resecca X. Manorin

Acceptance

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II. Acceptance

II. No. 19790707-11465

III. No. 19790707-11465

Provided thereto

Signature

March 22, 2019

Sarah Mollel P.O. Box 772, Arusha, Tanzania

Dear Sarah Mollel,

RE: APPOINTMENT AS PROGRAM COORDINATOR FOR GAHT

The Washington State University-Global Animal Health Tanzania (GAHT) program is pleased renew your position as indicated below.

Position Title: Program Coordinator

Working Title: Country Coordinator

Place of Recruitment: Arusha

Location of work: Global Animal Health Tanzania, Uzunguni Area, Sekou Toure

Road, Gymkhana, Arusha

Reporting: School for Global Animal Health Administrative Manager

Appointment Duration: 16th April, 2019 to 15th April, 2020

Gross Monthly Salary: 4,095,793.97 TSH \$1788.93

Start Date: 16th of April 2019

The position provides coordination and oversight for the numerous research projects that are carried out by Washington State University (WSU) and GAHT employees in Tanzania. Responsibilities include overseeing the purchase of supplies, disbursing funds, maintaining financial records for each project, managing reimbursements, processing payroll, managing all in country banking issues, working closely with in country auditors and legal counsel, assisting researchers in various research activities, organizing project related meetings and seminars, and managing the Arusha based GAHT office. Your position will report directly to School for Global Animal Health Administrative Manager. Additionally, you will receive direction and leadership from GAHT officers and WSU faculty coordinating research in Tanzania, and from the Washington State University administrative team, most directly from School for Global Animal Health Fiscal Analyst 3.

A detailed description of the position scope of work is provided in the position description. Note: **See attached position description**

The terms of engagement are as follows:

- 1. <u>Engagement Duration</u>: The period of service is for one (1) year from the start date indicated herein above (16 April 2019 to 15 April 2020), on a renewable basis upon consultation with and advice from the GAHT officers, and Administrative Manager Rebecca Manning. The contemplated renewal is not automatic and no action or omission by the GAHT program or its management shall constitute or support any expectation of renewal even where you may have had a previous renewal of contract.
- 3. <u>Working Hours:</u> The normal working hours are 40 hours a week from 8:00am to 5:00pm, with one-hour lunch break, from Monday to Friday. At times the Program Coordinator will be expected to work outside of the normal working hours, however the position is not eligible for overtime due to the senior level of the employee. Weekly you will have skype meetings, which due to time zone difference are likely to be scheduled outside of normal working hours, with WSU Research faculty and administrative team.
- **4. Salary:** You will be paid a Gross Monthly Salary of 4,095,793.97 TZS. The salary is paid in arrears at the end of each working month for the duration of engagement as per the employment contract.

The said gross salary shall be subjected to statutory deductions as provided in relevant Legislation including but not limited to PAYE (income tax) and pension deductions.

- **5.** <u>Benefits:</u> In addition to the salary, you will receive health insurance that can enlist up to four immediate dependents who must be either your spouse or your legal child (biological child, legally adopted child or a child over whom you have a court mandated guardianship or custody).
- **6.** <u>Annual Leave</u>: You will be entitled to annual leave of 22 days per year. These should be utilized within the duration of the contract through mutual agreement between you and WSU research faculty. The employee is also entitled to sick leave, maternity leave and compassionate leave as stipulated by law.
- **7.** <u>Confidentiality:</u> During and after the term of employment (unless expressly authorized in writing) all information respecting the organization, management, policy, finances and others shall be confidential and not subject to disclosure to 3rd parties.

All GAHT employees are required to adhere to the institution's policies and procedures. Please return a copy of this letter to Dr. Guy Palmer President of GAHT, indicating whether you accept or decline the offer, not later than April 15, 2019.

We are confident you will find this opportunity both challenging a forward to continuing to work with you at the Global Animal Heal	_
Sincerely,	
9HH2. Umer	
Dr. Guy Palmer Regents Professor Senior Executive Director, School for Global Animal Health at Wa President, Global Animal Health-Tanzania	ashington State University
<u>Acceptance</u>	
I, Sarah Mollel (Ido hereby accept /decline (delete whichever is not applicable) the approvided thereto	
	April 11th 2019
Signature	Date

Date

Name Address

Dear,

RE: APPOINTMENT AS PROJECT VETERINARIAN FOR GAHT

The Washington State University-Global Animal Health Tanzania (GAHT) program is pleased to offer you the position indicated below.

Position Title: Project Veterinarian

Place of Recruitment: Arusha

Location of work: Arusha and Meru Region, Tanzania

Reporting: Dr. Felix Lankester

Appointment Duration: One year

Gross Monthly Salary: 5,446,800 Tsh \$2,379

Start Date: XXXX

The role of the Project Veterinarian is to participate in field activities for collection of biological samples from livestock and wildlife species, including collection of samples and management of sample transport to laboratory facilities, and collection of survey data.

The terms of engagement are as follows:

- 1. Engagement Duration: The period of service is for one (1) year from the start date indicated herein above (xx/xx/xxxx to xx/xx/xxxx). The Contemplated renewal is not automatic and no action or omission by the GAHT program or its management shall constitute or support any expectation of renewal even where you may have had a previous renewal of contract. You also recognize that your position may be retrenched in the event of cessation or reduction funding and you accept that you will be retrenched by being given one (1) month notice and other minimum terms required by local legislation.
- 2. Working Hours: The normal working hours are 40 hours a week from 8:30am to 5:30pm, with one-hour lunch break, from Monday to Friday. Occasionally you may be required to work beyond 40 hours and anything beyond 45 hours per week shall be considered overtime. Overtime shall be paid in accordance with local legislation requirements but only in instances where you have received prior written approval to work overtime.

3. Salary: You will be paid a Gross Monthly Salary of 5,446,800 Tsh. The salary is paid in arrears at the end of each working month for the duration of engagement as per the employment contract.

The said gross salary shall be subjected to statutory deductions as provided in relevant Legislation including but not limited to PAYE (income tax) and pension deductions.

- **4.** <u>Benefits:</u> In addition to the salary, you will receive health insurance that can enlist up to four immediate dependents who must be either your spouse or your legal child (biological child, legally adopted child or a child over whom you have a court mandated guardianship or custody).
- 5. Annual Leave: Upon completing 12 months of continuous service, you will be entitled to annual leave of 28 consecutive days per year. These should be utilized within the duration of the contract through mutual agreement between you and the Country Director. Employees are also entitled to sick leave, maternity leave, paternity leave and compassionate leave as stipulated by law and clarified in the Employee Handbook.
- 6. <u>Bereavement:</u> In the case where the employee losses his immediate family member (child or spouse) the organization will provide 1,000,000Tsh as a support to the employee. Furthermore, when the employee dies GAHT will assist the family on funeral arrangements by providing them with 3,000,000Tsh.
- 7. <u>Confidentiality:</u> During the term of employment, (unless expressly authorized in writing) all information respecting the organization, management, policy, finances and others shall be confidential and not subject to disclosure to third parties.

All GAHT employees are required to adhere to the institution's policies and procedures as issued from time to time.

Please return a copy of this letter to the GAHT Country Coordinator, indicating whether you accept or decline the offer by XXXX.

We are confident you will find this new opportunity both challenging and rewarding, and are delighted that you have chosen to pursue your career with the Global Animal Health Tanzania program.

Sincerely,

Dr. Guy Palmer	
Regents Professor	
Washington State University	
Chairperson, Global Animal Health-Tanz	zunia
<u>Acceptance</u>	
I,applicable) the appointment and terms pro	
Signature	Date

Date

Name Address

Dear,

RE: APPOINTMENT AS FIELD ASSISTANT FOR GAHT

The Washington State University-Global Animal Health Tanzania (GAHT) program is pleased to offer you the position indicated below.

Position Title: Field Assistant

Place of Recruitment: Arusha

Location of work: Arusha and Meru Region, Tanzania

Reporting: Dr. Felix Lankester or Country Director

Appointment Duration: One year

Gross Monthly Salary: 1,144,800 Tsh \$1000

Full time equivalent: 50% Start Date: XXXX

The role of the Field Assistant is to drive project vehicles and assist with field activities.

The terms of engagement are as follows:

- 1. Engagement Duration: The period of service is for one (1) year from the start date indicated herein above (xx/xx/xxx to xx/xx/xxx). The Contemplated renewal is not automatic and no action or omission by the GAHT program or its management shall constitute or support any expectation of renewal even where you may have had a previous renewal of contract. You also recognize that your position may be retrenched in the event of cessation or reduction funding and you accept that you will be retrenched by being given one (1) month notice and other minimum terms required by local legislation.
- 2. <u>Probation:</u> You shall be subjected to a three-month probation period, after which a performance assessment will be conducted by the Country Director. Confirmation of appointment is subject to the satisfactory completion of the probationary period and approval by the Country Director.

During the probation period either party may terminate the contract for whatever reason upon giving one (1) week notice in writing or payment in lieu of such notice.

Thereafter either party may terminate the contract upon giving a minimum of 28 days' notice in writing or payment in lieu of such notice

- 3. <u>Working Hours:</u> The Field Assistant is expected to work the equivalent of 50% of a 40 hour per week full-time appointment. As this is not a full-time position, the hours of work will vary from week to week.
- **4. <u>Salary:</u>** You will be paid a Gross Monthly Salary of 1,144,800 Tsh. The salary is paid in arrears at the end of each working month for the duration of engagement as per the employment contract.

The said gross salary shall be subjected to statutory deductions as provided in relevant Legislation including but not limited to PAYE (income tax) and pension deductions.

- 5. Annual Leave: Upon completing 12 months of continuous service you will be entitled to annual leave of 6 working days per year. These should be utilized within the duration of the contract through mutual agreement between you and the Country Director. Employees are also entitled to sick leave, maternity leave, paternity leave and compassionate leave as stipulated by law and clarified in the Employee Handbook.
- **6.** <u>Confidentiality:</u> During the term of employment, (unless expressly authorized in writing) all information respecting the organization, management, policy, finances and others shall be confidential and not subject to disclosure to third parties.

All GAHT employees are required to adhere to the institution's policies and procedures. These policies are summarized in the Employee Handbook, which will be issued to all employees.

Please return a copy of this letter to the GAHT Country Director, indicating whether you accept or decline the offer, not later than XXXX.

We are confident you will find this new opportunity both challenging and rewarding, and are delighted that you have chosen to pursue your career with the Global Animal Health Tanzania program.

Sincerely,	
Dr. Guy Palmer	
Regents Professor	
Washington State University	
Chairman, Global Animal Health-Tanzania	
Acceptance	
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Signature	Date

HEALTH INSURANCE AND OTHER BENEFITS COSTS FOR GAHT EMPLOYEES

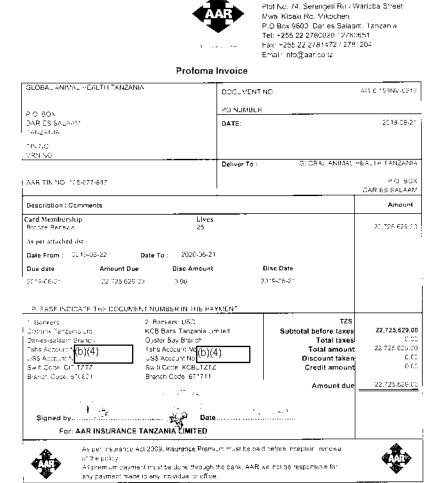
There are three major benefits for GAH employees (local staff) as follows;

1. 22 days per year as annual leave

Paid 20,574,101.40 for field team's insurance

- 2. 10% of gross salary as social security contribution, and
- 3. Health insurance for staff and up to 4 immediate dependents (spouse and children). The annual health insurance is TZS 22,725,629 equivalent to USD 9,900. Below is the proof of payments of Health Insurance for GAHT 7 employees for the period June 2019 June 2020.

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LOGICAL PRESENTATION OF REQUIREMENTS FOR APPLICATION OF RESEARCH CLEARANCE AND PERMIT AT COSTECH

The objective of the analysis that led to this presentation was to find a much more easier to understand presentation of the requirements to the prospective applicants.

GENERAL REQUIREMENTS: These apply to all applications

	Item	Foreigners Affiliated to Local Research and Higher Learning Institutions	Others (Tanzanian, Non Tanzanians, affiliated in a foreign country, affiliated locally, etc)
1	Detailed curriculum vitae	Required for all involved researchers	Required for all involved researchers
2	Full research proposal	Required	Required
3	Sponsor cover letter	Required	Required
4	Support letter from local collaborating institution / contact person	Required	Required
5	Recommendation letter for endorsement of the proposed research within the institution	Required	Not applicable
6	Front-page of passport	Required	Required
7	Proof of payment non- refundable application fees	50 USD	50 USD
8	Application form	Required	Required

REQUIREMENTS FOR SPECIFIC SCENARIOS

- a) Research related to medical, public health, drugs, clinical trials, and wildlife issues require special clearance from relevant authorities i.e National Institute of Medical Research (NIMR) for the study that involves medical, public health and / or human subject (health); Tanzania Food and Drug Authority for Clinical Trials; and Tanzania Wildlife Research Institute (TAWIRI) for the study that involves wildlife and natural resources conservation.
- b) In case of joining a new researcher to an on-going research which has already been granted a research permit, a Principal Investigator shall submit a request of research permit for a new member to COSTECH at least 2 months prior to his/her joining the research team with detailed curriculum vitae, clear justification and roles for an additional staff / researcher to the on-going project.
- c) It is anticipated that the PI will remain responsible for the entire lifetime of the project, unless circumstances necessitate a change of PI. In such rare situation the head of hosting research institution shall write to notify COSTECH within 6 months since termination of outgoing PI. This will be done in writing explaining the reason for the changes and suitability of a newly identified PI. The letter requesting for amendment, accompanied by an up to date progress report shall be subjected to approval process before continuing with the research. It is the responsibility of the hosting institution to submit the request for change of PI within specified time.

POST CLEARANCE

a) After the research has been cleared, the PI will be notified by email. All FOREIGNERS who then wishes to undertake research activities in the country under the cleared research project will be required to apply for permit by presenting a proof of payment of research permit fees (300 USD) and three passport size photos.

- b) All researchers granted research permit that involve collecting human, plant or animal materials / data that will be exported outside Tanzania must submit a signed Material Transfer Agreement (MTA) / Data Transfer Agreement (DTA) between Tanzania host institution and the foreign counterpart. The MTA/DTA will indicate terms for collecting, storing/managing, transporting, disposal or returning of the materials/DATA to Tanzania after the closure of the research project.
- c) An Applicant who has been permitted to conduct research in Tanzania is obliged to submit soft and **two (2) hard copies** (printed) and soft copy of his/her research report /thesis with COSTECH on completion of research.
- d) COSTECH will have an access to data and research premises of the permitted research projects.
- e) A Principal Investigator (PI) permitted to conduct research in Tanzania is obliged to submit a quarterly/annually report.
- f) Persons who have not submitted satisfactory final reports / thesis on previous research work in Tanzania may not be cleared for new projects. Attention will be drawn to the sponsoring institutions and referees on shared responsibility of making sure that researchers sponsored by them observe the foregoing regulations. A breach of the regulations could result in refusal of permits for other researchers sponsored by same institutions or referees.
- g) Any patent or intellectual property and royalty emanating from any research approved by the National Research Registration Committee (NRRC) should be owned by the respective research institutions involved.



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MINISTRY OF NATURAL RESOURCES AND TOURISM

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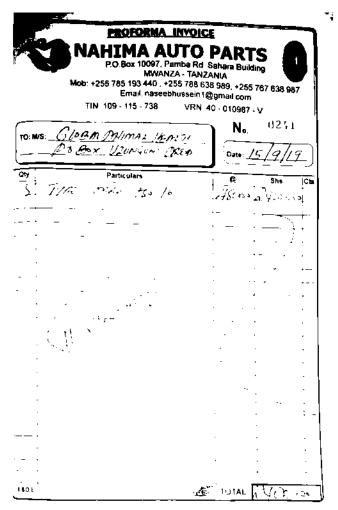
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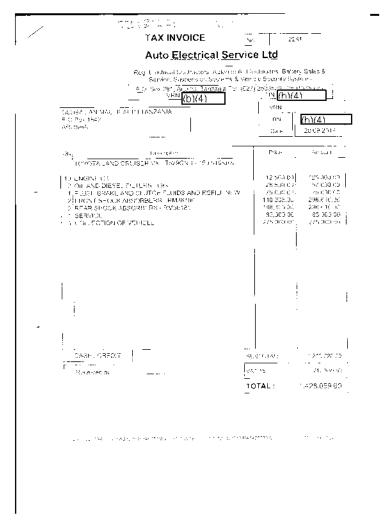
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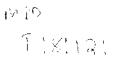
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UAP Insurance Tanzania Ltd

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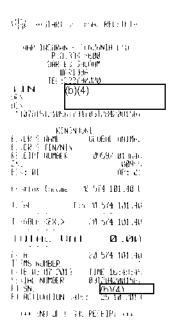
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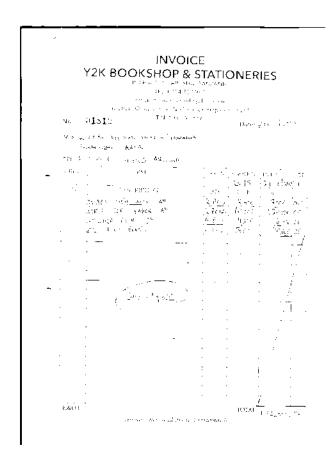
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OFFICE SUPPLIES

The list of office supplies is not exhaustive and we do not have recent comprehensive list yet. Several items were purchased a couple of days ago as seen in the documents below. Note that similar purchase can occur throughout the year USD 2,000. Below is the likely list of supplies and receipt for some of items that we purchased.

LIST OF COMMON OFFICE SUPPLIES 0.00043		Ex rate panda.com 11/5			
	Average	USD		Average	USD
Item	Price, TZS	Equivalent	Item	Price, TZS	Equivalent
A4 Printer paper	60,000.00	25.80	Hole puncher		-
Spiral bound notebooks - I	13,500.00	5.81	Legal pads	5,000.00	2.15
Box files	5,000.00	2.15	Manila folders	4,000.00	1.72
Stappler	7,500.00	3.23	Hanging folders	4,000.00	1.72
Punching machine	6,000.00	2.58	Paper clips	4,500.00	1.94
Pen	5,000.00	2.15	Binder clips	12,000.00	5.16
Pencils	2,500.00	1.08	Masking Tape	3,500.00	1.51
Highlighters	4,500.00	1.94	Packing Tape	4,500.00	1.94
Glue	6,000.00	2.58	White glue	6,500.00	2.80
Scissors	5,500.00	2.37	Pencil sharpner	2,500.00	1.08
Ruler	1,200.00	0.52	Erasers	1,500.00	0.65
Staplepins	3,500.00	1.51	Ink pad	3,500.00	1.51
Sticker notes	4,000.00	1.72	Correction fluid	2,500.00	1.08
Writing pads	6,000.00	2.58	Garbage bags	12,000.00	5.16
Electric extension cables	35,000.00	15.05	Broom	6,000.00	2.58
Dust bins	8,500.00	3.66	Dustpan	7,000.00	3.01
Office tray	25,000.00	10.75	Disinfectants	40,000.00	17.20
Paper shreader	320,000.00	137.60	Window cleaner	12,000.00	5.16
Notice board	70,000.00	30.10	Water dispenser refills	5,000.00	2.15
Cartilage	350,000.00	150.50	Coffee	12,000.00	5.16
Envelops	6,000.00	2.58			
Counter books	4,200.00	1.81			
Spiral note books - 5	3,500.00	1.51			





INVOICE

KILIMANJARO CHRISTIAN MEDICAL CENTRE



Kilimanjaro Christian Medical Centre
An Institution of the Good Samaritan Foundation

P.O. Box 3010, Moshi, Tanzania

Telephone: 255 27 2754377/83// Fax: 255 27 2754381

Email: kcmcadmin@kcmc.ac.tz Website: http://www.kcmc.ac.tz

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		OTHER CHARGES		Y
		TOTAL		USD 525=



WSU CONTRACT ##### DRAFT1

CONTRACT FOR PERSONAL SERVICES BETWEEN

WASHINGTON STATE UNIVERSITY AND

This contract is made and entered into by and between the state of Washington, Washington State University, hereinafter referred to as the "UNIVERSITY", and the below named firm or individual, hereinafter referred to as "CONTRACTOR."

NAME

ADDRESS

CITY STATE AND ZIP

TELEPHONE

EMAIL

FEDERAL ID NO.

WASHINGTON STATE UBI NO

WSU VENDOR NO.

STATE OF WA OMWBE CERTIFICATION

No.

1. PURPOSE

The purpose of this Contract is to provide expertise for a federally funded project entitled, "Crimean Congo Hemorrhagic Fever: Reducing an emerging health threat in Tanzania," University lead investigator Dr. Felix Lankester. CONTRACTOR will serve as the project mammologist.

2. SCOPE OF WORK

- A. The CONTRACTOR will provide services, and otherwise do all things necessary for or incidental to the performance of work, as set forth below:
 - 1. Assist field teams with the live trapping, sample collection and identification of small mammal species
 - 2. Ensure proper documentation of the species identified
 - 3. Write bi-monthly reports and submit to the University lead investigator, which will include a summary of field activities
 - 4. Attend study meetings as requested and report on progress of work
- B. Exhibits A and B contain the General Terms and Conditions governing work to be performed under this contract, the nature of the working relationship between the UNIVERSITY and the CONTRACTOR, and specific obligations of both parties.
- C. The CONTRACTOR shall produce the following deliverables by the dates indicated in the chart below:

DATE	DESCRIPTION OF DELIVERABLE ITEM
	A schedule of travel to be undertaken with field teams to conduct
	sampling activities and species identification of small mammals
	 Bi-monthly reports of field activities and species identification
	 Attendance at study related meetings as requested

3. PERIOD OF PERFORMANCE

The period of performance under this contract will be from xxxx through xxxx.

The execution of this Contract shall constitute a ratification of that earlier verbal agreement between the parties, the terms and conditions of which are contained herein. Accordingly, the beginning date of performance under this Contract shall be xxxx regardless of the date of execution. UNIVERSITY shall reimburse the CONTRACTOR for those costs incurred in performance hereunder, for that period between the beginning date of performance and the date of execution of this Contract.

4. COMPENSATION AND PAYMENT

All compensation amounts and funds due to CONTRACTOR are stated in U.S. Dollars (USD Payments will be made in Tanzania Shilling by UNIVERSITY'S Local Affiliate, PFK Limited and non-government agency, Global Animal Health Tanzania (GAHT). UNIVERSITY and GAHT will not compensate CONTRACTOR for currency exchange fluctuations through the issuance of payment.

Payments to CONTRACTOR will be subjected to all Tanzanian tax regulation.

UNIVERSITY shall pay an amount not to exceed \$12,000.00 for the performance of all things necessary for or incidental to the performance of work as set forth in the Scope of Work. CONTRACTOR'S compensation for services rendered shall be based on the following rates or in accordance with the following terms:

- A. Fees: At the rate of \$500.00 per month an amount not to exceed \$6,000.00 per year; which amount is included in the not-to-exceed compensation amount.
- B. **Expenses:** The UNIVERSITY shall provide coverage of travel expenses related to official work that has been approved in advance by the Project Manager, including:
 - 1. Lodging and subsistence necessary during periods of required travel.

5. BILLING PROCEDURES

UNIVERSITY will pay CONTRACTOR upon receipt of properly completed invoices, which may be submitted to the Contract Manager via email. The billing address for invoices is:

Washington State University

Controllers Office

Attn: WSU Contract XXXX~ Rebecca Manning, Mail Code 7090

P.O. Box 641025

Pullman, WA 99164-1025

The invoices shall describe and document to the UNIVERSITY'S satisfaction a description of the work performed, the progress of the project, and fees. If expenses are invoiced, provide a detailed breakdown of each type. Any single expense in the amount of \$50.00 or more must be accompanied by a receipt in order to receive reimbursement.

Payment shall be considered timely if made by the UNIVERSITY within thirty (30) days after receipt of properly completed invoices. Payment shall be sent to the address designated by the CONTRACTOR.

The UNIVERSITY may, in its sole discretion, terminate the contract or withhold payments claimed by the CONTRACTOR for services rendered if the CONTRACTOR fails to satisfactorily comply with any term or condition of this contract.

No payments in advance or in anticipation of services or supplies to be provided under this contract shall be made by the UNIVERSITY.

6. CONTRACT MANAGEMENT

A. The Contract Manager for each of the parties shall be the contact person for all communications regarding the performance of this contract and billing.

CONTRACT MANAGER FOR THE CONTRACT MANAGER FOR THE

CONTRACTOR UNIVERSITY

NAME Rebecca Manning

ADDRESS Paul G. Allen School for Global Animal

Health

P.O. Box 647090

Address Pullman, WA 99164-7090

TELEPHONE 509-335-5861

EMAIL manningr@wsu.edu

DES Training Completed? yes

no

B. The Project Manager for each of the parties will be point of contact for scope of work. Project Manager for UNIVERSITY will receive and accept deliverables and determine if CONTRACTOR has satisfactorily completed the scope of work.

PROJECT MANAGER FOR THE PROJECT MANAGER FOR THE UNIVERSITY

CONTRACTOR

NAME Dr. Felix Lankester
ADDRESS P. O. Box 647090

ADDRESS Pullman, WA 99164-7090

TELEPHONE +44 7426 426831

EMAIL Felix.lankester@wsu.edu

7. <u>INSURANCE</u>

The CONTRACTOR shall insure themselves and any persons working for their organization; and they shall be exclusively liable for any claims arising from them and/or their employees, from performance of their obligations of this Contract.

CONTRACTOR shall submit to UNIVERSITY within 15 days of the Contract effective date, a certificate of insurance that outlines the coverage and limits defined in the Insurance section. The mailing address for certificate holder is:

Washington State University Contract ##### PO Box 641020 Pullman, WA 99164-1020

8. ASSURANCES

UNIVERSITY and the CONTRACTOR agree that all activity pursuant to this contract will be in accordance with all the applicable current federal, state and local laws, rules, and regulations.

9. ORDER OF PRECEDENCE

Each of the Exhibits listed below is by this reference hereby incorporated into this contract. In the event of an inconsistency in this contract, the inconsistency shall be resolved by giving precedence in the following order:

- 1. Applicable Federal and state of Washington statutes and regulations
- 2. Special Terms and Conditions as contained in this basic contract instrument
- 3. Exhibit B FAR Terms and Conditions (for Federal Grant Funded Purchases only)
- 4. Exhibit A UNIVERSITY General Terms and Conditions
- 5. Any other provision, term or material incorporated herein by reference or otherwise incorporated.

10. ENTIRE AGREEMENT

This contract including referenced exhibits represents all the terms and conditions agreed upon by the parties. No other statements or representations, written or oral, shall be deemed a part hereof.

11. CONFORMANCE

If any provision of this contract violates any statute or rule of law of the state of Washington, it is considered modified to conform to that statute or rule of law.

12. APPROVAL

This contract shall be subject to the written approval of the UNIVERSITY'S authorized representative and shall not be binding until so approved. The contract may be altered, amended, or waived only by a written amendment executed by both parties.

This CONTRACT, consisting of FOUR pages and two attachments named Exhibit A and Exhibit B, is executed by the persons signing below who warrant that they have the authority to execute the agreement.

TYPE CONTRACTOR NAME HERE		WASHINGTON STATE UNIVERSITY		
Signature	Date	Patty Gropp, C.P.M	Date	
Name of signatory		Associate Director, Purchasing		
Title of signatory				
Email address of signatory				

WSU Contract XXXX Exhibit A

GENERAL TERMS AND CONDITIONS FOR PERSONAL SERVICES CONTRACT

DEFINITIONS

As used throughout this CONTRACT, the following terms shall have the meaning set forth below:

- A. "UNIVERSITY" shall mean Washington State University, an institution of higher education of the State of Washington, any division, section, office, unit or other entity of the UNIVERSITY, or any of the officers or other officials lawfully representing that UNIVERSITY.
- B. "AGENT" shall mean the delegated individual authorized in writing to act on the UNIVERSITY'S behalf.
- C. "CONTRACTOR" shall mean that firm, provider, organization, individual or other entity performing service(s) under this contract, and shall include all employees of the CONTRACTOR.
- D. "SUBCONTRACTOR" shall mean one not in the employment of the CONTRACTOR, who is performing all or part of those services under this contract under a separate contract with the CONTRACTOR. The terms "SUBCONTRACTOR" and "SUBCONTRACTORS" means SUBCONTRACTOR(s) in any tier.

ACCESS TO DATA

In compliance with RCW 39.26.180, the CONTRACTOR shall provide access to data generated under this contract to UNIVERSITY, the Joint Legislative Audit and Review Committee, and the State Auditor at no additional cost. This includes access to all information that supports the findings, conclusions, and recommendations of the CONTRACTOR'S reports, including computer models and methodology for those models.

ADVANCE PAYMENTS PROHIBITED

In accordance with state law, no payments in advance of or in anticipation of goods or services to be provided under this CONTRACT shall be made by the UNIVERSITY.

AMENDMENTS

This CONTRACT may be amended by mutual agreement of the parties. Such amendments shall not be binding unless they are in writing and signed by personnel authorized to bind each of the parties.

ASSIGNMENT

Neither this contract, nor any claim arising under this contract, shall be transferred or assigned by the CONTRACTOR without prior written consent of the UNIVERSITY.

ATTORNEYS' FEES

In the event of litigation or other action brought to enforce contract terms, each party agrees to bear its own attorney fees and costs.

CONFIDENTIALITY/SAFEGUARDING OF INFORMATION

The CONTRACTOR shall not use or disclose any information concerning the UNIVERSITY, or information that may be classified as confidential, for any purpose not directly connected with the administration of this contract, except with prior written consent of the UNIVERSITY, or as may be required by law.

CONFLICT OF INTEREST

Notwithstanding any determination by the Executive Ethics Board or other tribunal, the UNIVERSITY may, in its sole discretion, by written notice to the CONTRACTOR terminate this contract if it is found after due notice and examination by the UNIVERSITY that there is a violation of the Ethics in Public Service Act, Chapter 42.52 RCW; or any similar statute involving the CONTRACTOR in the procurement of, or performance under this contract.

In the event this contract is terminated as provided above, the UNIVERSITY shall be entitled to pursue the same remedies against the CONTRACTOR as it could pursue in the event of a breach of the contract by the CONTRACTOR. The rights and remedies of the UNIVERSITY provided for in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law. The existence of facts upon which the AGENT makes any determination under this clause shall be an issue and may be reviewed as provided in the "Disputes" clause of this contract.

COPYRIGHT PROVISIONS

Unless otherwise provided, all materials produced under this contract shall be considered "works for hire" as defined by the U.S. Copyright Act and shall be owned by the UNIVERSITY. The UNIVERSITY shall be considered the author of such materials. In the event the materials are not considered "works for hire" under the U.S. Copyright laws, CONTRACTOR hereby irrevocably assigns all right, title, and interest in materials, including all intellectual property rights, to the UNIVERSITY effective from the moment of creation of such materials.

Materials means all items in any format and includes, but is not limited to, data, reports, documents, pamphlets, advertisements, books, magazines, surveys, studies, computer programs, films, tapes, and/or sound reproductions. Ownership includes the right to copyright, patent, register and the ability to transfer these rights.

For materials that are delivered under the contract, but that incorporate pre-existing materials not produced under the contract, CONTRACTOR hereby grants to the UNIVERSITY a nonexclusive, royalty-free, irrevocable license (with rights to sublicense others) in such materials to translate, reproduce, distribute, prepare derivative works, publicly perform, and publicly display. The CONTRACTOR warrants and represents that CONTRACTOR has all rights and permissions, including intellectual property rights, moral rights and rights of publicity, necessary to grant such a license to the UNIVERSITY.

The CONTRACTOR shall exert all reasonable effort to advise the UNIVERSITY, at the time of delivery of materials furnished under this contract, of all known or potential invasions of privacy contained therein and of any portion of such document that was not produced in the performance of this contract.

The UNIVERSITY shall receive prompt written notice of each notice or claim of infringement received by the CONTRACTOR with respect to any data delivered under this contract. The UNIVERSITY shall have the right to modify or remove any restrictive markings placed upon the data by the CONTRACTOR.

COVENANT AGAINST CONTINGENT FEES

The CONTRACTOR warrants that no person or selling agent has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage or contingent fee, excepting bona fide employees or bona fide established agents maintained by the CONTRACTOR for securing business.

The UNIVERSITY shall have the right, in the event of breach of this clause by the CONTRACTOR, to annul this contract without liability or, in its discretion, to deduct from the contract price or consideration or recover by other means the full amount of such commission, percentage, brokerage or contingent fee.

DISALLOWED COSTS

The Contractor is responsible for any audit exceptions or costs disallowed by the UNIVERSITY that are incurred by the Contractor or its Subcontractors.

DISPUTES

In the event that a dispute arises under this Contract that the parties can't resolve, they shall allow the dispute to be decided by a Dispute Panel in the following manner: each party to this Contract shall appoint one member to the Dispute Panel, and the members so appointed shall jointly appoint an additional member to the Dispute Panel. The Dispute Panel shall review the facts, contract terms and applicable statutes and rules and make a determination of the dispute. The determination of the Dispute Panel shall be final and binding on the parties hereto. The parties shall equally share the costs, if any, for the services of the Dispute Panel.

Nothing in this contract shall be construed to limit the parties' choice of a mutually acceptable alternate dispute resolution method in addition to the dispute resolution procedure outlined above.

DUPLICATE PAYMENT

The UNIVERSITY shall not pay the CONTRACTOR, if the CONTRACTOR has charged or will charge Washington State University, the State of Washington or any other party under any other contract or agreement, for the same services or expenses.

FUNDING CONTINGENCY

In the event funding from state, federal, or other sources is withdrawn, reduced, or limited in any way after the effective date of this contract and prior to normal completion, the UNIVERSITY may terminate the contract under the "Termination for Convenience" clause, without the ten-day notice requirement, subject to renegotiation at the UNIVERSITY'S discretion under those new funding limitations and conditions.

GOVERNING LAW

This contract shall be construed and interpreted in accordance with the laws of the State of Washington, and the venue of any action brought hereunder shall be in the Superior Court for Whitman County.

INDEMNIFICATION

To the fullest extent permitted by law, CONTRACTOR shall indemnify, defend, and hold harmless Washington State University, the State of Washington, agencies of the State and all officials, agents and employees of the State, from and against all claims for injuries or death arising out of or resulting from the performance of the contract. "Claim," as used in this contract, means any financial loss, claim, suit, action, damage, or expense, including but not limited to attorney's fees, attributable for bodily injury, sickness, disease, or death, or injury to or destruction of tangible property including loss of use resulting therefrom.

CONTRACTOR'S obligations to indemnify, defend, and hold harmless includes any claim by CONTRACTORS' agents, employees, representatives, or any subcontractor or its employees.

CONTRACTOR expressly agrees to indemnify, defend, and hold harmless Washington State University and the State of Washington for any claim arising out of or incident to CONTRACTOR'S or any subcontractor's performance or failure to perform the contract. CONTRACTOR'S obligation to indemnify, defend, and hold harmless Washington State University and the State of Washington shall not be eliminated or reduced by any actual or alleged concurrent negligence of State or its agents, agencies, employees and officials.

CONTRACTOR waives its immunity under Title 51 RCW to the extent it is required to indemnify, defend and hold harmless Washington State University and the State of Washington and its agencies, officials, agents or employees.

INDEPENDENT CAPACITY OF THE CONTRACTOR

The parties intend that an independent contractor relationship will be created by this contract. The CONTRACTOR and his or her employees or agents performing under this contract are not employees or agents of the UNIVERSITY. The CONTRACTOR will not hold himself/herself out as or claim to be an officer or employee of the UNIVERSITY or of the State of Washington by reason hereof, nor will the CONTRACTOR make any claim of right, privilege or benefit that would accrue to such employee under law. Conduct and control of the work will be solely with the CONTRACTOR.

INDUSTRIAL INSURANCE COVERAGE

The CONTRACTOR shall comply with the provisions of Title 51 RCW, Industrial Insurance. If the CONTRACTOR fails to provide industrial insurance coverage or fails to pay premiums or penalties on behalf of its employees, as may be required by law, UNIVERSITY may collect from the CONTRACTOR the full amount payable to the Industrial Insurance accident fund. The UNIVERSITY may deduct the amount owed by the CONTRACTOR to the accident fund from the amount payable to the CONTRACTOR by the UNIVERSITY under this contract, and transmit the deducted amount to the Department of Labor and Industries, (L&I) Division of Insurance Services. This provision does not waive any of L&I's rights to collect from the CONTRACTOR.

LICENSING, ACCREDITATION AND REGISTRATION

The CONTRACTOR shall comply with all applicable local, state, and federal licensing, accreditation and registration requirements/standards, necessary for the performance of this contract.

LIMITATION OF AUTHORITY

Only a WSU UNIVERSITY'S personnel authorized in writing to bind UNIVERSITY (delegation to be made prior to action) shall have the express, implied, or apparent authority to alter, amend, modify, or waive any clause or condition of this contract. Any alterations, amendment, modifications, or waivers made by UNIVERSITY personnel or employees without such written authority will not be effective or binding unless also made in writing and signed by an authorized UNIVERSITY representative.

NONDISCRIMINATION

During the performance of this contract, the CONTRACTOR shall comply with all federal and state nondiscrimination laws, regulations and policies, including the AMERICANS WITH DISABILITIES ACT (ADA) OF 1990, PUBLIC LAW 101-336, also referred to as the "ADA" 28 CFR Part 35.

In the event of the CONTRACTOR'S non-compliance or refusal to comply with any nondiscrimination law, regulation, or policy, this contract may be rescinded, canceled or terminated in whole or in part, and the CONTRACTOR may be declared ineligible for further contracts with the UNIVERSITY. The CONTRACTOR shall, however, be given a reasonable time in which to cure this noncompliance. Any dispute may be resolved in accordance with the "Disputes" procedure set forth herein.

PRIVACY

Personal information including, but not limited to, "Protected Health Information," collected, used, or acquired in connection with this contract shall be protected against unauthorized use, disclosure, modification or loss. CONTRACTOR shall ensure its directors, officers, employees, subcontractors or agents use personal information solely for the purposes of accomplishing the services set forth herein. CONTRACTOR and its subcontractors agree not to release, divulge, publish, transfer, sell or otherwise make known to unauthorized persons personal information without the express written consent of the UNIVERSITY or as otherwise required by law.

Any breach of this provision may result in termination of the contract and the demand for return of all personal information. The CONTRACTOR agrees to indemnify and hold harmless the UNIVERSITY for any damages related to the CONTRACTOR'S unauthorized use of personal information.

PUBLICITY

The CONTRACTOR agrees to submit to the UNIVERSITY all advertising and publicity matters relating to this contract wherein the UNIVERSITY'S name is mentioned or language used from which the connection of the UNIVERSITY'S name may, in the UNIVERSITY'S judgment, be inferred or implied. The CONTRACTOR agrees not to publish or use such advertising and publicity matters without the prior written consent of the UNIVERSITY.

RECORDS MAINTENANCE

The CONTRACTOR shall maintain books, records, documents, data and other evidence relating to this contract and performance of the services described herein, including but not limited to accounting procedures and practices that sufficiently and properly reflect all direct and indirect costs of any nature expended in the performance of this contract.

CONTRACTOR shall retain such records for a period of six years following the date of final payment. At no additional cost, these records, including materials generated under the contract, shall be subject at all reasonable times to inspection, review or audit by the UNIVERSITY, personnel duly authorized by the UNIVERSITY, the Office of the State Auditor, and federal and state officials so authorized by law, regulation or agreement.

If any litigation, claim or audit is started before the expiration of the six (6) year period, the records shall be retained until all litigation, claims, or audit findings involving the records have been resolved.

REGISTRATION WITH DEPARTMENT OF REVENUE

If required to do so by law, the CONTRACTOR shall complete registration with the Washington State Department of Revenue and be responsible for payment of all taxes due on payments made under this contract.

RIGHT OF INSPECTION

The CONTRACTOR shall provide right of access to its facilities to the UNIVERSITY, or any of its officers, or to any other authorized agent or official of the state of Washington or the federal government, at all reasonable times, in order to monitor and evaluate performance, compliance, and/or quality assurance under this contract.

SEVERABILITY

The provisions of this contract are intended to be severable. If any term or provision is illegal or invalid for any reason whatsoever, such illegality or invalidity shall not affect the validity of the remainder of the contract.

SITE SECURITY

While on UNIVERSITY premises, CONTRACTOR, its agents, employees, or subcontractors shall conform in all respects with UNIVERSITY'S physical, fire or other security policies or regulations.

SUBCONTRACTING

Neither the CONTRACTOR nor any approved SUBCONTRACTOR shall enter into subcontracts for any of the work contemplated under this Contract without obtaining prior written approval of the UNIVERSITY. In no event shall the existence of the subcontract operate to release or reduce the liability of the CONTRACTOR to the UNIVERSITY for any breach in the performance of the CONTRACTOR's duties. This clause does not include contracts of employment between the contractor and personnel assigned to work under this contract.

Additionally, the CONTRACTOR is responsible for ensuring that all terms, conditions, assurances and certifications set forth in this CONTRACT are carried forward to any subcontracts. CONTRACTOR and its subcontractors agree not to release, divulge, publish, transfer, sell or otherwise make known to unauthorized persons personal information without the express written consent of the UNIVERSITY or as provided by law.

TAXES

All payments accrued because of payroll taxes, unemployment contributions, any other related taxes, insurance or other expenses for the CONTRACTOR or its staff shall be the sole responsibility of the CONTRACTOR.

TERMINATION FOR CAUSE

In the event the UNIVERSITY determines the CONTRACTOR has failed to comply with the conditions of this contract in a timely manner, the UNIVERSITY has the right to suspend or terminate this contract. Before suspending or terminating the contract, the UNIVERSITY shall notify the CONTRACTOR in writing of the need to take corrective action. If corrective action is not taken within 30 calendar days of date of notice, the contract may be terminated or suspended.

In the event of termination or suspension, the CONTRACTOR shall be liable for damages as authorized by law including, but not limited to, any cost difference between the original contract and the replacement or cover contract and all administrative costs directly related to the replacement contract, e.g., cost of the competitive bidding, mailing, advertising and staff time.

The UNIVERSITY reserves the right to suspend all or part of the contract, withhold further payments, or prohibit the CONTRACTOR from incurring additional obligations of funds during investigation of the alleged compliance breach and pending corrective action by the CONTRACTOR or a decision by the UNIVERSITY to terminate the contract. A termination shall be deemed a "Termination for Convenience" if it is determined that the CONTRACTOR: (1) was not in default; or (2) failure to perform was outside of his or her control, fault or negligence.

The rights and remedies of the UNIVERSITY provided in this contract are not exclusive and are, in addition to any other rights and remedies, provided by law.

TERMINATION FOR CONVENIENCE

Except as otherwise provided in this Contract, the UNIVERSITY may, by 30 calendar days written notice terminate this Contract, in whole or in part. If this Contract is so terminated, the UNIVERSITY shall be liable only for payment required under the terms of this contract for services rendered or goods delivered prior to the effective date of termination.

TERMINATION PROCEDURES

Upon termination of this CONTRACT, the UNIVERSITY, in addition to any other rights provided in this CONTRACT, may require the CONTRACTOR to deliver to the UNIVERSITY any property specifically produced or acquired for the performance of such part of this contract as has been terminated. The provisions of the "Treatment of Assets" clause shall apply in such property transfer.

The UNIVERSITY shall pay to the CONTRACTOR the agreed upon price, if separately stated, for completed work and services accepted by the UNIVERSITY, and the amount agreed upon by the CONTRACTOR and the UNIVERSITY for (i) completed work and services for which no separate price is stated, (ii) partially completed work and services, (iii) other property or services that are accepted by the UNIVERSITY, and (iv) the protection and preservation of property, unless the termination is for default, in which case the AGENT shall determine the extent of the liability of the UNIVERSITY. Failure to agree with such determination shall be a dispute within the meaning of the "Disputes" clause of this contract. The UNIVERSITY may, in good faith, withhold from any amounts due the CONTRACTOR such sum as the AGENT determines to be necessary to protect the UNIVERSITY against potential loss or liability.

The rights and remedies of the UNIVERSITY provided in this section shall not be exclusive and are in addition to any other rights and remedies provided by law or under this Contract.

After receipt of a notice of termination, and except as otherwise directed by the UNIVERSITY, the CONTRACTOR shall:

- 1. Stop work under the contract on the date, and to the extent specified, in the notice;
- 2. Place no further orders or subcontracts for materials, services, or facilities except as may be necessary for completion of such portion of the work under the contract that is not terminated;
- 3. Assign to the UNIVERSITY, in the manner, at the times, and to the extent directed by the UNIVERSITY, all of the rights, title, and interest of the CONTRACTOR under the orders and subcontracts so terminated, in which case the UNIVERSITY has the right, at its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts:
- 4. Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, with the approval or ratification of the UNIVERSITY to the extent UNIVERSITY may require, which approval or ratification shall be final for all the purposes of this clause;
- 5. Transfer title to the UNIVERSITY and deliver in the manner, at the times, and to the extent directed by the UNIVERSITY any property which, if the contract had been completed, would have been required to be furnished to the UNIVERSITY;
- 6. Complete performance of such part of the work as shall not have been terminated by the UNIVERSITY; and
- 7. Take such action as may be necessary, or as the UNIVERSITY may direct, for the protection and preservation of the property related to this contract, which is in the possession of the CONTRACTOR and in which the UNIVERSITY has or may acquire an interest.

TREATMENT OF ASSETS

- A. Title to all property furnished by the UNIVERSITY shall remain in the UNIVERSITY. Title to all property furnished by the CONTRACTOR, for the cost of which the CONTRACTOR is entitled to be reimbursed as a direct item of cost under this contract, shall pass to and vest in the UNIVERSITY upon delivery of such property by the CONTRACTOR. Title to other property, the cost of which is reimbursable to the CONTRACTOR under this contract, shall pass to and vest in the UNIVERSITY upon (i) issuance for use of such property in the performance of this contract, or (ii) commencement of use of such property in the performance of this contract, or (iii) reimbursement of the cost thereof by the UNIVERSITY in whole or in part, whichever first occurs.
- B. Any property of the UNIVERSITY furnished to the CONTRACTOR shall, unless otherwise provided herein or approved by the UNIVERSITY, be used only for the performance of this contract.
- C. The CONTRACTOR shall be responsible for any loss or damage to property of the UNIVERSITY that results from the negligence of the CONTRACTOR or which results from the failure on the part of the CONTRACTOR to maintain and administer that property in accordance with sound management practices.
- D. If any UNIVERSITY property is lost, destroyed or damaged, the CONTRACTOR shall immediately notify the UNIVERSITY and shall take all reasonable steps to protect the property from further damage.
- E. The CONTRACTOR shall surrender to the UNIVERSITY all property of the UNIVERSITY prior to settlement upon completion, termination or cancellation of this contract
- F. All reference to the CONTRACTOR under this clause shall also include CONTRACTOR'S employees, agents or SUBCONTRACTORS.

WAIVER

Waiver of any default or breach shall not be deemed a waiver of any subsequent default or breach. Any waiver shall not be construed to be a modification of the terms of this contract unless stated to be such in writing and signed by authorized representative of the UNIVERSITY.

CONTRACT TERMS AND CONDITIONS FOR FEDERAL GRANT FUNDED PURCHASES

The WASHINGTON STATE UNIVERSITY by and through its Board of Regents has entered into an agreement with the United States of America. This Contract is entered into with the Contractor in furtherance of the performance of the work required by that agreement. When interpreting applicable provisions of 2 CFR Part 200 and its appendices, "Federal Agency" or "Federal Awarding Agency" shall refer to the agency of the United States Government from whom the Washington State University ("WSU") has received grant funds to be expended under this Contract, "Non-Federal Entity" shall refer to the Washington State University, "Contractor" shall refer to the contractor with whom the Washington State University has entered into this contract and "Contract" shall refer to this contract between the Washington State University and Contractor.

By accepting this order or by entering into this Contract, a Contract between the Washington State University and the Contractor is formed. Contractor agrees to furnish the subject matter required by this order or Contract and agrees to all terms and conditions included by Washington State University, including the terms and conditions specified below. Any other applicable provisions of 2 CFR Part 200 are hereby incorporated by reference and shall have full force and effect.

- 1. **Breach, Default, Termination:** The Washington State University reserves the right to pursue all available legal, administrative, contractual or equitable remedies in the event of Contractor's breach of contract or violation of any term of this contract. The Washington State University shall have the right to terminate this contract for cause, and shall retain all rights and remedies against Contractor. The Washington State University shall also have the right to terminate this Contract for convenience upon thirty (30) days' notice to Contractor. Breach and/or Termination of this Contract shall be addressed in the manner prescribed in the WSU Standards Terms and Conditions.
- 2. **Equal Employment Opportunity:** Except as otherwise provided in 41 CFR Part 60, all "federally assisted construction contracts," as defined in 41 CFR Part 60-1.3 are subject to the Equal Opportunity clause contained in 41 CFR 60-1.4(b), incorporated by reference. Furthermore, the Equal Opportunity clause contained in 41 CFR 60-1.4(b) applies to all nonexempt subcontracts entered into by Contractor under this Contract, and Contractor agrees to include the Equal Opportunity clause contained in 41 CFR 60-1.4(b) in all nonexempt subcontracts.
- 3. Davis-Bacon Act, as amended (40 U.S.C. 3141-3148): Where applicable, all prime construction contracts in excess of \$2,000 shall comply with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the Davis-Bacon Act, contractors must pay wages to laborers and mechanics at a rate not less than prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must pay wages not less than once per week. If the Davis-Bacon Act applies to this Contract award of this Contract is conditioned upon the acceptance of the wage determination. The Washington State University will report all suspected or reported violations of the Davis-Bacon Act to the Federal Awarding Agency.
- 4. Copeland "Anti-Kickback" Act (40 U.S.C. 3145): Where applicable, all prime construction contracts over \$2,000 are subject to the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Washington State University will report all suspected or reported violations to the Federal Awarding Agency. The Act provides that each contractor or subrecipient shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he is otherwise entitled. The recipient shall report all suspected or reported violations to the Federal awarding agency.
- 5. Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708): Where applicable, all contracts over \$100,000 which will involve the use of mechanics or laborers shall comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each Contractor is required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 apply to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

- 6. **Rights to Inventions Made Under a Contract or Agreement:** For Contracts awarded by the Washington State University under a "funding agreement," as defined in 37 CFR 401.2(a) between a Federal Awarding Agency and the Washington State University, if the Washington State University or Contractor wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under the "funding agreement," the Washington State University or Contractor must comply with the requirements of 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.
- 7. Clean Air Act (42 U.S.C. 7401-7671q): For Contracts and subgrants over \$150,000, the Washington State University and Contractor shall comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q). The Washington State University shall report violations to the Federal Awarding Agency and the Regional Office of the Environmental Protection Agency (EPA).
- 8. **Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended:** For Contracts and subgrants over \$150,000, the Washington State University and Contractor shall comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). The Washington State University shall report violations to the Federal Awarding Agency and the Regional Office of the Environmental Protection Agency (EPA).
- 9. Energy Policy and Conservation Act (42 U.S.C. 6201): The Contractor shall comply with all mandatory standards and policies relating to energy efficiency contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. 6201).
- 10. **Debarment and Suspension (Executive Orders** 12549 **and 12689):** The Washington State University's award of this Contract is conditioned upon the Contractor's current and continued eligibility. Contractor is eligible unless Contractor is listed on the government-wide Excluded Parties List System in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR Part 1986 Comp., p. 189) and 12689 (3 CFR Part 1989 Comp., p. 235), "Debarment and Suspension." The Excluded Parties List System in SAM contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549. If a contractor is listed on the Excluded Parties List System in SAM, Contractor shall have the obligation to promptly inform a Washington State University contract manager, and this Contract shall be immediately terminated without liability on the part of the Washington State University or the Federal Awarding Agency.
- 11. **Byrd Anti-Lobbying Amendment (31 U.S.C. 1352):** For Contracts over \$150,000, Contractor warrants it filed the required certification prior to Contract award and payment. Contractor certifies that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Contractor shall require such certification and disclosure from any subcontractors used. Any further subcontractors must certify and disclose to the subcontractor awarding the subcontract. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures under this Contract shall be forwarded up from tier to tier up to the Washington State University.
- 12. Solid Waste Disposal Act (42 USC 6901-6992k): Contractor must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired by the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

Global Animal Health-Tanzania

December 4, 2019

RE: TRANSLATION SERVICES ESTIMATES

We will be translating the survey tools from English into Swahili and vernacular tribal languages. Translation services will be sourced in Arusha town and are estimated at;

\$800 Year 1;

\$872 Year 4.

\$1,672 total

Sincerely Yours,

Godfrey A. Kassanga

Administrative Manager/Finance and Operations

Global Animal Health Tanzania.

COLLEGES AND UNIVERSITIES RATE AGREEMENT

EIN:

ORGANIZATION:

Washington State University French Admin. Bldg., Rm. 240Q P.O. Box 641025 Pullman, WA 99164-1025

DATE: 12/09/2015

FILING REF.: The preceding

agreement was dated

07/08/2014

The rates approved in this agreement are for use on grants, contracts and other agreements with the Federal Government, subject to the conditions in Section III.

SECTION I: INDIRECT COST RATES

RATE TYPES:

FIXED

FINAL

PROV. (PROVISIONAL) PRED. (PREDETERMINED)

EFFECTIVE PERIOD

TYPE	FROM	TO	RATE (%) LOCATION	APPLICABLE TO
PRED.	07/01/2015	06/30/2016	51.00 On-Campus	Organized Research
PRED.	07/01/2016	06/30/2017	52.00 On-Campus	Organized Research
PRED.	07/01/2017	06/30/2019	53.00 On-Campus	Organized Research
PRED.	07/01/2015	06/30/2019	26.00 Off-Campus	Organized Research
PRED.	07/01/2015	06/30/2019	57.50 On-Campus	Instruction
PRED.	07/01/2015	06/30/2019	26.00 Off-Campus	Instruction
PRED.	07/01/2015	06/30/2019	36.00 On-Campus	Other Sponsored Activities
PRED.	07/01/2015	06/30/2019	26.00 Off-Campus	Other Sponsored Activities
PROV.	07/01/2019	Until Amended	Use same rates and corfiscal year ending Jur	nditions as those cited for ne 30, 2019.

*BASE

Modified total direct costs, consisting of all salaries and wages, fringe benefits, materials, supplies, services, travel and subgrants and subcontracts up to the first \$25,000 of each subgrant or subcontract (regardless of the period covered by the subgrant or subcontract). Modified total direct costs shall exclude equipment, capital expenditures, charges for patient care, student tuition remission, rental costs of off-site facilities, scholarships, and fellowships as well as the portion of each subgrant and subcontract in excess of \$25,000.

AGREEMENT DATE: 12/9/2015

SECTION	N I: FRINGE BENI	EFIT RATES**		
TYPE	FROM	<u>TO</u>	RATE (%) LOCATION	APPLICABLE TO
FIXED	7/1/2013	6/30/2016	33.60 CEEO (1)	Admin/Prof Employees, Faculty
FIXED	7/1/2015	6/30/2016	35.00 CEEO (1)	Classified Employees

** DESCRIPTION OF FRINGE BENEFITS RATE BASE:

Salaries and wages excluding vacation, holiday, sick leave pay and other paid absences, and direct charged fringe benefits.

(1) Cooperative Extension Energy Office

AGREEMENT DATE: 12/9/2015

SECTION II: SPECIAL REMARKS

TREATMENT OF FRINGE BENEFITS:

Except for CEEO employees (Admin/Prof/Faculty and Classified Categories only), this organization charges the actual cost of each fringe benefit direct to Federal projects. However, it uses a fringe benefit rate which is applied to salaries and wages in budgeting fringe benefit costs under project proposals.

The following fringe benefits are treated as direct costs: SOCIAL SECURITY, WORKERS COMPENSATION, HEALTH/LIFE/DISABILITY INSURANCE, UNEMPLOYMENT COMPENSATION, RETIREMENT (TIAA/CREF, PERS), AND QUALIFIED STUDENT TUITION REDUCTION (TUITION REMISSION).

For CEEO employees (Admin/Prof/Faculty and Classified Categories only), this organization uses a fringe benefit rate which is applied to salaries for budgeting and charging purposes for Federal projects. The following fringe benefits are included in CEEO fringe benefit rate: PAID ABSENCES

The following fringe benefits are treated as direct costs: SOCIAL SECURITY, WORKERS COMPENSATION, HEALTH/LIFE/DISABILITY INSURANCE, UNEMPLOYMENT COMPENSATION, RETIREMENT (TIAA/CREF, PERS).

TREATMENT OF PAID ABSENCES:

Except for CEEO employees (Admin/Prof/Faculty and Classified Categories only), vacation, holiday, sick leave pay and other paid absences are included in salaries and wages and are charged to Federal projects as part of the normal charge for salaries and wages. Separate charges for the cost of these absences are not made.

For CEEO (Admin/Prof/Faculty and Classified Categories only), the cost of vacation, holiday, sick leave pay, and other paid absences are included in a fringe benefit rate and are not included in direct charges for salaries. Charges for salaries must exclude those paid to CEEO employees (Admin/Prof/Faculty and Classified Categories only) for periods when they are on vacation, holiday, or sick leave, or are otherwise absent from work.

AGREEMENT DATE: 12/9/2015

· DEFINITION OF OFF-CAMPUS:

A project is considered off-campus if the activity is conducted at locations other than in University owned or operated facilities and indirect costs associated with physical plant and library are not considered applicable to the project.

DEFINITION OF EQUIPMENT:

Equipment is defined as tangible nonexpendable personal property having a useful life of more than one year and an acquisition cost of \$5,000 or more per unit.

NEXT PROPOSALS DUE DATES:

Your next Facilities & Administrative proposal based on fiscal year ending 06/30/2018 is due in our office by 12/31/2018, and your next fringe benefits proposal based on your fiscal year ending 6/30/2015 is due in our office by 12/31/2015.

AGREEMENT DATE: 12/9/2015

SECTION III: GENERAL

A. <u>limitations:</u>

The rates in this Agreement are subject to any statutory of administrative limitations and apply to a given grant, contract or other agreement only to the extent that funds are available. Addeptance of the rates is subject to the following conditions: (1) Only costs incurred by the organization were included in its facilities and administrative cost pools as finally accepted; such costs are legal obligations of the organization and are allowable under the querring cost principles: (2) The same costs that have been treated as finally administrative costs are not claimed as direct costs; (3) Similar types of costs have been accorded consistent accounting treatment; and (4) The information provided by the organization which was used to establish the rates is not later found to be materially incomplete or inaccurate by the Federal Government. In such situations the rate(s) would be subject to renegotiation at the discretion of the Federal Government.

B. ACCOUNTING CHANGES:

This Agreement is based on the accounting system purported by the organization to be in effect during the Agreement pariod. Changes to the method of accounting for costs which affect the amount of reimbursement resulting from the use of this Agreement require prior approval of the authorized representative of the confinant agency. Such changes include, but are not limited to, changes in the onarging of a particular type of cost from facilities and administrative to direct. Failure to obtain approval may result in cost disallowances.

C. FIXED RATES:

If a fixed rate is in this Agraement, it is based on an estimate of the costs for the period covered by the rate. When the actual costs for this period are determined, an adjustment will be made to a rate of a future year(s) to compensate for the difference between the costs used to establish the fixed rate and actual costs.

D. CSE BY OTHER FEDERAL AGENCIES:

The rates in this Agreement were approved in accordance with the authority in Title 2 of the Code of Federal Regulations, Fart 200 (2 CFR 200), and should be applied to grants, contracts and other agreements covered by 2 CFR 200, subject to any limitations in A above. The organization may provide copies of the Agreement to other Federal Agencies to give them early notification of the Agreement.

E. CTHER:

If any Edderal contract, grant or other agreement is reimbursing facilities and administrative costs by a means other than the approved rate(s) in this Agreement, the organization should (1) credit such costs to the affected programs, and (2) apply the approved rate(s) to the appropriate base to identify the proper amount of facilities and administrative costs allocable to these programs.

ON BEHALF OF THE FEDERAL GOVERNMENT: BY THE INSTITUTION: Washington State University DEPARTMENT OF HEALTH AND HUMAN SERVICES (INSTITUTION) Arif M. Karim -S Cheater of the Ward State of the Conference of th (SIGNATURE) SIGNATURE) Arif Karim MATTHEW A. SKINNER (NAME) Director, Cost Allocation Services ASSOC. VICE PRESIDENT OF FINANCE (TITLE) (TITLE) JANUARY 6, 2016 12/9/2015 (DETEL (DATE) 2144 HES REPRESENTATIVE: Helen Fung

Telephone:

(415) 437-7820

WASHINGTON STATE UNIVERSITY FACILITIES AND ADMINISTRATIVE COST PROPOSAL **FYE JULY 1, 2015** TO FYE JUNE 30, 2019

BUILDING
EQUIPMENT
OPERATIONS & MAINTENANCE
INTEREST
LIBRARY
UTILITY COST ADJUSTMENT
GENERAL ADMINISTRATION
DEPARTMENT ADMINISTRATION
SPONSORED PROJECTS ADMINISTRATION
STUDENT SERVICES ADMINISTRATION
ADMINISTRATION COMPONENTS

				ORGA	NIZED RESE	ARCH			
JUŁY 1	2015	THROUGH JU	JNE 30, 2016	JULY 1, 2016	THROUGH JU	JNE 30, 2017	JULY 1, 2017	THROUGH JU	JNE 30, 2019
		ON-CAMPUS	OFF-CAMPUS		ON-CAMPUS	OFF-CAMPUS		ON-CAMPUS	OFF-CAMPUS
l		5.3%			7.1%			7.3%	
[2.7%			2.6%			2.8%	
l		15.3%			12.8%			12.9%	
[0.3%			2.2%			2.5%	
1		1.4%			0.6%			0.8%	
l					0.7%			0.7%	•
ı	8.5%			9.2%	-		9.2%		
ł	14.6%			14.2%			14.2%		
	2.9%			<u>2.6%</u>			<u>2.6%</u>		
	26.0%	<u>26.0%</u>	<u>26.0%</u>	26.0%	26.0%	<u>26.0%</u>	26.0%	<u>26.0%</u>	<u>26.0%</u>
L.		51.0%	26.0%		52.0%	26.0%		53.0%	26.0%

BUILDING EQUIPMENT **OPERATIONS & MAINTENANCE** INTEREST LIBRARY GENERAL ADMINISTRATION DEPARTMENT ADMINISTRATION SPONSORED PROJECTS ADMINISTRATION STUDENT SERVICES ADMINISTRATION ADMINISTRATION COMPONENTS

INSTRUCTIO	N & DEPARTMEN	T RESEARCH	OTHER SP	ONSORED A	CTIVITIES
JULY 1, 2015	THROUGH J	JNE 30, 2019	JULY 1, 2015	THROUGH JU	JNE 30, 2019
	ON-CAMPUS	OFF-CAMPUS	·	ON-CAMPUS	DFF-CAMPUS
	10.5%			2.5%	
	1.5%			0.5%	
	11.5%			5.5%	
1	1.5%		İ	0.5%	
1	6.5%			1.0%	
7.4%			9.4%		
11.2%			13.9%		
0.4%			2.7%		
7.0%					
26.0%	<u>26.0%</u>	<u>26.0%</u>	25.0%	<u>26.0%</u>	26,0%
	\$7.5%	26.0%		36.0%	26.0%

ADMINISTRATIVE COMPONENTS ARE CAPPED AT 26.0% IN ACCORDANCE WITH OMB A-21, DATED JULY 26, 1993.

CONCUR:

TOTAL

TOTAL

ASSOC. VICE PRESIDENT OF FINANCE

JANUARY 6, 2016

WSU budget documentation





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Trip Summary

Trip Summary **∜**

Trip Total: **\$964**.60

Rates are quoted in US dollars

- 2º 71052 customers protected their flight in the last 7 days. Add flight protection when you check out.
 - ✓ Nice Job! You picked one of our cheapest flights. Book now so you don't miss out on this price!

Sun, Feb 2 From Heathrow (LHR)
To Kilimanjaro Intl. (JRO)
Kenya Airways

Cheapest

5:25pm → 9:30am 13h 5m, 1 stop

LHR JRO NBO

Arrives Mon, Feb 3

Show flight and baggage fee details ❖

Sat, Feb 8 From Kilimanjaro Intl. (JRO)
To Heathrow (LHR)

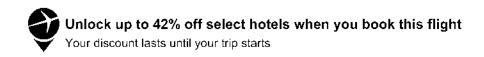
Kenya Airways Cheapest

9:35pm → 10:45am 16h 10m, 2 stops

JRO DAR, AMS
Arrives Sun, Feb 9

Show flight and baggage fee details ❖

WSU budget documentation



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The Rickshaw Travels Ltd.
Plot No 1006, Buzwagi Street, Msasani Peninsula, Dar es Salaam, Tanzania
Tel: +255 22 2602 303/304/305/610/612/613 |
Email: accounts@rickshawtravels.com
TIN 100 153 572 | VRN 100 006147 J

PROFORMA INVOICE

To:

Proforma#: TZ1909-2493/TS ****Cash Sales

Date: 25/09/2019 Currency: USD.

Dar Es Salaam, Tanzania

Service	Description		Amount
AIR TICKET	Passenger Name: FELIX LANKESTER AIR EXCEL		241.00
	11-Oct-19 041 Seronera 11:05 Arusha 12:10		
Amount in Wor Two Hundred Fo	ds (USD.): orty One And Forty One Cents Only	Total Amount (USD.)	241.00
Amount in Wor Five Hundred Fi Twenty Cents O	ity Nine Thousand One Hundred Twenty And	Total Amount (TZS.)	559,120.00

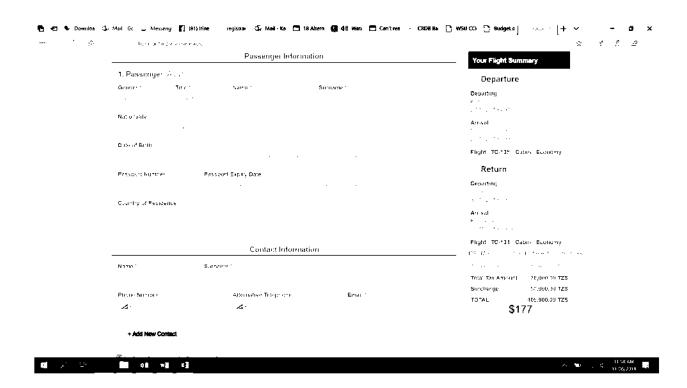
For Rickshaw Travels Ltd.

Account Name: The Rickshaw Travels Ltd

Bank of Africa Tanzania Ltd
P.O.Box 3054, Dar es Salaam, Tanzania
Account Number (h)(4) USD) | 10200127013 (TZS)
Switt Code: E U A F T Z T Z

*This is a computer generated document and no signature is required.

Diamond Trust Bank (T) Ltd
P.O Box 115, Dar Es Salaarn, Tanzania
Account Number (NAYA) (USD) | 017264001 (TSH)
Swift Code: D T K E T Z T Z



Trip Summary

Trip Summary >

Trip Total: \$315,25 Only 7 tickets left at this price!

Rates are quoted in US dollars

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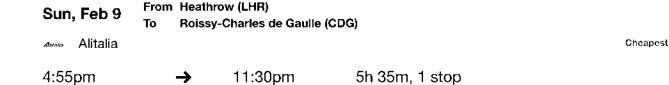


LHR

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CDG

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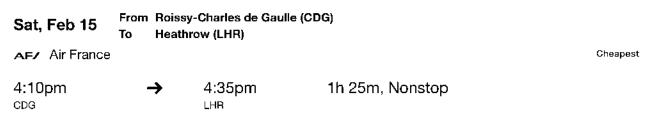


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Get more comforts and benefits by adding an upgrade.



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5h 35m

- · Relax while packing! Get free bags
- · Enjoy more flexibility with free cancellation
- · Choose seats at no extra charge

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+ \$58.61

from

12/2/19, 3:26 PM

for all travelers



Foreign Per Diem Rates In U.S. Dollars **DSSR 925**

Country: TANZANIA Publication Date: 11/01/2019

Country Name	Post Name	Season Begin	Season End	Maximum Lodging Rate	M & IE Rate	Maximum Per Diem Rate	Footnote	Effective Date
TANZANIA	Arusha	01/01	12/31	143	91	234	View	06/01/2019
TANZANIA	Dar Es Salaam	01/01	12/31	207	106	313	View	06/01/2019
TANZANIA	Dodoma	01/01	12/31	112	60	172	N/A	06/01/2019
TANZANIA	Morogoro	01/01	12/31	137	60	197	View	06/01/2014
TANZANIA	Other	01/01	12/31	110	47	157	View	06/01/2014
TANZANIA	Zanzibar	01/01	12/31	187	106	293	View	06/01/2019

From: To: Cc: Subject: Date:	<u>Dr. Melinda Rostal</u> (b)(6) <u>Awadallah, Michael S CIV DTRA AL (USA)</u> ; <u>Aleksei Chmura</u> [Non-DoD Source] Re: FRBAA14-6-2-0356 Friday, May 22, 2020 3:17:44 PM
All active links (contained in this email were disabled. Please verify the identity of the sender, and confirm the Il links contained within the message prior to copying and pasting the address to a Web browser.
Dear ^{(b)(6)}	
on March 26, 20	will speak to you about the difference in the total between when the budget was originally submitted 19 and when we submitted the documentation you requested for all costs on December 5, 2019, our offices are closed both today and Monday for the observation of Memorial Day. He will be able on Tuesday.
He has your (b)(6	phone number.
Kind regards,	
Mindy	
	DVM, MPH, PhD ist, Vector-Borne Diseases
Rift Valley Feve	er Virus Project Manager
EcoHealth Allia 460 West 34th S New York, NY	treet, Suite 1701
1.212.380.4489 Caution-www.ed	(direct) cohealthalliance.org < Caution- <u>http://www.ecohealthalliance.org</u> >
EcoHealth Allia	nce leads cutting-edge scientific research into the critical connections between human and wildlife

EcoHealth Alliance leads cutting-edge scientific research into the critical connections between human and wildlife health and delicate ecosystems. With this science, we develop solutions that prevent pandemics and promote conservation.

EcoHealth Alliance 460 West 34th Street – 17th floor New York, NY 10001

Good Morning,

I noticed the proposal came in at \$4,848,483.14 but the detail excel spreadsheet I have, that was emailed on 12/16/19, states \$4,995,106.37.

V/r	
(b)(6)	Contractor
Contract Spe-	cialist • Broadleaf
Defense Thre	at Reduction Agency (DTRA)
Office Phone	(b)(6)
(b)(6)	

From: Dr. Melinda Rostal (b)(6) To: Cc: Aleksei Chmura; Joe Riccardi; Amanda Andre; Whitney Bagge; Subject: Re: [Non-DoD Source] Re: FRBAA14-6-2-0356 Clarification Questions 1/3 Date: Monday, December 16, 2019 2:40:19 PM Attachments: 02 - FRBAA14-6-2-0356 - KCRI Budget Justification.pdf FRBAA14-6-2-0356 Clarifications.xlsx 02 - FRBAA14-6-2-0356 - KCRI Documentation.pdf FRBAA14-6-2-0356 Detailed Budget.xlsx 03 - FRBAA14-6-2-0356 - OHCD PMO Budget Justification.pdf Dear(b)(6) I have reattached the documentation here. All of the documentation is 23.8MB, perhaps that is why it did not go through? I will split it into three emails and send smaller emails. Please confirm receipt of the three emails. 1. The budget, response, 01 EHA Justification, 02, KCRI Justification, 02 KCRI documentation. Please note that the 01 EHA documentation was the largest file (11.3MB) and so that one was sent in the second email. Please find attached the documentation requested for our FRBAA14-6-2-0356 cost proposal. We have responded to the clarification questions and indicated both the document and page number where the full documentation/justification may be viewed. For each partner we have provided two files: (a) a PDF document of our updated justification using tracked changes according the the current costs for all items based on the documentation (b) a PDF of the documentation that was requested on the clarification sheet We have also included an Excel spreadsheet that includes our calculations for all costs and all partners corresponding to our updated justifications and documentation. Necessarily and following the documentation now provided, various costs have changed since our initial submission in April 2018 and our budget has been updated accordingly. Therefore, our overall budget request has also increased to \$4,995,106.37 with annual amounts as follows. Y1: \$999,888.16 Y2: S997,047.51 Y3: S999,782.70 OY1: \$998,704.80 OY2: \$999.683.19. Please email anytime or contact me directly at +1.212.380.4489 with any questions about our documentation, cost proposal, or other details.

Best.

Mindy

Melinda Rostal DVM, MPH Principal Scientist, Vector-Borne Diseases

Rift Valley Fever Virus Project Manager

KCRI Budget Justification

A. Senior Personnel

We request a total of S3 ,000 to support Key Personnel over the five years of the proposed project.

B. Other Personnel

We request a total of $S2^-$, to support Other Personnel over the five years of the proposed project.

Technicians. We request \$2,000 per year in Y1-2 for a laboratory technician, who will commit 1 months per year to aliquot the serum samples that come in from the field and store them. laboratory technician will increase the time commitment to months laboratory

technician will be hired committing 12 months per year, for which we are requesting per technician to complete the ELISA testing on the human sera collected in Y1, Y2 and OY1.

Nurses. We request \$\\$4,000 over the five years of the project for two nurses. In Y1- , we request support for nurse who will commit months per year at a rate of \$12,000 who will collect blood samples from participants in the serosurvey (Task 2). In OY1 of the project, we who will commit months for the year in order to collect blood samples for the incidence study

Administrator. We request \$2,400 in Y1 to support a Program Administrator who will assist co-PI Mmbaga in the administration of the project. We request a total of \$12,000 over the five years of the project.

Anthropologist/Epidemiologist. We request \$,000 for an Anthropologist/Epidemiologist, with a 3% increase in subsequent years, who will commit 12.0 months Y1-2, OY1 and 6 months in Y3 to contribute to the development of the serosurvey and incidence studies, field data collection and data analysis.

We request \$10,500 over the five years of the project to support a Finance Specialist who will commit .84 months per year for Y1-5. The Finance Specialist will work with project staff to ensure timely invoicing for all program expenses.

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D. Travel

We request \$3,500 , with a 3% annual increase, for travel. This will cover a travel stipend of \$35 per day for 100 days in each of Y1 and Y2 for the original scrosurvey

15 days in OY1 for the incidence study

while they are working in the field. We request \$18, over the five years.

E. Participant Support Costs

We request a total of \$1,80 for a CCHFV Diagnostics Training Workshop Y3 of the project. We will host a workshop to train participants from local and national public health laboratories to conduct CCHFV ELISA and PCR testing as well as to understand the importance of including CCHFV as a differential diagnosis.

F. Other Direct Costs

We request a total of \$8., for other direct costs over the five years of the proposed project.

We request \$2.4 for the storage of samples in Y1 of the project, and an increase of 5% in each subsequent year for a total of \$13, over the five years of the project. We request \$14, for laboratory access and utilization for the processing of human IgG ELISA samples in Y3 of the project, and an increase of 5% in Y for a total of \$29, over the five years of the project. There is a separate cost to perform the tests, for which we request a total of \$42,656, \$10,66 in Y3 to perform 800 tests and \$31.99 in Y to perform 2400 tests all at a cost of 30,000 Tanzanian Shilling, or \$13.33 USD, per test.

II. Indirect Costs

We request a total of \$4 in overhead, a rate of 10% per year, over the five years of the proposed project.

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Meals 11 participant * 15 USD per meal (breakfast and lunch and evening tea) per day*5 days 900USD, Transport 0.65 USD/km for local pick up.

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0.65USD*5days=81.25USD.

Venue 50 USD per day *5 = 500USD. Stationaries pens, files and training material 125 USD.

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_	DTRA Questions	EcoHealth Responses	Document and Page number
_		Please see the attached documentation of the salaries of current staff as well as that of the	
1	Please provide documentation to support the proposed salaries (key personnel and other personnel)	positions created by this grant	01 - FRBAA14-6-2-0356 - EHA Documentation Pg 1
		A isalar as for key personne are increased annually by 5% due to the exceptionally high cost	
2	Please justify the 5% increase, per year, for key personnel	of living increases in New York City where we are headquartered. EcoHealth Alliance bases	
		this calculation on the Consumer Price Index plus an annual merit increase.	
		We reculte a 4k when drive land cruiser made for driving off roads (the roads in Tanzania are	
		very poorly maintained) for 6 passengers (griver/techingian, field coordinator, yet, nurse, PFD	
		student, TAWIRI wildlife team member, plus equipment! A 5-person land cruiser is available	
		for rent from Daries Salaam (very few vehicles are available from Arusha). The cost is	
		\$3,112,27 per month (see documentation attached). We will need a vehicle gaily for field	
		work, visiting the communities or or to the start and at the end of the work for Years 1, 2 and	
		OP1. Thus, the cost for these three years for 6 people = \$3112.27 k 2 vehicles k 36 months =	
		\$224,083.44. Acd tionally, we will need a vehicle to move between laboratories, meet with	
	For the 4 wheel price, specifically:	collaborators and prepare for workshops ouring Years 3 and DY2, which would increase the	
	- More detailed description as to why this is needed	aast of the rental vehicle even higher. Finally, one is not permitted to drive the rental vehicle.	
3	- What is the plan to disposition of the four wheel drive	into the national parks, which would mean our team would not be able to access one of the	
	- The comparison between renting and buying	three environmental disturbance, evels. I hus, it is far more economical for the project for us to purchase two vehicles rather than rent them. The only way to access our study areas is to	
		to purchase two vehicles rather than rent them. The phy way to access our study areas is to drive. For each sampling trip in years 1-2 well. I need to bring supplies for redent, livestock	
		and human sampling as well as a dry shipper for tick sampling. Addit chally, the rodent	
		sampling will take three days persite, whereas the human and livestock sampling will brily	
		take one day. Thus, the fram can increase their officiency by having the radiest sampling	
		team in a separate vehicle from the human sampling team. Additionally, when the PIs join the	
		team in the field they will need additional seating, which will be provided by two set dies. At	
		the end of the project, the vehicle will be transferred for use on other zoonotic disease	01 - FRBAA14-6-2-0356 - EHA Documentation PB 2-7, 01 - FRBAA14-6-2-
		research projects that our collaborators at EcoHealth Alliance or GAHT are working on	0356 - EHA Budget Justification Pg 2
_			01 FRBAA14 6 2 0956 FHA Oppl. montablen Pg 8 80, FRBAA14 6 2
4	Please provice a breakdown of the proposed materials and ecopinent, to include quantities and unit	A detailed breakdown is provided in the FRBAA14-6-2-0356 Octailed Budget and	0356 Ontailer, Budget, Tabs, Prime Budget, EHA Travel bunget, EHA
	prices. Please provide documentation (quotes, screen shots, links, etc.) to support the proposed prices	documentation of all terms is provided in the FHA Documentation file.	Materials and supplies and Visas and Permits
_	Please provice any current agreements with or submissions to either DCMA or DCAA. Please also	We have provided our federally negotiated indirect rate in the documentation and applied	
- 5	explain how the rates in these documents are utilized in the proposal calculations	this to all modified direct costs	01 FRB4A14 6 2 09SG FH4 Opp. montationPg pG7
		The cost of non-Tanzanians obtaining research permits to concact research in Tanzania	
6	Open mentation to justify the permit needed to enter Tanzania	includes: A COSTech research permit (\$300 and \$50 = \$350). Then there is the additional	
		TAWIRI permit, which is \$9,800 per person (\$1,800 for the research for and in Y1 and Y2 and	01 - FRBAA14-6-2-0356 - EHA Documentation Pg 53-56, G1 - FRBAA14-6-
_		additional \$2,000 for the or tital protected area for). The opcumenation is provided.	2-0356 - EHA Budget Just I cation Pg 2-5
	What does the misc travel cost entail	The missi travel costs are requested to cover ground transportation round trip to/from the	
7	avitat does the mist (ravel (05) antail	a roort or train station in NYC and to from the hotel at the meeting location. These are estimated at a \$25 taxi ride each way per person.	01 - FRBAA14-6-2-0356 - EHA Budget Justification Pg 2-5
_			or - upowit6-5-5000 - Ethy gridget tractilitation v.B. 5-2
		Domestic travellest mates are based on attending the APHA Conference which for 2018 was the diin San Diego. CA. Therefore the est mates are based on the per great of \$173 for lodging.	
		and \$71 for meals and incidentals per day for a total of \$245 and conference registration fees	
8	Please explain how you came up with the cost associated with the international and domestic	of \$700. International travel is based on attending the International Conference on Veterinary	
	conferences	Fig demicrogy and Arrimal Health in Paris, France Therefore the estimates are based on the	
		per cirm of \$391 for lodging and \$169 for meals and incidentals for a total of \$560 and	01 - FRBAA14-6-2-0356 - EHA Oper mentation Pg 69-74; 01 - FRBAA14-6-
		conference registration fees of 45th EURCL, or 550th	2 0956 FHA Budget Just Fration Pg 2 5
_	Please provice documentation to justify the conference space, amenates and printing documents for	We provided a quote from the Sheraton for facilities for our stakeholder meeting in	-
- 4	stakeholders meeting	November 2019 in Preton a South Africa for a smillar DTRA project	01 - FRBAA14-6-2-0356 - EHA Oppumentation Pg 78-80
10	Please provice documentation to justify the rental of a conference facility for the CCIIF Symposium in	We provided a quote from the Sheraton for facilities for our stakeholder meeting in	
, 20	OYZ	November 2019 in Pretor a South Africa for a similar DTRA project.	01 - FRBAA14-6-2-9356 - EHA Opermentation Pg 78-80
		The costs associated with recruiting the Tanzanian post-doctoral fellow in CY2 include: the	
	L	costs of the legal and visa filing fees associated with obtaining a work visa for the fe low (\$450)	
11	Please provice documentation for cost of recruitment of the Tanzanian post doctoral fellow in OY2	for the application filing fee, \$2,630 for the legal fees, \$2,000 for the flight). As well as moving	
		expenses etc. that will need to be reimoursed to the fellow IS1,500 for housing until an apartment is found, 9910 for moving belongings).	
		Apparent and the Locate 19 10 year working desire Bings)	01 - FRBAA14-6-7-0356 - EHA Documentation Pg 74-77

		DTRA Questions	KCRI Responses	Document and Page number
1		Please provide documentation to support the proposed salaries (key personnel and other personnel)	Please see the attached documentation of the salaries of current staff at KCRI.	02 - FRBAA14-6-2-0356 - KCRI Documentation Pg 2
2		Please break down QDCs and provided documentation to justify any cost	We have provided the requested documentation in the documentation and updated justification files.	02 - FRBAA14-6-2-0356 - KCRI Documentation Pg 3-6; 02 - FRBAA14-6-2-0356 - KCRI Budget Justification Pg 2
3		For all travel proposed whether domestic and international, please provide (screenshots or links) the departure and arrival locations, number of trips, purpose of each trip, length of each trip, number of travelers, etc.	Travel costs include a stipend of \$35 per day (non-governmental rate) for 100 days in each of Y1 and Y2 for the original serosurvey and 151 days in OY1 for the incidence study for the norse(s) while they are working in the field.	FRBAA14-6-2-0356 - KCRI Documentation Pg 6-7; 02 - FRBAA14-6-2-0356 - KCRI Budget Justification Pg 2
4	ı	For all travel proposed (domestic and international), please provide a breakdown of the travel costs {airfare, ground transportation, lodging, per diem, etc. .	Please see above explanation of travel costs	FRBAA14-6-2-0356 - KCRI Documentation Pg 6-7; 02 - FRBAA14-6-2-0356 - KCRI Budget Justification Pg 2
5				

	DTRA Questions	OneHealth Responses	Document and Page number
1	Please provide documentation to support the proposed salaries (key personnel and other personnel)	Please see the attached documentation of the salaries of current staff at OHCD.	03 - FRBAA14-6-2-0356 - OHCO Documentation Pg 1 -2
2	For all travel proposed whether domestic and international, please provide (screenshots or links) the departure and arrival locations, number of trips, purpose of each trip, length of each trip, purpose of travelers, err.	Dr. Assenga and Dr. Bernard may attend project meetings held in Tantania and take other meetings to improve One Health stakeholder relationships. This will cover four trips per year, for 2 days each with local transportation estimated at \$40 per trip and per diem expenses of \$55 per day (government standard rate).	03 - FRBAA14-6-2-0356 - OHCD Justification Pg 1: 06 - FRBAA14 G 2 0356 - TVLA Documentation Pg 1
3		Please see above explanation of travel tosts. For documentation of the government stipend (SSS) please see the TVLA documenation.	D6 - FRBAA14-6-2-0356 - TVLA Documentation Pg 1
4			
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	DTRA Questions	Public Health Responses	Document and Page number
1	Thease provide occurrentation to support the proposed smalles they personner and other		04 - FRBAA14-6-2-0356 - PHE Documentation Pg 2
	Please break down ODCs and provided documentation to justify any cost	rease see me appurentation the torian tracer about property and a jama accompanying documentation of international travel (item 3). This documentation includes an explanation of international travel required, the Lost per CEIF with invalidation limb (under materials and supplies) a quote for shipment of samples from Tanzania to the UK (under postage of samples), and an estimate for inflation in costs, as the activity is scheduled for four lowers forming (OCS).	04 - FRBAA14-6-2-0356 - ³ -1E Documentation Pg 3-5
3	Please provide a breakdown of the proposed materials and equipment, to include quantities and unit prices. Please provide documentation (quotes, screen shots, links, etc.) to support the proposed prices.	Please see the documentation file outlining the agreed upon total unit cost per test under materials and supplies in item 2	C4 - FRBAA14-6-2-C356 - 3-IE Ducumentation Pg 3
. 4	Please provide any current agreements with or submissions to either DCMA or DCAA, Please also explain how the rates in these documents are utilized in the proposal calculations	Please see the documentation file, item 4 (current rate agreement) and item 5 (explanation of how the rate is used) for the federally negotiated rate.	04 - FRBAA 14-6-2-0356 - PHE Documentation Pg 6-9
5	Please provided documentation to Justify facility cost	Please see the documentation file, item 6, which describes both the overall cost for utilizing the 554 laboratory for 2 weeks, as well as provides Table 1, which includes the cost breakdown for the facility.	C4 - FRBAA14-6-2-C355 - PHE Documentation Pg 10-
6			

	DTRA Questions	TAWIRI Responses	Document and Page number
	Please provide documentation to support the proposed	Please see the attached documentation of the salaries of current staff at	
1	salaries (key personnel and other personnel)	TAWIRI.	05 - FRBAA14-6-2-0356 - TAWIRI Documentation Pg. 1
2			
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	DTRA Questions	TVLA Responses	Document and Page number
	Please provide documentation to support the proposed salaries (key personnel and	Please see the attached documentation of the salanes of current staff at TVLA.	
. 1	other personnel)	Preese see the etteched documenterion of the salenes of content stan at 1704.	06 · FRBAA14-6-2-0356 - TVLA Documentation Pg 2
	For all travel proposed (domestic and international), please provide a breakdown of	We have provided a breakdown of all travel proposed in the updated budget justification.	D6 - FRBAA14-6-2-0356 - TVLA Documentation Pg 2; D6 -
. 2	the travel costs (airfare, ground transportation, lodging, per diem, etc.).	we have provided a dieakdown of all travel proposed in the opposed douget justification.	FRBAA14-6-2-0356 - TVLA Budget Justification Pg 1
3	Please provide documentation to support ODCs (screenshots links, quotes, etc.)	We have provided documentation in support of the ODCs in the Documentation file .	06 - FRBAA14-6-2-0356 - TVLA Documentation Pg 2-4
4			

	DTRA Questions	UoG Responses	Document and Page number
1	Mease provide documentation to support the proposed salaries (key personnel and other personnel)	Please see the utrached ducumentation of the Galaries of current staff at JoG	07 - FRBAA14-6-2-0356 - JoG Documentation Pg 2
		Screenshots for Hight prices between Glasgow and Dar er Salaam, Glasgow and Kilimanjaro, and Kilimanjaro and Dar es Salaam are provided in the documentation attached. The breakdown of all Loots associated with travel is provided in the updated justification.	D7 - FRBAA14-6-2-0356 - UoG Documentatiun Pg 3-8: 07 - FRBAA14-6-2-0356 - UoG Budget Justification Pg 1-2
3	For all travel proposed (domestic and international), please provide a breakdown of the travel costs jairfare, ground transportation, lodging, per diem, etc.].	The breakdown of all costs associated with travel is provided in the updated justification	D7 - FRBAA14-6-2-0356 - UeG Budget Justification ⁹ g 1-2
4	Please provide documentation to support ODCs (screenshots links, quotes, etc.)	Ducumentation is attached to confirm the Losts of direct costs including shopping and lab expenses including testing kits. Full explanation of costs is outlined in the updated justification.	07 - FRBAA14-6-2-0356 - DuG Ducumentation Pg 9-16, 07 - FRBAA14-6-2-0356 - UpG Budget Justification Pg 2-3
5	Please break down participant costs	We request \$1,300 in Y3 fur travel subsistence costs fur purticipants at a rate of \$555/day (standard government rate) over 5 days for 10 participants, who will attend 2 trainings. The costs for the UCG trainer are covered by travel costs (above).	07 FRBAA14 G 2 C356 UpG Budget Justification Pg 2

_	OTRA Questions	WSU Responses	Document and Page number
1	Please provide documentation to support the proposed sale its (key personnel and other personnel)	Please see the attached documentation of the salaries of correct staff at WSU. We have also documented a trade or ployment contract for the employees to be nitred at the standard safe as GAUTANIA To be being a first product of the safe and	08 - FRBAA14-6-2-0356 - WSU Documental on Pg 2-14
3	Please provide documentation to support ODCs (screenshors links, quotes, etc.)		08 - FRBAALI4-6-2-0356 - WSU Documental on Pg 15-38; Q8 - FRBAA14-6-2-0356 - WSU Budght It officiation Pg 4-5
4	Please provide any current agreements with or submissions to either DCMA or DCAA. Please also copians how the rates in these documents are utilized in the proposal calculations.	WSC has a federally negotiated rate for overneed. The documentation attached includes a rate for work that takes place off sampus (as our project opes).	WSU Dout rentation Pe 39 94
5	Need discurrentation to justify the permit needed to enter Canzania		08 - FRBAALI4-6-2-0356 - WSU Documental on Pg 15-18: 08 - FABAA1.4-6-2-0356 - WSU Budget: Indification Pg 15-18:
6	Need documental on to justify medical waste management (Screenshots, links, quotes)	Documentation is provided for the cost of medical waste intimeration. This will be necessary to hancle the biohazardous waste that is produced curing the field sampling.	08 - FRBAA14-6-2-0356 - WSU Documental on Pg 25
,	Please provide decuments an its support equipment insurance (streenshets links, quotes, etc.)	The pury equipment that is required to be insured are the project which as As in the US there is a lower cost of the vorticle will be used for fower kilometers in a year (\$692 vs the \$1.364 cost documented) as 1 is in the years without held work (\$43 and \$072).	08 - FRBAA14-6-2-0356 - WSU Documental on Pg 21-22
	For all travel proposed whether domestic and international please provide is ("entities in its) the departure and arrival locations, number of trips, purpose of each trip, length of each trip, number of travelers etc.		OH FRBARIA 6 / D45E WSU Documentarion Pg 45 49; FRBARIA 6 / O45E Detailed Budget. Tab WSU, D6 - FRBARIA-6-2-0356 - WSU Budget. Job fination Pg 1-3
9	For all trave-proposed (domestic and internal onal), please provide a breakdown of the travel rosts (airfare, ground transporte) on, lodging, per dien, etc.).		08 - FRBAA14-6-2-0356 - WSU Budget Justification Pg 1-3, 08 - FRBAA14-6-2-0356 - WSU Dotumentation Pg 45-50, TRBAK14-6-2-0356 Detalled Gudget, Tab WSU
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Budget Documentation – Kilimanjaro Clinical Research Institute

1)	Salaries		Pg	j. 2
2)	Laboratory Access a	nd Utilization	Pg	ı. 3
3)	Sample Storage		Pg	1. 4
4)	Venue Cost		Pg	j. 5
5)	Testing Costs		Pg	1. 6
6)	Participant Support	Cost Travel	Pg	j. 7



Interventions of the Good Samaritan Foundation

P.O.BOX 2236

Moshi, Tanzania

Telephone: 255-27-2754201

Fax: 255 27 2753368

Email: keriadmin qkeri.ac.tz Website: http://www.keme.ac.tz Website: http://www.keri.ac.tz

Date: 20:11-2019

Dear Melinda Rostal

I am writing to confirm the salaries mentioned in Cremean Congo Hemorrhagic Fever study for KCRI personnel as listed below.

Personnel-KCRI				nthly	
	Ann	ual salary	salary		
Scientist – Local PI	\$	60,000.00	\$	5,000.00	
Senior- Lab Technician 1	\$	24,000.00	\$	2,000.00	
Lab Technician 2	\$	12,000.00	\$	1,000.00	
Lab Technician 3	\$	12,000.00	\$	1,000.00	
Nurse 1	\$	12,000.00	\$	1,000.00	
Nurse 2	\$	12,000.00	\$	1,000.00	
Administrator	\$	24,000.00	—:— \$	2,000.00	
Anthropologist/epidemiologist	\$	24,000.00		2,000.00	
Scientist 2 -Veterinary	\$	30,000.00	\$	2,500.00	
Scientist 3-Physician	\$	30,000.00	\$	2,500.00	
Finance	\$	30,000.00	\$	2,500.00	

Moore

CPA(T) Gilbert Shao Chief accountant - KCRI

	al No: 1840	ital Fee	Institution P O Box KCRI -KO MOSHI Tel: +2 Fax: +25 Email: k	Researce Evidence Entre for Evidence Entre Good S. 2236	amaritan Feedback 01 68 cri.ac.tz
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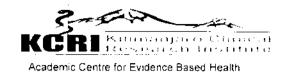
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Cost per test and non-governmental daily stipend rate



Interventions of the Good Samaritan Foundation

P.O.BOX 2236 Moshi, Lanzania Telephone: 255-27-2754201

fax: 255 27 2753368

Email: keriadmin a keri.ae.tz Website: http://www.keme.ae.tz Website: http://www.keme.ae.tz Date: 24.11/2019

Dear Dr. Melinda Rostal,

I am writing to confirm the agreed upon testing and travel costs for the Crimean-Congo Hemorrhagic Fever: Reducing an Emerging Health Threat in Tanzania Project.

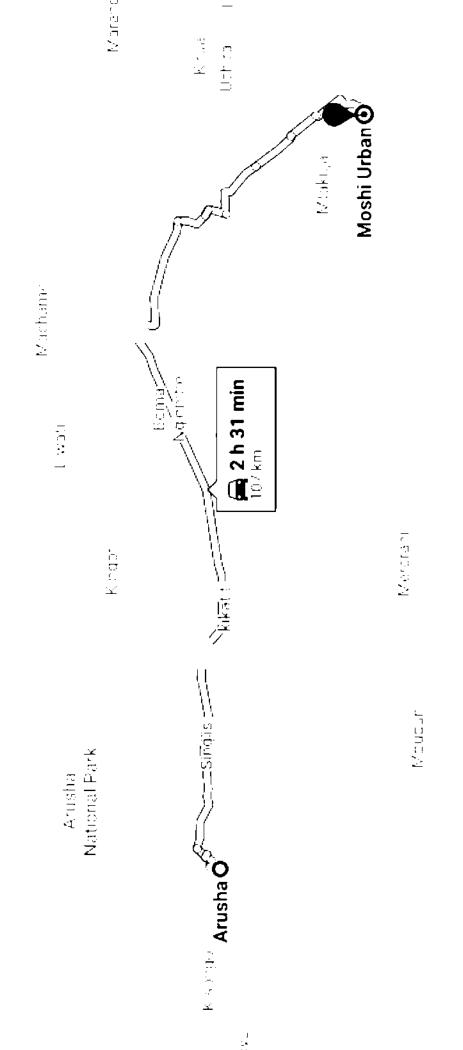
We have agreed to a fee of \$13.33 per ELISA.

We have agreed to use the travel rate of \$35 per day for our nurse while in the field.

Sincerely,

HUM

CPA(T) Gilbert Shao Chief accountant – KCRI



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ltem			Number needed Y1		Y2		43	Y4	YS	ļ	
Shipping Costs		\$ 5,011.00	3		— <u> </u>	5,483.99		\$ 5,475,63			
Label Printer Supplies (5000 roll)		\$ 133.45	3			412.36		\$ 291.65			
Label printer ribbon (for 14,000 labels)	1	\$ 28.89	1	2_5 28.8		29.76		\$ 63.14			
Theory Computers	1	\$ 2,125.00	2	1 5 4,252.0) [5 .	2,025.00		\$ 2,126.00	\$ 2,126.00	\$ 3,795,34 5	442.12
Software Ara GIS	1	5 1,000.00		1 5					5 2,750.00		
Supplies for Graduate Students/Postdac	1	5 1,500.00	1	2 5 1,500 0) 5	1,545.00	5 9,182 70	5 3,278 18	5 3,370.33	1	
Label printer (Bracy 300 dpi)	1	5 3,366 10	1	5 3,366 1)					1	
Refrigeratur	i	\$ 2,740.00	Ī							i	
Rehigeratur Thermometer		\$ 101.00	i							1	
Multiscan ex plate reader Lamp		\$ 174.10	i							1	
Sterial microscope		\$ 3,347.30	1							1	
Water Distiller	1		1							ļ	
PH Meter		\$ 257.92	1								
_ SA Washer		\$ 2,513.48	1								
riage for vehicles		5 3,795 00	2								
Backup battery for fridge	1	5 1,495 00	2								
Nunc I Biriternal cryuvaly	1800	\$ 967.73	3	3 \$ 7,903.1	\$.	2,990.29		\$ 1,177,39			
forum tubes 10 ml	1000	\$ 331.66	3	7 5 994.9	1 \$	1,074.83		\$ 1.0B7.24		1	
Serum tubes 3 mL	1000		2			259.47	İ			1	
eum 1.3m - or smaller?	100		3			187.98				1	
accutatiner holder	1000		3			283.97	-	\$ 903.79		1	
Pig 1 in vacutainer safety needles		5 339.50	2			699.37		5 1,112,94		1	
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coluentock syringe	1000		- 4			202.65				1	
2g Jin needle (for vactutainer)	1000		1			279.02				ļ	
2g Jin needle (for synnge)	1000		2			224 91					
cosyringe and risealis	1000		1			219.61					
numb furceps to collect ticks	1		2	\$ 18.0		18.54					
ubrestu put ticks in	500	\$ 415.00	3	\$ 1,245.0	1 \$	1,287.35					
PE protective coverall for rodent work (M)	24	\$ 470.00	11	\$ 5.170.0	1 \$.	5,325.10				1	
PE protective coverall for rodent work (LI	24	\$ 470.00	11	12 \$ 5,170,0	1 5 .	5,809,20				1	
95 respirator for repent work	80		7			2,253,94				i	
espirator fit test kit	l i	•	i			2,220.0					
esphator in test int sfety glasses	10.0		10								
	300		2			694.93		5 363.33		-	
itrile gloves extended cu ²² XL		5 332.50									
itrile gloves extended cu ²² M	300		3			1,027.43		5 363 33			
7 Pun behnetos esculpidados	500		1			347.48		\$ 726.66		1	
gallon sharps bucket	20		1			245.48		\$ 260,43			
iohazard bags	50	\$ 38.13	1	1 5 38.1	3 \$	33.27		\$ 41.67			
ablets (plus case)	1	\$ 228.98	8	2 5 1.831.8	1 \$	1,885.80		\$ 500.43		l	
0 Tomahawk traps	1	\$ 53,45	50	10 5 3,172.5) 5	653.54		\$ 693.34		1	
O squirrel traps	1	5 44.82	30	10 5 1,544.6	3 5	451.65				1	
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ncentive for cattle owners	î		600			4,325.00				1	
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thanol gallon	1	\$ 82.00	1		$\overline{}$					Į.	
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ab supplies for workshop				Y1		Y2	Y3	OY1	OY2	TOTAL	
ppendorf tubes		5 99.00	3				\$ 279.00			\$ 279.00	
LISA plates		5 139 40	2		1		\$ 276.80			\$ 276.80	
ter pipette tip 200uL		\$ 191.70	1		\top		\$ 191.70			\$ 191.70	
ter pipette tip 1000uL		\$ 777.00	1 1		+		\$ 227.00			\$ 227.00	
ipette fips 1000uL		\$ 179.10	1		+		\$ 129.10			\$ 129.10	
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ipette fips 200uL					+					P 150.00	
ipette tips 1000uL		\$ 75.00	2		+		\$ 152.00			\$ 52.00	
Shipping and hancling							\$ 105.59				
iuhTotal				\$ -	3	-	\$ 1,519	\$ -	š -	\$ 1.519	
OVERALL											
Breakdown for Justification				Y1		Y2	Y3	OY1	OY2	1	
Held supplies				5 35,528.0	5 5 4			\$ 10,973.92		1	
Shipping				5 15,033.0				\$ 5,475.65		l	
Computers				5 9,047 3				5 2,480.79		l	
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ab infrastructure/large items				5 22,172 3			5	S 4 3 270 19	5	I	
innulus for Guer students				S 1500 ft	1 5	1.545.00	5 1 R2 70	5 3 770 19	5 1 276 53		

Breakdown for Justilikation			7.1		12	┖	7.1	CFT		C2Y2
Held supplies		5	39,328.06	5	35,115.77	\$	-	\$ 10,973.92	3	-
Shipping		5	15,033.00	5	15,483.99	\$		\$ 5,475.65	. 5	-
Computers		5	9,047 34	5	2,569 12	5		5 2,480.79	5	4,876.00
lab infrastructure/large items		S	22,172 30	5		- 5		S	- 5	
Supplies for Grad students		ŝ	1.500.00	\$	1,545.00	5	3,182.70	\$ 3.278.18	\$	3.376.53
Total		\$	86,080.70	\$	54,713.BB	5	4,701.89	\$ 22,208.54	\$	8,252.53
	Field supply									
	breakdown	٧.	l	٧,	2	٧.)	CV1	O	٧2
	sampling									
	supplies	5	8,217.89	5	7,682.96	\$		\$ 5,276.37	. 5	
	8.95	5	15,568.46	5	15,737,84	\$	-	\$ 1,755.42	: 5	
	ncentive	5	5,000.00	5	5,150.00	\$		\$ 1,748.36	5	
	Tablets	5	1,831,84	5	1,895.80	- 5		5 500.48	5	
	Trapping and	: 5	9,709.87	-5	4,659.18	- 5		5 (93.34	1 5	

Visa and Permit	Y1	Y2		Y3	Y4	Y5
COSTech application fee		50	50	50	50	50
COSTech clearance fee		300	300	300	300	300
Research fees (non-Tanzanian)	1	.800	1800	1800	1800	1800
TAWIRI Protected Area Permit	2	2000	2000			
Shipping samples				300	300	300
KCMC ethics approval		500				
NIMR - submit protocol		500				
NIMR - application fee		100				
NIMR - Expedited Review	1	.000				
NIMR - Renewal			100	100	100	100
NIMR - amendment		600	300		300	
Hummingbird IRB	2	2000	2000	2000	2000	2000
Cost per Person	Y1	Y2	ı	Y3	Y4	Y5
Rostal EHA	4	150	4150	2150	2150	2150
Field Coordinator EHA	4	150	4150	2150	2150	2150
Cleaveland UoG		0	2150	2150	2150	2150
Technician UoG	2	150	2150	2150	2150	
Lankester SU	4	150	4150	2150	2150	2150
Veterinarian WSU		50	50	0	0	0
Field Assistant WSU		50	50	0	50	0
PhD Student WSU		50	50	0	0	0
Masters' students EHA		0	50	100	100	50
Post-doctoral fellow		0	0	0	0	50

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One Health Coordination Desk (OHCD-PMO) Budget Justification

A. Senior Personnel

We request a total of \$14, to support Key Personnel over the five years of the proposed project.

Dr. Justine Assenga, Research Scientist, Molecular Epidemiologist, will commit 0 month per year for which we request salary support of \$2 in

Year 1, with a 3% increase per annum (p.a.). Dr. Justine Assenga is the Animal Health Focal Person at the Ministry of Livestock and Fisheries One Health Coordination Desk and will join meetings, assist with keeping the government ministries apprised of our activities, contribute to the development of the epidemiological plan as well as facilitate communication to stakeholders. In order to prepare for and facilitate the policy workshop and CCHF Symposium, Dr. Assenga's time will increase in Y for a total of \$7,2 over the five years of the project.

Dr. Jubilate Bernard, Research Scientist, Public Health Specialist, will commit 0 months per year for which we request salary support of \$25 in Year 1, with a 3% increase p.a. Dr. Jubilate Bernard is the Animal Health Focal Person at the Ministry of Livestock and Fisheries One Health Coordination Desk will join meetings, assist with keeping the government ministries apprised of our activities, contribute to the development of the epidemiological plan as well as facilitate communication to stakeholders. In order to prepare for and facilitate the policy workshop and CCHF Symposium, Dr. Bernard's time will increase to months per year in

- for a total of \$7, over the five years of the project.

D Travel

We request a total of \$3,185 to support local travel for them in Tanzania over the five years of the proposed project.

We request \$600 in Y1 so that both Dr. Assenga and Dr. Bernard may attend project meetings held in Tanzania and take other meetings to improve One Health stakeholder relationships.

Travel expenses will increase at a rate of 3% per year over the five years of the project.

H. Indirect Costs

We request a total of \$, 5 in overhead over the five years of the project. The rate of overhead will be 10% each year, starting with \$11 in \$11.

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1.212.380.4489 (direct) 1.212.380.4465 (fax)

www.ecohealthalliance.org < http://www.ecohealthalliance.org/>

Visit our blog: www.ecohealthalliance.org/blog <http://www.ecohealthalliance.org/blog>

EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics.

On Dec 16, 2019, at 2:24 PM,	(b)(6)
(b)(6)	> wrote:

Thanks for following up because I did not receive that email on the 5th. I have checked all my folders and nothing comes up.

Can you please send it again and I will confirm as soon as I receive it.

----Original Message---From: Dr. Melinda Rostal <rostal@ecohealthalliance.org < mailto:rostal@ecohealthalliance.org > Sent: Monday, December 16, 2019 2:19 PM
To(b)(6)

>; Gawrelski, Emalee CIV DTRA ACQ AND LOG (USA)

<emalee.gawrelski.civ@mail.mil <<u>mailto:emalee.gawrelski.civ@mail.mil</u>> >

Cc: Aleksei Chmura chmura@ecohealthalliance.org<>; Joe Riccardi@ecohealthalliance.org<mailto:riccardi@ecohealthalliance.org<>>; Amanda Andre amanda.andre@ecohealthalliance.org<>=: Whitney Bagge

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Subject: [Non-DoD Source] Re: FRBAA14-6-2-0356 Clarification Questions

All active links contained in this email were disabled. Please verify the identity of the sender, and confirm the authenticity of all links contained within the message prior to copying and pasting the address to a Web browser.

Dear^{(b)(6)}

I just wanted to confirm that you had received the documentation that I sent to you on December 5.

Kind regards, Mindy

Melinda Rostal DVM, MPH Principal Scientist, Vector-Borne Diseases Rift Valley Fever Virus Project Manager

EcoHealth Alliance 460 West 34th Street – 17th floor New York, NY 10001

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EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics.

On Dec 5, 2019, at 10:50 PM, Dr. Melinda Rostal <rostal@ecohealthalliance.org <mailto:rostal@ecohealthalliance.org < Caution-mailto:rostal@ecohealthalliance.org > > wrote:



Please find attached the documentation requested for our FRBAA14-6-2-0356 cost proposal. We have responded to the clarification questions and indicated both the document and page number where the full documentation/justification may be viewed. For each partner we have provided two files:

- (a) a PDF document of our updated justification using tracked changes according the the current costs for all items based on the documentation
 - (b) a PDF of the documentation that was requested on the clarification sheet

We have also included an Excel spreadsheet that includes our calculations for all costs and all partners corresponding to our updated justifications and documentation. Necessarily and following the documentation now provided, various costs have changed since our initial submission in April 2018 and our budget has been updated accordingly. Therefore, our overall budget request has also increased to \$4,995,106.37 with annual amounts as follows.

Y1: \$999.888.16 Y2: \$997.047.51 Y3: \$999.782.70 OY1: \$998,704.80 OY2: \$999,683.19.

Please email anytime or contact me directly at =1.651.308.5498 with any questions about our documentation, cost proposal, or other details.

Best.

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<FRBAA14-6-2-0356 Clarifications.xlsx>
<FRBAA14-6-2-0356 Detailed Budget.xlsx>
<01 - FRBAA14-6-2-0356 - EHA Budget Justification.pdf>
<01 - FRBAA14-6-2-0356 - EHA Documentation.pdf>
<02 - FRBAA14-6-2-0356 - KCRI Budget Justification.pdf>
<02 - FRBAA14-6-2-0356 - KCRI Documentation.pdf>
<03 - FRBAA14-6-2-0356 - OHCD PMO Documentation.pdf>
<03 - FRBAA14-6-2-0356 - OHCD PMO Budget Justification.pdf>
<04 - FRBAA14-6-2-0356 - PHE Documentation.pdf>
<04 - FRBAA14-6-2-0356 - PHE Budget Justification.pdf>
<05 - FRBAA14-6-2-0356 - TAWIRI Budget Justification.pdf>
<05 - FRBAA14-6-2-0356 - TAWIRI Documentation.pdf>
<06 - FRBAA14-6-2-0356 - TVLA Budget Justification.pdf>
<06 - FRBAA14-6-2-0356 - TVLA Documentation.pdf>
<07 - FRBAA14-6-2-0356 - UoG Budget Justification.pdf>
<07 - FRBAA14-6-2-0356 - UoG Documentation.pdf>
<08 - FRBAA14-6-2-0356 - WSU Budget Justification.pdf>
<08 - FRBAA14-6-2-0356 - WSU Documentation.pdf>
Melinda Rostal DVM, MPH
Senior Research Scientist
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PREDICT 2 Surveillance Coordinator for EcoHealth Alliance

Rift Valley Fever Virus Project Manager

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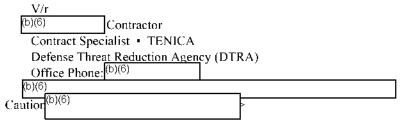
EcoHealth Alliance 460 West 34th Street – 17th floor New York, NY 10001

On Oct 29, 2019, at 10:45 AM (b)(6)	
(b)(6)	> wrote:

Good Morning,

We have reviewed your cost proposal and are requesting responses to the attached clarification questions.

Please provide responses as soon as possible so that we can move forward with grant award. Please let me know if you have any questions.



<FRBAA14-6-2-0356_Clarifications.xlsx>

From	Joe Riccardi
To:	(b)(6)
Cc: Subje	Aleksei Chmura Re: [Non-DoD Source] Re: Available for Quick Call?
Date:	
	stive links contained in this email were disabled. Please verify the identity of the sender, and confirm the nticity of all links contained within the message prior to copying and pasting the address to a Web browser.
	Afternoon,
Wew	rould prefer Monthly invoicing if that is alright.
Chee	rs
Joe	
On Ti	ານ, Jun 11, 2020 at 12:26 PM (b)(6)
Cauti	or(b)(6) > wrote:
- I S Cauti	Joseph Afternoon, fust a quick question, is there a particular way you want the invoice set? Monthly, quarterly, etc? Original Message From: Joe Riccardi riccardi@ecohealthalliance.org riccardi@ecohealthalliance.org riccardi@ecohealthalliance.org riccardi@ecohealthalliance.org

On Tue, May 26, 2020 at 11:48 AM Joe Riccardi riccardi@ecohealthalliance.org Caution-mailto:riccardi@ecohealthalliance.org Caution-mailto:riccardi@ecohealthalliance.org November 11:48 AM Joe Riccardi@ecohealthalliance.org Caution-mailto:riccardi@ecohealthalliance.org Caution-mailto:riccardi@ecohealthalliance.org November 11:48 AM Joe Riccardi@ecohealthalliance.org Novembe
Hi (b)(6)
Melinda had reached over the weekend asking me to give you a quick call about our CCHF award?
Please let me know when is best for you? Or if easier my number is (b)(6)
Cheers
Joe

Joseph Riccardi Manager of Budget and Finance
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EcoHealth Alliance develops science-based solutions to prevent pandemics and promote conservation.
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EcoHealth Alliance develops science-based solutions to prevent pandemics and promote conservation.

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EcoHealth Alliance develops science-based solutions to prevent pandemics and promote conservation.

Cover Sheet

Proposal Number FRBAA14-6-2-0356

Phase I Proposal Number FRBAA14-6-1-0867

Topic Thrust Area 6

Proposal Title Crimean-Congo Hemorrhagic Fever: Reducing an Emerging Health Threat in Tanzania

Applicant Information

ApplicantEcoHealth AllianceMail Address460 W 34th St Suite 1701

Tax ID 311726494 **City** New York

DUNS 0770900660000 State/Province NY

CAGE Zip 10001 - 2302

Website Country USA

 POC Name
 Dr. Melinda Rostal
 POC Email
 rostal@ecohealthalliance.org

Cost

Applicant Certification

Organization Type Non-Profit Organization

Are Human Subjects involved? No

Are Vertebrate Animals involved? No

Has a proposal for essentially equivalent N work been submitted to other US

government agencies or DoD components?

Agency 1 Contract/Grant No.

Agency 2 Contract/Grant No.

Agency 3 Contract/Grant No.

Are you a current DoD Contractor or No

Grantee?

Agency Point Of Contact

Phone #

Principal Investigator 1 Business Official 1

Prefix	Dr.	Prefix	Dr.
Name	Melinda Rostal	Name	Aleksei Chmura
Title	Senior Research Scientist	Title	Authorized Organizational
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For any purpose other than to evaluate the white paper/proposal, this data shall not be disclosed outside the Government and shall not be duplicated, used or disclosed in whole or in part, provided that if an award is made to the offeror as a result of or in connection with the submission of this data, the Government shall have the right to duplicate, use or disclose the data to the extent provided in the agreement. This restriction does not limit the right of the Government to use information contained in the data if it is obtained from another source without restriction. The data subject to this restriction is contained on the pages listed below.

Proprietary Information (list page numbers)

List a maximum of 8 Key Words or phrases, separated by commas, that describe the Project.

Technical Abstract (Limit your abstract to 200 words with no classified or proprietary information) "This publicly releasable abstract is provided to DTRA for use in fulfillment of Section 8123 of the Defense Appropriations Act and future versions of the same." Crimean-Congo Hemorrhagic Fever: Reducing an Emerging Health Threat in Tanzania Crimean-Congo hemorrhagic fever (CCHF) is a deadly disease caused by a virus that is spread through a tick bite. The World Health Organization and U.S. Department of Health and Human Services consider CCHF to be a severe threat to human health with epidemic potential, for which there is an urgent need for accelerated research, especially as there is no known treatment. CCHF virus (CCHFV) occurs from South Africa to northern Europe and east into Central Asia, including countries such as Afghanistan and Iraq where U.S. troops are stationed and potentially at risk for infection. Like Ebola virus in West Africa, CCHFV has been known to circulate silently in livestock and wildlife for decades with no cases in people reported before causing massive outbreaks (affecting more than a thousand people in Turkey) that are further spread through human-to-human transmission. These "surprise" outbreaks are often linked to people making changes to the environment that allow the ticks and the small wild mammals they feed on to increase in abundance. We propose to conduct the first investigation into the patterns and rates of CCHFV infection in people in northern Tanzania to reduce the threat of disease. While CCHFV is spread by ticks to people, the virus

does infect (though does not make sick) livestock and small wild mammals and if people contact the blood of infected animals they can also become infected. Therefore, to understand the risk of infection in people in this region we need to take a One Health approach and investigate CCHFV infection patterns in cattle and wildlife and identify environmental factors that are associated with higher rates of CCHFV infection. While there is evidence that CCHF is circulating in animals in Tanzania and neighboring Uganda has had 6 outbreaks of CCHF since 2010, CCHF is not routinely tested for in Tanzania. This will be the first study to evaluate the risk of an outbreak in Tanzania. To maximize the impact of the project, we will work closely with our partners in the Government of Tanzania to develop policy recommendations to reduce the risk of CCHFV infection in people living where the ticks are present as well as to reduce the risk of a case snow-balling into an epidemic. We will establish sustainable diagnostic capacity at regional health laboratories in northern Tanzania. This collaboration will also support communication between animal and human health officials, which is important not only for CCHF, but also for the many other zoonotic diseases (diseases that spread from animals to people) that threaten people. This project strives to collaborate with the Government of Tanzania to assess and understand the risk of CCHF epidemics while at the same time producing sound policy recommendations that will reduce the threat that CCHF poses for the people in Tanzania and those traveling through Tanzania.

Knowingly and willfully making any false, fictitious, or fraudulent statements or representations may be a felony under the Federal Criminal False Statement Act (18 USC Sec 1001), punishable by a fine of up to \$10,000, up to five years in prison, or both.

Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania PI: Melinda K. Rostal

Thrust Area 6 - Cooperative Counter Weapons of Mass Destruction Research with Global Partners FRCWMD

Crimean-Congo Hemorrhagic Fever: Reducing an Emerging Health Threat in Tanzania Phase II Technical Proposal

I. ABSTRACT. In line with Thrust Area 6 - Cooperative Counter Weapons of Mass Destruction Research with Global Partners FRCWMD we propose to reduce the threat of Crimean-Congo hemorrhagic fever (CCHF) by conducting the first collaborative One Health investigation of the ecology and epidemiology of CCHF virus (CCHFV) in Tanzania. Through hypothesis driven research we will evaluate: 1) the current seroprevalence of CCHFV in people, cattle and wildlife; 2) ecological factors (e.g. environmental disturbance) associated with CCHFV vector abundance and seroprevalence in the three groups; and 3) risk factors associated with CCHFV incidence in human populations. Understanding CCHFV ecology in Tanzania is critical to improving Tanzania's capacity to evaluate and manage the risk of CCHF and reduce the threat to people, including Americans working or traveling in the country.

II. SCOPE.

A. OBJECTIVE. We will establish a multi-disciplinary team of Tanzanian and international One Health experts to collect fundamental data on CCHFV, conduct rigorous scientific analyses and support the Government of Tanzania in the development of policies to prevent CCHF outbreaks. We will use a One Health approach to investigate the following three hypotheses: 1) CCHFV is circulating in ticks, livestock and wildlife in Tanzania; 2) CCHFV is present and circulating in the human population in Tanzania; 3) CCHFV prevalence, seroprevalence and vector abundance will vary across an environmental disturbance gradient from periurban communities, to pastoral rangeland to protected wildlife areas. The project will support the capacity of Tanzanian human and animal health laboratories to conduct CCHFV diagnostics, train Tanzanian field researchers and provide valuable data to Tanzanian government partners and stakeholders to develop policies to prepare for and reduce the threat of CCHF.

B. BACKGROUND. Crimean-Congo hemorrhagic fever is a WHO Blueprint R&D priority disease for which there is an urgent need for accelerated research given the epidemic potential and lack of countermeasures against CCHFV¹. The Department of Health and Human Services reports that CCHF has the potential to pose a severe threat to human health. Similarly, Tanzania identified viral hemorrhagic fevers as one of six priority zoonoses of greatest national concern². CCHFV is thought to be transmitted primarily by *Hyalomma* spp. ticks and occurs throughout the ticks' range, from South Africa to northern Europe³. CCHFV was first identified in Crimea, after an epidemic in more than 200 troops⁴. People may be infected with CCHFV through the bite of an infected tick or via direct contact with fluids from an infected animal or human⁵. Clinical signs include fever, headache, hemorrhagic disease and death in 30-40% of patients⁴⁻⁶. Human-to-human transmission is possible, and if isolation practices are not implemented, nosocomial outbreaks can occur⁷.

While CCHFV is not known to cause disease in any animal species³, a One Health approach is necessary to understand the ecology of CCHFV and thereby better estimate the potential for infection in people. *Hyalomma* spp. ticks are capable of transstadial, transovarial, sexual, and co-feeding transmission of CCHFV⁸. *Hyalomma* spp. ticks feed preferentially on small mammals or birds during the larval/nymph stage and on large animals (livestock/antelope) and humans during the adult stage⁹.

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Serological evidence of CCHFV circulation in a country highlights the potential for outbreaks, even where human cases have not yet been reported¹⁰. In Turkey, for example, CCHFV antibodies were detected as far back as 1980¹¹, but no cases were reported until an outbreak of 1,103 cases occurred in 2002-06¹². This "sudden" appearance of CCHF has been described in many regions that thereafter remain endemic for the virus, including Pakistan, Crimea and Turkey^{3,12}. This phenomenon has also been described for other hemorrhagic fever, including the Ebola outbreak in West Africa in 2014-16¹³.

Human epidemics have often been linked to environmental and social changes, which are associated with an increase in the abundance of CCHFV vectors. These drivers include: climatic changes, abandoned agricultural lands, wartime activities, introduction of a susceptible human population, changing pasture patterns, and converting floodplains to farmland³.

Although Tanzania is listed by the WHO as a having CCHFV virological or serological evidence and vector presence¹⁴, little is known about the current status of CCHFV in Tanzania with the most recent cattle serosurvey conducted in 1974-75 (identifying a 9% seroprevalence)³. Furthermore, despite two recent modeling studies that predicted northern Tanzania to be at high risk for CCHFV^{15,16} and neighboring Uganda reporting multiple cases since 2016¹⁷, CCHF has not yet been investigated in people in Tanzania. Given that anthropogenic environmental changes can lead to large CCHF outbreaks and that environmental and land use changes are occurring rapidly in Tanzania, it is important and timely to generate a better understanding of CCHFV ecology. We theorize that CCHFV is causing human infections in Tanzania and that the risk of CCHFV infection in people is being modified by current and ongoing environmental changes. This One Health project will provide critical data and analyses to support policy development for reducing the threat of CCHF. We will do this through four activities aligned with the project's scientific hypotheses and tasks:

- 1) Characterize differences in CCHFV seroprevalence in animals and humans, abundance of CCHFV vectors, and CCHFV prevalence across a gradient of environmental disturbance.
- 2) Characterize the exposure, behavioral risk and incidence of CCHFV in human populations.
- 3) Identify environmental factors associated with higher levels of CCHFV seroprevalence, incidence, and presence as well as with higher abundance of CCHFV vectors.
- 4) Develop policy recommendations to reduce the risk of CCHF epidemics in Tanzania. *Study Sites:* We propose to conduct this work in Tanzania. The serological evidence of CCHFV

infection in livestock³ (see preliminary data) and the proximity of diagnosed cases of CCHF in Uganda¹⁷ and Kenya¹⁸ indicate that it is probable that CCHFV is present in Tanzania. The Government of Tanzania has prioritized hemorrhagic fevers² and predictive modeling studies have identified northern Tanzania as being at high risk for CCHF^{15,16}. We have a strong history of conducting research in Tanzania and have an established network of collaborators and partners therein (see Credentials). The study site will be in the Arusha Region of northern Tanzania and

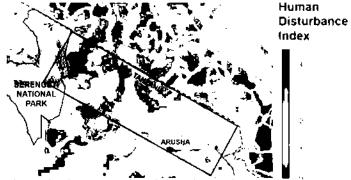


Figure 1. The proposed study area in Northern Tanzania. from just east of Arusha, west to the Serengeti National Park and north to the border with Kenya. The human disturbance index identifies high disturbance around Arusha and East of it, with the least disturbance occurring in the protected areas.

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will stretch from the town of Arusha, the third largest city in Tanzania, westwards to the Serengeti National Park and northwards to the international border with Kenya (see Figure 1). This study site will allow investigation across three levels of environmental disturbance: periurban areas, pastoral livestock areas, and natural protected areas.

Research Justification: In Tanzania, the most recent investigation of CCHFV was conducted in 1975 and was limited to livestock serology³. To compile contemporary preliminary data, we assayed 276 cattle, goat and sheep samples collected from the study area using the newly released ID Screen® CCHF Double Antigen Multi-species ELISA by IDVet (Grabels, France). We detected anti-CCHFV antibodies in 41% of cattle, 30% of goats and 25% sheep from Tanzania (see Table 1). In neighboring Uganda, prior to the launch of a viral hemorrhagic fever surveillance program in 2010, the most recent cases of CCHF were reported in 1972³. Following the launch of the surveillance program, six outbreaks of CCHF (2013, 2015 and 2017) have been detected¹⁷. The first case of CCHF in Kenya was reported in 2000¹⁸. Isolated cases can snowball into an epidemic in rural health centers¹⁹. Without baseline data to identify patterns of CCHFV exposure in human populations, health care workers, facilities and government agencies cannot prepare for and take measures to reduce the threat of CCHF. We will use a One Health approach to collect samples from humans, livestock, wildlife and ticks from the same locations and during the same sampling trip. This method will increase the power of our analysis to detect associations between human and animal seroprevalences²⁰.

Table 1. Preliminary data screening 92 of each cattle, goats and sheep with the multispecies ELISA for CCHFV antibodies. Samples were collected from animals within part of the proposed study area in Tanzania through co-Pl Cleaveland's previous work on the Social, Economic and Environmental Drivers of Zoonoses in Tanzania (SEEDZ) project during 2016.

Species	Number	Number	Percent	Confidence
	Tested	Positive	Positive	Interval
Cattle	92	38	41%	32-52%
Goats	92	28	30%	17-35%
Sheep	92	23	25%	22-40%

CCHF outbreaks have been linked to environmental changes, specifically those that increase the abundance of small mammal hosts. In tropical areas anthropogenic environmental changes occur on a rapid timescale and affect large regions. These anthropogenic drivers have been linked to outbreaks of various hemorrhagic viruses, including CCHF²¹ and to changing community structure among small mammals²². Shifts in small mammal communities following anthropogenic changes are associated with large and protracted CCHF outbreaks (e.g. Turkey¹²). Studies have identified environmental factors, such as increasing temperature, normalized difference vegetation index (NDVI), and savannah-type habitat as being associated with more human CCHF cases²³. Few studies have investigated how intermediate changes in environmental disturbance may impact the risk of CCHF as measured by the direct prevalence of CCHFV and vector abundance. Therefore, we propose to compare three levels of anthropogenic disturbance by characterizing the epidemiology of CCHFV in peri-urban, pastoral rangeland, and protected savanna areas in northern Tanzania. These vital data can be used to predict future changes in CCHFV prevalence given continued environmental disturbance that supports specific communities of small mammals. In OY2 we propose to include remote-sensing data to identify other important ecological factors associated with viral and vector prevalence as well as seroprevalence.

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In East Africa, surveys in people have identified seroprevalences of 2.2% in Uganda²⁴ and 14% and 23% in two areas in Kenya²⁵. Few incidence studies have been conducted, and those have only identified cases retrospectively using hospital records²³. As the proportion of people infected with CCHFV that become symptomatic is unknown (one model estimated 22% of people exposed to CCHFV become ill²⁶), and to better understand the potential for a CCHF outbreak in Tanzania, we propose to prospectively resample participants within 2 years of our initial serosurvey to estimate the incidence of CCHFV seroconversion, giving us a more accurate estimate of true incidence.

C. PROGRAMMATICS. We established a collaborative team of Tanzanian, U.S. and U.K. partners to implement the proposed project. We demonstrated the functionality of our team by generating preliminary CCHFV serology results from Tanzanian livestock samples. PI Rostal has worked for over a decade with bunyavirales, including a previous project on CCHFV²⁷. PI Rostal and co-PI Cleaveland first collaborated in 2005 and in 2019 PI Rostal will complete her Ph.D. in epidemiology under the supervision of co-PI Cleaveland at the University of Glasgow. Co-PIs Cleaveland, Lankester, Mmbaga and Key Personnel (KP) Keyyu have co-authored publications together^{28,29} and KP Hewson has authored over 30 publications on CCHFV³⁰⁻³².

As the prime institution, EcoHealth Alliance (EHA) will coordinate the collaboration between all parts of the project (livestock, wildlife, and tick studies and laboratory and ecological results) as well as analyses and publications. EHA will also mentor the post-doctoral fellow and be responsible for all contractual obligations with DTRA. This One Health investigation into the ecology and epidemiology of CCHFV will be led by experts from: Kilimanjaro Clinical Research Institute (KCRI), Tanzanian Veterinary Laboratory Agency (TVLA), Global Animal Health Tanzania (GAHT), Tanzania Wildlife Research Institute (TAWIRI), One Health Coordination Desk-Prime Minister's Office (OHCD-PMO), University of Glasgow (UoG), Washington State University (WSU), and Public Health England (PHE).

Table 2: Partners and roles.

Institution	Activities	Personnel	Degrees	Role
EcoHealth	Management; delivery; training; study	Melinda K. Rostal	M.P.H.,	Principal
Alliance	design; sample/data collection; analyses. As		D.V.M.	Investigator
(prime)	the prime, EHA will finalize and implement	William B. Karesh	D.V.M.	Co-PI,
	the study design, ensure coordination			Veterinarian
	between all parts of the project (livestock,	Carlos Zambrana-	Ph.D.	Research Scientist,
	human, tick, environmental and wildlife	Torrelio		Ecologist
	studies, and policy development) and			
	analyze and publish the data			
	collaboratively. EHA will be responsible			
	for all contractual obligations with DTRA.			
KCRI	Laboratory analysis (human samples);	Blandina Mmbaga	M.D.,	Co-PI,
	human field study design, implementation		M.med.,	Epidemiologist
	and analysis; training; mentorship;		Ph.D.	
	development of policy recommendations;	Venance Maro	M.D.,	Research Scientist,
	communication with stakeholders.		M.med.	Clinician
UoG	Epidemiological study design and analysis;	Sarah Cleaveland	Vet.M.B.	Co-PI,
	laboratory planning, support, and training;		Ph.D.	Epidemiologist
	development of policy recommendations;	Brian Willett	Ph.D.	

	mentorship; communication with stakeholders.			Research Scientist, Viral Immunologist
TVLA	Laboratory testing (animals and ticks); animal study design, implementation and analysis; communication with stakeholders.	Furaha Mramba	M.Sc., Ph.D.	Co-PI, Entomologist
WSU	Epidemiological study design, implementation and analysis; development of policy recommendations; mentorship; communication with stakeholders.	Felix Lankester	B.V.Sc., M.Sc., Ph.D.	Co-PI, Veterinary Epidemiologist
GAHT	Field coordination and management; animal epidemiological study design, implementation and analysis; communication with stakeholders.	Felix Lankester	B.V.Sc., M.Sc., Ph.D.	Co-PI Veterinary Epidemiologist
TAWIRI	Support wildlife sampling team; animal epidemiological study design, implementation and analysis; communication with stakeholders.	Julius Keyyu	B.V.M., M.V.M., Ph.D.	Research Scientist, Disease Ecologist
OHCD- PMO	Develop the epidemiological plan; lead policy workshop; development of policy recommendations; mentorship;	Justine Assenga	B.V.M. M.V.M. Ph.D.	Research Scientist, Molecular Epidemiologist
	communication with stakeholders.	Jubilate Bernard	M.P.H.	Research Scientist, Public Health Specialist
PHE	Confirm wildlife serology results with virus neutralization testing.	Roger Hewson	Ph.D.	Research Scientist, Virologist

D. RELEVANCE. This project seeks to characterize the epidemiology and ecology of CCHFV in the context of **evaluating CCHF** as a public health threat in Tanzania and improving Tanzania's ability to respond to and reduce the risk of a CCHF epidemic. It is critical to support this capability in countries where there is evidence that CCHFV is circulating, especially as development will continue to lead to rapid environmental changes that could drive the emergence of CCHF epidemics. We will answer important questions regarding the **epidemiology of the virus in people, cattle and wildlife** as well as how current environmental conditions in peri-urban, pastoral and protected areas impact the abundance and prevalence of *Hyalomma* spp. ticks and CCHFV, respectively. Finally, we will identify the key environmental drivers impacting CCHFV in Tanzania specifically.

CCHF is a public health threat requiring a One Health approach to disease mitigation. We have built an integrated One Health team of researchers, which includes several Tanzanian government institutions that will directly use the outputs of this research to inform policy on CCHF prevention and control. We will train Tanzanian scientists by supporting graduate students (or FETP fellows) and a Tanzanian post-doctoral fellow, as well as by hosting two workshops on CCHF diagnostics, a workshop on policy development, and a symposium to bring East Africa into focus for global experts and to support the flow of information and networks of CCHF researchers. We will continue to be transparent and

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disseminate our results broadly in peer-reviewed journals and public venues. We will report all surveillance data to ministries responsible for health, livestock and environment in Tanzania. Results will also be disseminated via regular presentations that the PIs and KP give to the public, media, to governmental (USDA, NIH, USAID) and intergovernmental (WHO, FAO, OIE) agencies and scientific conferences, such as ASTMH, IMED, ASM Biothreats and the DTRA Annual Technical Review.

Scientific Impact for C-WMD science: CCHF is a threat frequently faced by U.S. warfighters working in endemic countries in Central Asia and the Middle East and war is considered to be a driver for the emergence of CCHF⁴. Though rarely tested for in East Africa, evidence is mounting that CCHF cases occur in people more frequently than previously thought. If CCHFV remains uninvestigated in Tanzania, it may continue to circulate undetected until an epidemic occurs, carrying the threat of transmission outside of Tanzania. Further, ever-changing environmental disturbances may drive a large CCHF outbreak. This study will identify patterns of CCHFV seroprevalence in people, cattle and wildlife: measure the incidence of CCHFV infection in people as well as identify how different levels of environmental disturbance affect the prevalence of CCHFV vectors and the virus itself. By improving our understanding of the ecology of CCHFV in East Africa we are building the foundation to monitor for changes in prevalence, vectors and seroprevalence as the development drives environmental changes. Thereby reducing the threat of a CCHF large epidemic, as occurred in Turkey¹². We propose to collaborate directly with Tanzania's One Health Coordination Desk (Prime Minister's Office) to develop policies that can reduce the risk of CCHF outbreaks as well as prepare health care workers to use proper isolation precautions should a suspected case present at a health center.

III. CREDENTIALS.

PI: Dr. Melinda Rostal is a Senior Research Scientist at EcoHealth Alliance. Currently, Dr. Rostal is a co-PI and project manager for the DTRA-funded Understanding Rift Valley Fever (RVF) in the Republic of South Africa and the EHA surveillance coordinator for the USAID Emerging Pandemic Threats PREDICT-2 program, a \$130 million effort focused on predicting and preventing pandemic diseases. She has developed, coordinated and managed projects and programs in 16 countries, including efforts to minimize the impact of diseases such as RVF and avian influenza, and supporting global emerging infectious disease surveillance systems. Prime Organization: EcoHealth Alliance is a science-based organization incorporated over 45 years ago, currently working with local partners in over 20 countries at the nexus of public health, biodiversity conservation and international development. EHA has a staff of 50 in New York, including science (modelers, economists, social scientists, veterinarians and ecologists), administrative and communications staff. EHA has an extensive record of publishing high quality, peer-reviewed papers, journals, briefing documents and reports, including work on vector-borne viruses such as RVF^{20,33,34} and West Nile^{35,36}. EHA's demonstrated multidisciplinary expertise in producing highly utilized and understandable science-based outputs will contribute significantly to achieving project goals and provide objective methods for tracking utilization of project findings.

Partners:

Kilimanjaro Clinical Research Institute is located in Moshi, Tanzania and provides necessary research infrastructure and logistics for infectious disease projects. The KCRI Zoonoses

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Laboratory Unit has a unique infrastructure to support training and conduct diagnostic assays, including molecular diagnostics. The site serves as a Training Node for the Eastern African Consortium for Clinical Research, KCRI will conduct CCHFV ELISAs in BSL-2 laboratories. Tanzanian Veterinary Laboratory Agency is headquartered in Dar es Salaam and delivers laboratory services to 11 centers located across Tanzania. TVLA is mandated to undertake research, diagnosis and investigation of animal diseases and vectors. TVLA will support its Arusha Centre to conduct the CCHFV serological tests and PCR in BSL-2 laboratories. University of Glasgow has a well-established One Health and infectious disease research program involving Tanzanian collaborators from human, livestock and wildlife health sectors. The MRC-UoG Centre for Virus Research (CVR) houses an excellent infrastructure and equipment for molecular biology and virology. These include a category 3 high-containment suite and insectaries, automatic robotic systems for high throughput assays and qPCR machines. Washington State University will support the proposed research by leveraging existing WSU research facilities, capacity, and scientific personnel in the U.S. and in Tanzania. The Paul G. Allen School for Global Animal Health, College of Veterinary Medicine is legally registered to conduct research in Tanzania and maintains an office in Arusha to support WSU investigators with local procurement, accounting, research permitting, and logistics.

Global Animal Health Tanzania is a non-governmental organization registered in Tanzania to facilitate infectious disease field research. GAHT's office space in Arusha has sufficient storage space for field equipment, GAHT also coordinates the use of four field vehicles with internal mobile refrigerators to transport temperature sensitive items.

Tanzania Wildlife Research Institute is a government institution mandated to conduct, coordinate and oversee wildlife research in Tanzania. TAWIRI investigates wildlife diseases and zoonoses. TAWIRI will provide expertise in small mammal sampling as well as provide access to banked samples from wild ruminants.

One Health Coordination Desk is housed in the Prime Minister's Office. The OHCD collaborates on the prioritization of zoonotic diseases; the creation of surveillance guidelines for priority zoonotic diseases; the development and review of control strategies for selected diseases in Tanzania; and the implementation of the national response to rabies and anthrax.

Public Health England-Porton Down has extensive experience in applied microbiology including access to a BSL-4 facility. The institute has over 40 years of experience in CCHF virology including the original isolation and characterization of Congo virus in 1958 and more recent studies involving CCHFV molecular epidemiology, disease modelling and vaccines.

WORK TO BE PERFORMED.

A. GENERAL. By the end of the project period and two option years we propose to have completed a synthesis of ecological and host factors that impact the ecology and epidemiology of CCHFV in Tanzania, improved the capacity of regional laboratories in Tanzania to detect and diagnose CCHFV, collaboratively developed policy recommendations to reduce the threat of CCHF in Tanzania and raised the awareness of the emerging issue of CCHF in East Africa through a symposium designed to bring together global leaders in CCHFV epidemiology with regional African public health specialists and researchers. Our collaboration of multi-disciplinary scientists will successfully execute a One Health investigation of CCHFV in Tanzania. We will investigate patterns of CCHFV seroprevalence in people, risk factors associated with CCHFV infection and estimate the incidence of infection in the study population; characterize patterns of CCHFV seropositivity in wildlife and cattle, as well as vector abundance and actual viral

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prevalence within tick vectors; compare the exposure risks for CCHFV in populations within peri-urban and pastoral regions; determine environmental factors associated with the seroprevalence of CCHFV and confirm the accuracy of the only commercially available multi-species anti-CCHFV antibody ELISA using virus neutralization testing in wildlife samples. Together our team will support the coordination of One Health work in Tanzania by bringing together a wide-array of partners and stakeholders to discuss the importance of CCHF in Tanzania, hosting an international symposium on CCHF in East Africa, training a number of Tanzanian students and a post-doctoral fellow and developing policy recommendations to identify the public health risk of CCHF and reduce the threat of a CCHF outbreak in Tanzania.

B. SUMMARY.

Year #1

- Task 1: Improve the capacity within Tanzania to understand the potential impacts of CCHF and strengthen One Health collaborations between sectors.
- Task 2: Determine CCHFV infection patterns, risk factors and incidence in humans.
- Task 3: Determine CCHFV infection patterns in cattle across varying environments.
- Task 4: Determine CCHFV seroprevalence and infection patterns in wildlife and ticks.
- Task 5: Disseminate reports to relevant stakeholders.

Year # 2

- Task 1: Improve the capacity within Tanzania to understand the potential impacts of CCHF and strengthen One Health collaborations between sectors.
- Task 2: Determine CCHFV infection patterns, risk factors and incidence in humans.
- Task 3: Determine CCHFV infection patterns in cattle across varying environments.
- Task 4: Determine CCHFV seroprevalence and infection patterns in wildlife and ticks.
- Task 5: Disseminate reports to relevant stakeholders.

Year #3

- Task 1: Improve the capacity within Tanzania to understand the potential impacts of CCHF and strengthen One Health collaborations between sectors.
- Task 2: Determine CCHFV infection patterns, risk factors and incidence in humans.
- Task 3: Determine CCHFV infection patterns in cattle across varying environments.
- Task 4: Determine CCHFV seroprevalence and infection patterns in wildlife and ticks.
- Task 5: Disseminate reports to relevant stakeholders.

Year #4 (Optional)

- Task 1: Improve the capacity within Tanzania to understand the potential impacts of CCHF and strengthen One Health collaborations between sectors.
- Task 2: Determine CCHFV infection patterns, risk factors and incidence in humans.
- Task 5: Disseminate reports to relevant stakeholders.

Year #5 (Optional)

- Task 1: Improve the capacity within Tanzania to understand the potential impacts of CCHF and strengthen One Health collaborations between sectors.
- Task 4: Determine CCHFV seroprevalence and infection patterns in wildlife and ticks.
- Task 5: Disseminate reports to relevant stakeholders.
- Task 6: Identify environmental correlates with CCHFV seroprevalence.

C. DETAILED TASKS.

Year 1:

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Task 1: Improve the capacity within Tanzania to understand the potential impacts of CCHF and strengthen One Health collaborations between sectors. Subtasks:

- 1.1.1 Train a minimum of four graduate students in fields related to CCHFV.
- 1.1.2 Strengthen the capacity of the Arusha Regional TVLA laboratory.
- 1.1.3 Train staff *in situ* in epidemiological field methods.
- 1.1.4 Support One Health relationships between partners and stakeholders.

Description and execution: 1) Students: We will mentor, at minimum, four graduate students or Field Epidemiology Training Program participants in project-related subjects, including field epidemiology, ecology, spatial analysis, public health, entomology and laboratory sciences at local universities. Students may be nominated by Tanzanian partners (including mid-career students that will complete their degree while employed by the Tanzanian government), or will be recruited from local universities (such as Nelson Mandela or Sokoine University of Agriculture). The students, hired as research assistants, will conduct field and laboratory analyses as part of the project (e.g. environmental factors associated with vector prevalence) under the supervision and mentorship of the project staff and their university advisor. The students will be mentored both by project staff in Tanzania and remotely by support staff at EcoHealth Alliance. They will receive the same training as project staff and will be provided comments on study design, implementation plans, analytical methods and drafts of their written work. Skype will be utilized to ensure students are receiving appropriate training by their project mentors and ensure the students are able to hone writing and field/laboratory skills that will further their careers. Students may also have the option to conduct a small, but related, project on another important pathogen using our samples (limited to PCR and/or ELISAs at a BSL-2 level or below). Examples of such pathogens include Brucella spp., Bacillus anthracis, foot and mouth disease and Rift Valley fever virus. 2) Improve Arusha Centre's (TVLA) laboratory capacity: Rather than sending samples to the central government laboratories, we will improve the capacity of TVLA's Arusha laboratory to conduct the CCHFV serological and PCR tests (BSL-2). Critical among the sustainable improvements to the Arusha Centre laboratory will be the provision of a generator that will provide backup power during the frequent power outages, thereby protecting samples stored in a provided ultra-freezer and enabling sensitive laboratory analyses to continue. 3) In situ training: Before each of the field studies (Tasks 2, 3, 4 in Y1 and OY1), we will train/retrain the One Health field team. Project staff will be trained to collect biological samples and ticks, to promote animal welfare and ethics, and to understand human subjects research ethics, obtaining valid, informed consent and administering questionnaires (please see the agenda attached). The staff will be cross-trained so that members of the animal health team will be trained to give questionnaires and members of the human health team will be trained to record animal data. 4) Support One Health relationships: The project will reach out to relevant stakeholders among public health, animal health and environmental agencies operating in and around the study area. We will support relationships between the One Health sectors through outreach and meetings between project partner institutions and stakeholders, who will all be invited to our annual stakeholder meetings.

Resources: EHA: 3 research scientists (mentor students, conduct field trainings, support TVLA, support CCHF policy workshop (Y3), organize CCHF symposium (OY2), mentor post-doctoral fellow (OY2), coordinate activities between collaborators); KCRI: 1 research scientist, (mentor students, conduct laboratory trainings, organize CCHF symposium, coordinate activities between

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collaborators); TVLA: 1 research scientist & 1 laboratory technician (ensure Arusha laboratory equipment is installed, mentor students, coordinate activities between collaborators); UoG: 2 research scientists & 1 laboratory technician (mentor students, lead the laboratory capacity building, organize CCHF symposium, coordinate activities between collaborators). WSU: 1 research scientist (mentor students, conduct field trainings, organize CCHF symposium, coordinate activities between collaborators); TAWIRI: 1 research scientist (mentor students, support field trainings, support CCHF policy workshop, coordinate activities between collaborators); OHCD: 2 research scientists (mentor students, lead CCHF policy workshop, organize CCHF symposium, coordinate activities between collaborators.

Metrics of success: The number of students recruited, number of pieces of equipment installed in

Metrics of success: The number of students recruited, number of pieces of equipment installed in Arusha, number of meetings with partners and stakeholders, number of team members trained. Deliverable: Students selected to join the project; equipment installed at TVLA.

Task 2: Determine CCHFV infection patterns, risk factors and incidence in humans. *Subtasks*:

- 1.2.1 Obtain local permissions and approvals to work with human subjects.
- 1.2.2 Conduct a cross-sectional study in people within the study area.

Description and execution: 1) Local permissions: A questionnaire will be developed for use in the cross-sectional study as will the digital data collection tool to implement the survey. Once U.S. ethical approval is finalized, we will submit protocols for local ethical clearance and permits to conduct research with human subjects. As part of obtaining local permissions we will also meet with local/village leaders. 2) Human serosurvey: A human serosurvey will be conducted in the communities within our study area. As the risk of CCHFV infection in people in Tanzania is unknown, villages or geological points will be randomly selected as will the households within the village. All people living or working at the household will be invited to participate. If a household is empty or does not want to participate for any reason another household will be randomly selected. The participants will constitute the population at risk in the prevalence and incidence studies and the random sampling will allow us to estimate the risk of CCHFV infection within the population in the study area. The questionnaire will collect general health information with a focus on potential risk factors for CCHF and tick-borne diseases. Assuming a 23% seroprevalence within the population (based on a serosurvey in Kenya²⁵), this study requires 793 people per environmental disturbance level to estimate the expected seroprevalence with 5% absolute precision and 95% confidence in each area (for both areas, n = 1,586). This was calculated using an intra-cluster correlation coefficient of 0.2, and the intention of sampling ten people per household/unit from 79 households/units³⁷. The first serosurvey will be initiated in Y1 and completed in Y2. The second serosurvey will be conducted at the same households in OY1. Focusing on pastoral and peri-urban environments, we will specifically evaluate the level of environmental disturbance as a risk factor using a combination of satellite imagery and on the ground surveys/transects to quantify characteristics of disturbance (e.g. human presence). Sample transfer from the field to KCRI is described under Task 3, Y1. Resources: EHA: 3 research scientists, (design study methods, coordinate field activities, design digital data collection tool for collecting data, coordinate activities between collaborators, ensure the curation and analysis of data); KCRI: 2 research scientists, 1 nurse & 1 laboratory technician (design study methods, coordinate and implement field activities, conduct CCHFV serological analyses on human sera and analysis of data); **UoG:** 2 research scientists & 1 laboratory technician (design study methods, coordinate activities between collaborators, collaborate with

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KCRI on laboratory analyses); WSU: 1 research scientist (design study methods and analysis of data); GAHT: 1 field assistant (implement field activities).

Metrics of success: The number of permits and permissions obtained, number of people sampled, number of environmental surveys completed.

Deliverable: Obtain all permits and permissions; initiate cross-sectional study.

Task 3: Determine CCHFV infection patterns in cattle across varying environments. *Subtasks*:

- 1.3.1 Obtain local permits and permissions.
- 1.3.2 Conduct a cross-sectional serosurvey in cattle across two levels of environmental disturbance.
- 1.3.3 Collect and identify *Hyalonuna spp.* ticks from sampled cattle.

Description and execution: 1) Local permissions: Once U.S. ethical approval is finalized, we will submit protocols for local ethical clearance and permits to conduct research with human and animal subjects, and discuss the project with local community leaders. 2) Cattle serosurvey: Assuming a 41% seroprevalence within the cattle population (preliminary data), this study requires at least 542 animals per level of environmental disturbance to estimate the seroprevalence with 5% absolute precision and 95% confidence in each area; however, we will collect blood samples from all cattle that are sampled for the tick analysis (n = 1,200) 3) Tick abundance: To evaluate the difference in CCHFV vector abundance and viral prevalence in the ticks across two of the landscape disturbance gradients (peri-urban and pastoral lands), we will collect and test ticks from the cattle in the serosurvey. Using a mixed effect negative binomial simulation model in R³⁸, we determined that by sampling 15 cattle per herd, at a minimum of 40 sites in each of the two environmental disturbance levels (n=1,200) and assuming a ratio of 1:3 in the mean number of ticks between the two levels, this study will have a power of 0.97 to detect a difference in infection prevalence between the two areas (estimated by 700 simulations using a random variance from ticks of 1.4, calculated using the same model on ticks collected from cattle on farms in South Africa; M. Rostal, unpublished data). The characterization of the environmental disturbance is described in Task 2. Samples will be transferred directly to TVLA (animal samples) or KCRI (human samples) following the return of the team from the field. Samples will be processed by each laboratory (see the PRAT for details), serum will be aliquoted and logged into the DTRA inventory. Until testing, samples will be frozen at -20°C or -80°C in the designated and secure freezers within each laboratory. While it is not anticipated that CCHFV will be present in the serum samples, sera will be inactivated. Aside from a randomly selected subset of samples transferred to the U.K. for confirmatory testing (see Y3, Task 3), all samples will remain in their respective laboratories for the duration of the project and kept as a biobank following the study to allow for serological studies targeting other pathogens. Both the field and laboratory teams will receive safe sample handling and biosecurity training (see attached syllabi). Laboratory security details are indicated the PRAT form. Resources: EHA: 2 research scientists (design study methods, conduct field sampling, coordinate

Resources: EHA: 2 research scientists (design study methods, conduct field sampling, coordinate activities between collaborators, ensure the curation and analysis of data); TVLA: 1 research scientist & 3 laboratory technicians (Y3) (identification of ticks, conduct serological analyses, conduct PCR on tick samples and contribute to analysis of data); UoG: 2 research scientists & 1 laboratory technician (design study methods, coordinate activities between collaborators, collaborate with TVLA on laboratory analyses); WSU: 1 research scientist (design study

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methods, coordinate field activities and analysis of data); **GAHT**: 1 veterinarian & 1 field team assistant (conduct field sampling, and contribute to analysis).

Metrics of success: The number of permits and permissions obtained, number of cattle sampled, number of ticks collected.

Deliverable: Obtained permits and permissions; initiated the cattle cross-sectional study.

Task 4: Determine CCHFV seroprevalence and infection patterns in wildlife and ticks. Subtasks:

- 1.4.1 Obtain local permits and permissions.
- 1.4.2 Conduct cross-sectional study in small mammals.
- 1.4.3 Collect ticks from vegetation at study sites.

Description and execution: 1) Local permissions: Once U.S. ethical approval is finalized, we will submit protocols for local ethical clearance and permits to conduct research with wildlife subjects. 2) Wildlife serosurvey: Small mammals will be trapped at each of the cattle/human sampling sites for two nights per site. Traps will be set, mammals that are captured will be immobilized, sampled, and (following recovery) released under the supervision of the veterinarian. We will collect all ticks observed on the small mammals to determine the relative abundance and diversity of tick species. Using a mixed effect negative binomial simulation model, we determined that by sampling 15 small mammals per site, assuming that three animals per site have *Hyalomma* spp. ticks, from at least 40 sites in each of the three gradients (periurban, pastoral and protected land) and assuming there is a difference in the mean number of ticks between each gradient of 1:3 this study will have a power of 1.00 to detect differences in seropositivity after 700 simulations (using the random variance from ticks collected from rodents at sites in South Africa, 1.5³⁹). The characterization of the environmental disturbance is described in Task 2. 3) Tick abundance: At each site, a set of four transects will be conducted to collect ticks. Ticks will be collected from the vegetation using flagging ⁴⁰.

Resources: EHA: 2 research scientists (design study methods, coordinate activities between collaborators, conduct field work, ensure the curation and analysis of data); TVLA: 1 research scientist & 3 laboratory technicians (Y3) (identification of ticks; conduct serological and PCR analyses and contribute to analysis of data); UoG: 2 research scientists & 1 laboratory technician (Y3) (design study methods, coordinate activities between collaborators, collaborate with TVLA on laboratory analyses); WSU: 1 research scientist (design study methods, coordinate field activities and analysis of data); GAHT: 1 veterinarian & 1 field team assistant (conduct field sampling, and contribute to analysis of data); TAWIRI: 1 research scientist & 1 field technician (design study methods, implement and coordinate field sampling); PHE: 1 research scientist & 3 laboratory technicians (test a subset of wildlife samples using virus neutralization; OY2).

Metrics of success: The number of permits and permissions obtained, number of small mammals sampled, number of ticks transects conducted, the number of ticks collected.

Deliverable: Obtained permits and permissions; initiated wildlife cross-sectional study.

Task 5: Disseminate reports to relevant stakeholders.

Subtasks:

- 1.5.1 Submit reports, including sample repository data, to DTRA.
- 1.5.2 Complete annual report to local stakeholders.
- 1.5.3 Host annual partners' and stakeholders' meeting.
- 1.5.4 Conduct presentations/meetings at times and places specified in the grant schedule, including DTRA Annual Technical Review.

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1.5.5 Maintain samples in biobanks.

Description and execution: 1) Submit reports: All activities, results and capacity building activities will be summarized on a quarterly or annual basis. 2) Report to stakeholders: We will work with stakeholders and community members to inform them of the project prior to initiating work in their communities and to identify and use the best method to communicate the aggregate results back to the communities that participate in the study. These community meetings are especially important as, not having been diagnosed in Tanzania previously, awareness of CCHF is low. 3) Stakeholder meeting: An annual Stakeholders' and Partners' Meeting will be hosted to inform stakeholders of progress and receive feedback and input on the project. Local and national representatives of public, veterinary and environmental health/sciences as well as medical and laboratory officers and community leaders will be invited. 4) Presentations: PIs and KP will give presentations at the times and places specified in the grant schedule. 5) **Biobanks:** Biobank sample repository information will be maintained in a DTRA-specified format and all samples and data generated during the course of the project will be available for at least 12 months after the project end date. Additionally, a database will be developed, used for epidemiological analyses and shared among implementing partners (including government partners). While sensitive human data will remain protected, we will work with government partners and stakeholders to provide aggregated data as requested.

Resources: EHA: 4 research scientists (synthesize communication between partners, ensure data management for reporting, develop reports for DTRA and stakeholders; host stakeholder meeting); KCRI: 1 research scientist (submit human serological results and human survey data to database, contribute to reporting, maintain human samples in a biobank and complete the DTRA inventory); TVLA: 1 research scientist (submit animal and tick laboratory results, contribute to reporting, maintain animal and tick samples in a biobank and complete the DTRA inventory); UoG: 1 research scientist (contribute to reporting, maintain any project samples submitted for confirmation at UoG and complete the DTRA inventory); WSU: 1 research scientist (contribute to reporting); GAHT: 1 veterinarian (upload field data into database from animal studies, contribute to reporting); TAWIRI: 1 research scientist (contribute to reporting); OHCD-PMO: 2 research scientists (contribute to reporting); PHE: 1 research scientist (contribute to reporting).

Metrics of success: The number of reports (quarterly, annual, repository, etc.) written, number of samples in biobanks, number of attendees to stakeholder meeting, number of presentations given. *Deliverable*: Communication via reports to the funder; scientific community and stakeholders; biobank sample repository maintained in a DTRA specified format.

Year 2:

Task 1: Improve the capacity within Tanzania to understand the potential impacts of CCHF and strengthen One Health collaborations between sectors.

Subtasks:

- 2.1.1 Train a minimum of four graduate students in fields related to CCHFV.
- 2.1.2 Strengthen the capacity of the Arusha Regional TVLA laboratory.
- 2.1.3 Train staff in situ in epidemiological field methods.
- 2.1.4 Support One Health relationships between partners and stakeholders.
- 2.1.5 Support laboratory capacity to conduct CCHFV diagnostics.

Description, execution and resources: Same as above; see Y1, Task 1. 5) CCHF diagnostics: UoG will prepare CCHFV-specific reagents (recombinant antigen for ELISA and primers and

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probes for PCR) for KCRI and TVLA, as well as additional recombinant antigen to transfer reagents to local health laboratories whose technicians will attend the Y3 workshop.

Metrics of success: The number of students working on the project, number of laboratory reagent kits prepared for TVLA and KCRI, number of meetings with partners and stakeholders.

Deliverable: Continue training graduate students.

Task 2: Determine CCHFV infection patterns, risk factors and incidence in humans. *Subtasks*:

2.2.2 Conduct a cross-sectional study in people within the study area.

Description, execution and resources: Same as above; see Y1, Task 2.

Metrics of success: Number of people sampled, number of environmental surveys completed.

Deliverable: Completed sampling for human cross-sectional study.

Task 3: Determine CCHFV infection patterns in cattle across varying environments. *Subtasks*:

- 2.3.2 Conduct a cross-sectional serosurvey in cattle across two levels of environmental disturbance.
- 2.3.3 Collect and identify *Hyalonuna spp.* ticks from sampled cattle.

Description, execution and resources: Same as above; see Y1, Task 3.

Metrics of success: The number of cattle sampled, number of ticks collected.

Deliverable: Completed cross-sectional cattle sampling.

Task 4: Determine CCHFV seroprevalence and infection patterns in wildlife and ticks. *Subtasks*:

- 2.4.2 Conduct cross-sectional study in small mammals.
- 2.4.3 Collect ticks from vegetation at study sites.

Description, execution and resources: Same as above; see Y1, Task 4.

Metrics of success: The number of small mammals sampled, number of tick transects completed.

Deliverable: Completed cross-sectional wildlife sampling and tick transects.

Task 5: Disseminate reports to relevant stakeholders.

Subtasks:

- 2.5.1 Submit reports, including sample repository data, to DTRA.
- 2.5.2 Complete annual report to local stakeholders.
- 2.5.3 Host annual partners' and stakeholders' meeting.
- 2.5.4 Conduct presentations/meetings at times and places specified in the grant schedule, including DTRA Annual Technical Review.
- 2.5.5 Maintain samples in biobanks.

Description, execution and resources: Same as above; see Y1, Task 5.

Metrics of success: The number of reports written, number of samples in biobanks, number of attendees to stakeholder meeting, number of presentations given.

Deliverable: Communication via reports to the funder; scientific community and stakeholders; biobank sample repository maintained in a DTRA specified format.

Year 3:

Task 1: Improve the capacity within Tanzania to understand the potential impacts of CCHF and strengthen One Health collaborations between sectors.

Subtasks:

- 3.1.1 Train a minimum of four graduate students in fields related to CCHFV.
- 3.1.2 Strengthen the capacity of the Arusha Regional TVLA laboratory.

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- 3.1.4 Support One Health relationships between partners and stakeholders.
- 3.1.5 Support laboratory capacity to conduct CCHFV diagnostics.
- 3.1.6 Host one workshop on diagnostic testing for CCHFV at each KCRI and TVLA.

Description, execution and resources: Same as above; see Y1, Task 1. 5) CCHF diagnostics: During the two years of laboratory work, we will have a dedicated UoG technician that will work directly with the Tanzanian laboratories (KCRI and TVLA) to train local technicians to perform CCHFV serological and PCR assays. To ensure the training is sustainable, the UoG technician will spend 8 months in Tanzania working directly with project laboratory technicians at KCRI and TVLA and will remain in contact with the teams at TVLA and KCRI for the duration of the laboratory activities (Y3-OY1). 6) CCHFV laboratory diagnostics workshops: PIs Mmbaga and Mramba and the UoG technician will host a workshop at each TVLA and KCRI. Participants of the TVLA workshop will include staff from KCRI and TVLA that will be working on this project as well as other laboratory technicians/scientists from other animal health laboratories. In addition to the laboratory techniques demonstrated (ELISA and PCR), there will be a focus on biosecurity (appropriate sample handling, storage and inactivation) as well as the importance of One Health, demonstrating the role that animal health workers play in protecting humans from CCHFV. The second workshop, at KCRI, will target laboratory scientists and technicians from local, regional and national public health or medical laboratories. This training will focus on the diagnostics, biosecurity, clinical manifestations, epidemiology and infection control for laboratories, clinics and hospitals that may treat or diagnose CCHFV-infected patients. Following both workshops, all participating laboratories will be provided with PCR primers and probes and human health labs will be given the recombinant CCHFV antigen as well as protocols to reproduce it so that it may be sustainably and locally used after the project ends. As the CCHFV protocols are new to KCRI and TVLA, a randomly selected subset of human and cattle serum aliquots will be submitted to UoG for confirmatory testing using ELISA (Y3). A subset of the wildlife sera will be submitted to PHE to confirm the results using virus neutralization (see OY2.4.8). Samples that are shipped to the UK will be inactivated prior to shipment and packed and labeled according to IATA standards on dry ice, with a chain of custody. Metrics of success: The number of students working on the project, number of meetings with

Metrics of success: The number of students working on the project, number of meetings with partners and stakeholders, number of team members trained, number of workshops hosted, number of laboratories attending the workshops.

Deliverable: Completed CCHFV diagnostics workshops; initiated testing at the Tanzanian laboratories.

Task 2: Determine CCHFV infection patterns, risk factors and incidence in humans. Subtasks:

- 3.2.3 Conduct serological assays for the presence of anti-CCHFV antibodies.
- 3.2.4 Analyze human serosurvey results.

Description, execution and resources: Same as above; see Y1, Task 2. 3) Laboratory assays: Human samples will be analyzed using a CCHFV ELISA³¹ at KCRI. 4) Statistical analyses: Similar analytical methods will be applied across species (people, cattle, wildlife and ticks). CCHFV prevalence (ticks) and seroprevalence (people, cattle and wildlife) will be calculated using standard methods⁴¹. Risk factors for individuals will be determined using standard multiple logistic regression techniques. Comparisons between different levels of environmental disturbance will be conducted using Generalized Linear Mixed Models (GLMMs) in a manner similar to the simulation used to calculate the sample size and power.

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Metrics of success: Number of human samples tested.

Deliverable: Initiated the laboratory analyses of the human samples.

Task 3: Determine CCHFV infection patterns in cattle across varying environments. *Subtasks*:

- 3.3.3 Collect and identify *Hyalomma spp.* ticks from sampled cattle.
- 3.3.4 Conduct laboratory analyses on cattle ticks and sera.
- 3.3.5 Analyze cattle serosurvey results.

Description, execution and resources: Same as above; see Y1, Task 3. 3) Tick identification: An experienced TVLA technician will identify the ticks to the species level. 4) Laboratory analyses: Serum samples will be analyzed using the ID Screen® CCHF Double Antigen Multispecies ELISA at TVLA, which has been vetted using livestock samples. Ticks will be screened by RT-PCR for viral RNA³⁰. 5) Statistical analyses: The analytical methods indicated in Task 2 will be used to calculate the cattle seroprevalence.

Metrics of success: The number of cattle samples tested, number of ticks identified, number of ticks tested.

Deliverable: Completed the testing of cattle samples and ticks and reported the results.

Task 4: Determine CCHFV seroprevalence and infection patterns in wildlife and ticks. Subtasks:

- 3.4.4 Identify ticks collected from small mammals and transects.
- 3.4.5 Conduct laboratory analyses for CCHFV antibodies and viral RNA.
- 3.4.6 Test banked serum from wild ungulates.
- 3.4.7 Analyze wildlife serosurvey results.

Description, execution and resources: Same as above; see Y1, Task 4. 4) Tick identification: An experienced TVLA technician will identify the ticks to species. 5) Laboratory analyses: Wildlife samples will be analyzed using the ID Screen® CCHF Double Antigen Multi-species ELISA at TVLA, a subset of samples will be confirmed by virus neutralization at PHE (see OY2.4.8). Ticks will be tested using rt-PCR³⁰. 6) Wild ruminant samples: We have established a relationship with an ongoing TAWIRI study investigating peste des petits ruminants virus, which will collect and archive blood and tick samples from wild ruminants that may be accessed. TAWIRI will also provide samples collected opportunistically from wild ruminants immobilized for management reasons in the Serengeti. This will provide serology results from ruminants in the protected area and will be screened using the ID Screen® CCHF Double Antigen Multi-species ELISA at TVLA. 7) Statistical Analyses: The analytical plan described in Task 2 will also be used for the wild ruminant study. Tick abundance and richness measures will be estimated and will be compared between the different levels of environmental disturbance within the study area using traditional ecological tools such as Non-Metric Multidimensional Scaling (NMDS) to compare diversity metrics with environmental factors.

Metrics of success: The number of wildlife samples tested, number of ticks identified, number of ticks tested.

Deliverable: Completed ELISA testing of wildlife samples; completed tick identification and PCR testing; completed Y3 report of serosurvey results.

Task 5: Disseminate reports to relevant stakeholders.

Subtasks:

- 3.5.1 Submit reports, including sample repository data, to DTRA.
- 3.5.2 Complete annual report to local stakeholders.

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- 3.5.3 Host annual partners' and stakeholders' meeting.
- 3.5.4 Conduct presentations/meetings at times and places specified in the grant schedule, including DTRA Annual Technical Review.
- 3.5.5 Maintain samples in biobanks.
- 3.5.6 Complete reports on results of human, cattle and wildlife cross-sectional studies and comparison across the gradient.

Description, execution and resources: Same as above; see Y1, Task 5. 6) Summary report: A report on the results of the cattle and wildlife cross-sectional studies, a comparison across gradient and the preliminary results of the serosurvey in people will be written.

Metrics of success: The number of reports written, number of samples in biobanks, number of attendees to stakeholder meeting, number of presentations given.

Deliverable: Communication via reports to the funder; scientific community and stakeholders; biobank sample repository maintained in a DTRA specified format; completed the syntheses report on serological results, tick abundances and viral prevalence.

Year OY1:

Task 1: Improve the capacity within Tanzania to understand the potential impacts of CCHF and strengthen One Health collaborations between sectors.

Subtasks:

- OY1.1.1 Train a minimum of four graduate students in fields related to CCHFV.
- OY1.1.3 Train staff in situ in epidemiological field methods.
- OY1.1.4 Support One Health relationships between partners and stakeholders.
- OY1.1.5 Support laboratory capacity to conduct CCHFV diagnostics.
- OY1.1.7 Host a workshop to support CCHF policy development in Tanzania.

Description, execution and resources: Same as above; see Y1, Task 1. 6) Policy development workshop: We propose to bring together a group of One Health participants from government agencies, including representatives from the Ministry of Health, Community Development, Gender, Elderly and Children, Ministry of Natural Resources and Tourism and the Ministry of Livestock and Fisheries to discuss the potential implications of the study results and develop a series of recommendations for reducing the risk of CCHF outbreaks in Tanzania. The workshop will be led by OHCD-PMO and supported by the PI institutions.

Metrics of success: The number of students working on the project, number of meetings with partners and stakeholders, number of team members trained, number of attendees at the CCHF policy workshop.

Deliverable: Successfully conducted the CCHF policy workshop.

Task 2: Determine CCHFV infection patterns, risk factors and incidence in humans. Subtasks:

- OY1.2.3 Conduct serological assays for the presence of anti-CCHFV antibodies.
- OY1.2.4 Analyze human serosurvey results.
- OY1.2.5 Conduct incidence sampling among cross-sectional study participants.

Description, execution and resources: Same as above; see Y1, Task 2. 5) Incidence study: During OY1 we propose to resample voluntary participants that were sampled during the initial cross-sectional study completed in Y1-Y2 in order to estimate the incidence of CCHFV infection. The diagnostic assays will be completed at KCRI (see Y3). CCHFV incidence will be calculated using standard methods⁴¹. We will use multiple logistic regression to identify risk

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factors for CCHFV infection and compared to those identified through the prevalence study. We will also develop species specific and combined seropositivity hot spot maps of the study area. *Metrics of success*: The number of people resampled, the number of samples tested.

Deliverable: Completed human longitudinal sampling and testing.

Task 5: Disseminate reports to relevant stakeholders.

Subtasks:

- OY1.5.1 Submit reports, including sample repository data, to DTRA.
- OY1.5.2 Complete annual report to local stakeholders.
- OY1.5.3 Host annual partners' and stakeholders' meeting.
- OY1.5.4 Conduct presentations/meetings at times and places specified in the grant schedule, including DTRA Annual Technical Review.
- OY1.5.5 Maintain samples in biobanks.

Description and execution: Same as above; see Y1, Task 5.

Metrics of success: The number of reports written, number of samples in the biobanks, number of participants at the stakeholders' meeting, number of presentations given.

Deliverable: Communication via reports to the funder; scientific community and stakeholders; biobank sample repository maintained in a DTRA specified format.

Year OY2:

Task 1: Improve the capacity within Tanzania to understand the potential impacts of CCHF and strengthen One Health collaborations between sectors.

Subtasks:

- OY2.1.1 Train a minimum of four graduate students in fields related to CCHFV.
- OY2.1.4 Support One Health relationships between partners and stakeholders.
- OY2.1.8 Mentor a Tanzanian post-doctoral fellow in spatial ecology of infectious diseases.
- OY2.1.9 Host East African CCHF Symposium.

Description and execution: Same as above; see Y1, Task 1. 7) Train post-doctoral fellow: We will identify a Tanzanian post-doctoral fellow (through an application process or partner recommendations) to be trained in the spatial ecology of infectious diseases, work with scientists at EcoHealth Alliance and complete the remote sensing analysis of environmental variables associated with CCHF seroprevalence. The post-doctoral fellow will be supervised by KP Zambrana-Torrelio as well as PIs Rostal and Karesh (see post-doctoral mentoring plan). 8) Host CCHF Symposium: As CCHF is an emerging disease and it has rarely been studied in East Africa, we will host a symposium to bring together experts on CCHF from other regions of the world (e.g. Central Asia, South Africa) to exchange ideas on additional research that is needed, ways of increasing support for the growing group of CCHF experts in East Africa, including through further networking, and ideas about the applicability of control measures being used in other regions that may be transferable to the situation in East Africa.

Metrics of success: The number of students working on the project, number of meetings with partners and stakeholders, number of attendees at the CCHF symposium.

Deliverable: Post-doctoral fellow completed his/her fellowship; hosted a CCHF symposium.

Task 4: Determine CCHFV exposure and CCHFV infection patterns in wildlife and ticks. Subtasks:

OY2.4.8 Confirm seropositive wildlife samples with virus neutralization assays.

Description, execution and resources: 8) Confirm seropositive samples: The serological analysis of small mammal sera will allow the estimation of seroprevalence and implication of

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potentially important species for future research on CCHFV ecology in Tanzania and East Africa. While this multispecies ELISA is designed to work in multiple species, it is able to differentiate CCHFV seropositive and seronegative sera from livestock as well as correctly identify seronegative wildlife, it has not been validated on any seropositive wildlife samples⁴². Thus, it is important to validate this safe (BSL-2) multispecies ELISA. As CCHFV is a select agent requiring BSL-4 containment, we have partnered with PHE to verify the ELISA results on a subsample of wildlife samples that will be tested using virus neutralization (VNT). PHE has a biosecure facility (see facilities and the PRAT form) and protocols in place to conduct such assays (details of sample shipments are given Task 3.2).

Metrics of success: The number of wildlife samples tested with VNT.

Deliverable: Completed the verification of wildlife serology results.

Task 5: Disseminate reports to relevant stakeholders.

Subtasks:

OY2.5.1 Submit reports, including sample repository data, to DTRA.

OY2.5.2 Complete annual report to local stakeholders.

OY2.5.3 Host annual partners' and stakeholders' meeting.

OY2.5.4 Conduct presentations/meetings at times and places specified in the grant schedule, including DTRA Annual Technical Review.

OY2.5.5 Maintain samples in biobanks.

Description and execution: Same as above; see Y1, Task 5.

Metrics of success: The number of reports written, number of samples in biobanks, number of attendees to stakeholder meeting, number of presentations given.

Deliverable Communication via reports to the funder; scientific community and stakeholders; biobank sample repository maintained in a DTRA specified format; completed final report with policy recommendations.

Task 6: Identify environmental correlates with CCHFV seroprevalence. Subtasks:

OY2.6.1 Access appropriate remote sensing data.

OY2.6.2 Conduct spatial analysis to identify correlates between environmental and ecological factors and CCHFV seropositivity.

Description and execution: The Tanzanian post-doctoral fellow would be supported for one year at EcoHealth Alliance to conduct the analysis proposed within this task and will be directly supervised by KP Zambrana-Torrelio. 1) Remote sensing and other spatial data: We will access and use the following remote sensing products: NASA's ECOSTRESS data (ECOsystem Spaceborne Thermal Radiometer Experiment on Space Station) that provides data on vegetation water stress and LandSat data, as well as remote sensing derived data such as NDVI and enhanced vegetation index (EVI). Additional datasets will be obtained from different sources, including soil type maps and climate predictions. 2) Correlates between CCHFV seropositivity and the environment: Spatially explicit correlates will be used to understand the relationship between environmental factors and seropositivity in humans, livestock and wildlife as well as vector and viral prevalence. We will characterize the potential ecological niche of CCHFV in our study sites and use this to identify other areas in Tanzania where CCHFV may be present but has not yet been detected. These results will be shared with government partners in Tanzania to be considered with the policy recommendations produced under Task 1 OY1.

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Resources: EHA: 3 research scientists (design study methods, coordinate activities between collaborators, conduct the analysis of data); KCRI: 1 research scientist (contribute to the analysis); TVLA: 1 research scientist (contribute to the analysis); UoG: 1 research scientist (contribute to the analysis); WSU: 1 research scientist (contribute to the analysis).

Metrics of success: Number of remote sensing datasets accessed.

Deliverable: Completed environmental analysis.

<u>Confirmed Proposal Expiration Date</u> "EHA holds the proposal, to include proposed costs, firm for 180 days after the submission date as stated in the invitation to submit a full proposal."

IV. PERFORMANCE SCHEDULE.

V. REFERENCES.

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C. Equipment Description List items and dollar amount for each item exceeding \$5,000 Funds Requested (\$) Equipment item Vehicle | fridge 77,489.00 23,000.00 Generator Centrifuge 5,000.00 TVLA -80 Freezer 20,000.00 Additional Equipment: Add Attachment Total funds requested for all equipment listed in the attached file **Total Equipment** 125,489.00 D. Travel Funds Requested (\$) Domestic Travel Costs (Incl. Canada, Mexico and U.S. Possessions) 1,750.00 Foreign Travel Costs 67,571.00 69,321.00 **Total Travel Cost** E. Participant/Trainee Support Costs Funds Requested (\$) Tuition/Fees/Health Insurance Stipends Travel Subsistence 5. Other

Total Participant/Trainee Support Costs

Number of Participants/Trainees

F.	Other Direct Costs	Funds Requested (\$)
1.	Materials and Supplies	66,773.00
2.	Publication Costs	
3.	Consultant Services	25,000.00
4.	ADP/Computer Services	4,000.00
5.	Subawards/Consortium/Contractual Costs	304,521.26
6.	Equipment or Facility Rental/User Fees	
7.	Alterations and Renovations	
8.	Stakeholder Meeting	10,000.00
9.		
10.		
	Total Other Direct Costs	410,294.26
G. I	Direct Costs	Funds Requested (\$)
	Total Direct Costs (A thru F)	835,712.51
H. I	Indirect Cost Type Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
	Indirect 32.74	162,088.66
_	Total Indirect Costs	162,088.66
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	Total Costs and Fee (I + J)	997,801.17
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Prefix	First	Middle	Last	Suffix	Base Salary	(\$) Ca	Months		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
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Dr.	Carlos		Zambrana		125,023.	50 2.00			20,837.25	6,557.48	27,394.73
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B. Other Per	sonnel								То	tal Senior/Key Person	118,490.61
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1	Research As	sistant			5.00				25,593.75	8,054.35	33,648.10
1	Operations	Assistant			2.00				9,748.49	3,067.85	12,816.34
1	Field Coord	inator			12.00				88,250.00	21,478.28	89,728.28
3	Total Number	Other Personne	el						7	Total Other Personnel	136,192.72
							Total Sa	alary, Wa	ages and Frin	ge Benefits (A+B)	254,683.33

C. Equip	pment Description		
	s and dollar amount for each item exceeding \$5,000 pment item		Funds Requested (\$)
Additional	Il Equipment:	dd Attachment	
	Total funds requested for all equipm	nent listed in the attached file	
		Total Equipment	
D. Trave	el		Funds Requested (\$)
1. Dom	nestic Travel Costs (Incl. Canada, Mexico and U.S. Possessions)		6,350.00
2. Fore	eign Travel Costs		78,513.00
		Total Travel Cost	84,863.00
E. Partic	cipant/Trainee Support Costs		Funds Requested (\$)
1. Tuitio	on/Fees/Health Insurance		
2. Stipe	ends		
3. Trav	rel		
4. Subs	sistence		
5. Othe	er		
	Number of Participants/Trainees Total Partic	cipant/Trainee Support Costs	

F.	Other Direct Costs	Funds Requested (\$)
1.	Materials and Supplies	40,068.65
2.	Publication Costs	1,500.00
3.	Consultant Services	40,000.00
4.	ADP/Computer Services	4,000.00
5.	Subawards/Consortium/Contractual Costs	344,728.00
6.	Equipment or Facility Rental/User Fees	
7.	Alterations and Renovations	
8.	Stakeholders Meeting	10,000.00
9.		
0.		
	Total Other Direct Costs	440,296.65
<u>G.</u>	Direct Costs	Funds Requested (\$)
	Total Direct Costs (A thru F)	779,842.98
<u>1. </u>	Indirect Cost Type Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
	Indirect 32.74	147,243.09
_	Total Indirect Costs	147,243.09
	gnizant Federal Agency ency Name, POC Name, and	
POC	C Phone Number)	
<u>. т</u>	otal Direct and Indirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	927,086.07
J. F	Fee Fee	Funds Requested (\$)
<u>۲. '</u>	Total Costs and Fee	Funds Requested (\$)
	Total Costs and Fee (I + J)	927,086.07
[Budget Justification	
Onl	ly attach one file.) 1267 FRA CORE Budget Tust if ignt jord and	

ORGANIZATIO	ONAL DUNS:	0770900660	:000	nter name of Organization: Ecoffeatch Alliance							
Budget Type:	⊠ Project	Subawa	ard/Consortiun	١	Budget	t Period: 3	Sta	art Date:	09/01/2021	End Date: 08/31/2022	
A. Senior/Key	/ Person										
Prefix	First	Middle	Last	Suffix	Base Salary (s) Cal	Months . Acad.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	Melinda		Rostal		111,956.0				46,652.29	14,681.47	61,333.76
Project Role	: P1							•			
Or.	William		Karesh		313,230.0	00 1.00			26,102.47	8,214.45	34,316.92
Project Role	: Co PI										
Dr.	Carlos		Zambrana		131,275.0	00 0.50			5,469.78	1,721.34	7,191.12
Project Role	: Research So	rientist, Ec	clogist								
Additional Senio	r Kev Persons			Add Attachm	ent				Total Funds (requested for all Senior	
Additional Senio	r Key Persons:			Add Attachin	ent					ons in the attached file	102,841.80
B. Other Pers	onnel								•	otal Senior/Key Person	102,041.00
Number of						Months		Red	quested	Fringe	Funds
Personnel	Project				Cal.	Acad.	Sum.	Sa	lary (\$)	Benefits (\$)	Requested (\$)
	Post Doctoral										
	Graduate Stud										
	Undergraduat										
	Secretarial/Cl	erical			_ []						
1	Research As				5.00				26,873.44	8,457.07	35,330.51
	Operations .				2.99				10,235.91	3,221.24	13,457.15
1	Field Coord	inator			12.00				71,662.50	22,552.19	94,214.69
.3	Total Number	Other Personn	el							Total Other Personnel	143,002.35
						-	Total Sa	alary, W	ages and Frir	nge Benefits (A+B)	245,844.15

C. Equipment Description		
List items and dollar amount for each item excee Equipment item	ding \$5,000	Funds Requested (\$)
Additional Equipment:	Add Attachment	
Total funds	requested for all equipment listed in the attached file	
	Total Equipment	
D. Travel		Funds Requested (\$)
1. Domestic Travel Costs (Incl. Canada, Mexico a	nd U.S. Possessions)	6,350.00
2. Foreign Travel Costs		41,206.60
	Total Travel Cost	47,556.60
E. Participant/Trainee Support Costs		Funds Requested (\$)
1. Tuition/Fees/Health Insurance		
2. Stipends		
3. Travel		
4. Subsistence		
5. Other		
	Г	

Total Participant/Trainee Support Costs

Number of Participants/Trainees

F.	Other Direct Costs	Funds Requested (\$)
1.	Materials and Supplies	4,682.70
2.	Publication Costs	1,500.00
3.	Consultant Services	40,000.00
4.	ADP/Computer Services	4,000.00
5.	Subawards/Consortium/Contractual Costs	517,698.00
6.	Equipment or Facility Rental/User Fees	
7.	Alterations and Renovations	
8.	Stakeholder Meeting	10,000.00
9.		
10.		
	Total Other Direct Costs	577,880.70
G.	Direct Costs	Funds Requested (\$)
	Total Direct Costs (A thru F)	871,281.45
H. I	Indirect Cost Type Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
	Indirect 32.74	121,389.07
^	Total Indirect Costs	121,389.07
	Inizant Federal Agency ency Name, POC Name, and	
POC	Phone Number)	
. T	otal Direct and Indirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	992,670.52
J. F	ee	Funds Requested (\$)
K. '	Total Costs and Fee	Funds Requested (\$)
	Total Costs and Fee (I + J)	992,670.52
<u> l</u>	Budget Justification	
Onl	y attach one file.) 1267 FILE CORE Budget Tust if ignation and f	

ORGANIZATIO	DNAL DUNS:	0770900880000	Enter name of Organizatio	er name of Organization: Ecoffealth Alliance						
Budget Type:	Project	Subaward/Consortiu	m	Budge	t Period:	4 St	art Date:	09/01/2022	End Date: 08/31/2023	
A. Senior/Key	Person									
Prefix	First	Middle Last	Suffix B:	ase Salary	ren C	Month al. Acad	-	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Melinda	Rostal		117,564.	(*/			48,984.90	15,415.55	64,400.45
Project Role:	РТ				•		•			
Or,	William	Karesh		328,891.	00 1.00			27,407.53	8,625.17	36,032.76
Project Role:	Co PI									
Dr.	Carlos	Zambrana		137,838.	00 0.50			5,743.27	1,807.41	7,550.68
Project Role:	Research Sc	rientist, Ecologist								
Additional Senio	r Key Persons:		Add Attachmen	<u>''</u>				·	ns in the attached file	107,983.8
	·							·	tal Senior/Key Person	107,983.89
B. Other Pers	onnel									
Number of Personnel	Project	Role		Cal.	Months Acad.	Sum.		quested lary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctoral	Associates								
	Graduate Stud	dents								
	Undergraduat	e Students								
	Secretarial/Cle	erical								
1	Research As:	sistant		5.00				28,217.11	8,879.92	37,097.03
1	Operations A	Assistant		2.00				10,747.71	3,382.30	14,130.01
1	Field Coord	inator		12.00				75,245.63	23,679.80	98,925.43
3	Total Number	Other Personnel						Т	otal Other Personnel	150,152.47
						Total S	alary, W	ages and Fring	ge Benefits (A+B)	258,136.36

quipment Desc	ription	
	amount for each item exceeding \$5,000	Funds Requested (\$)
tional Equipment:	Add Attachment	
	Total funds requested for all equipment listed in the attached file	
	Total Equipment	
ravel		Funds Requested (\$)
Domestic Travel C	osts (Incl. Canada, Mexico and U.S. Possessions)	6,350.00
Foreign Travel Co	sts	58,968.91
	Total Travel Cost	65,318.91
articipant/Train	ee Support Costs	Funds Requested (\$)
Tuition/Fees/Healt	h Insurance	
Stipends		
Travel		
Subsistence		
Other		
i .	items and dollar a Equipment item itional Equipment: Travel Domestic Travel Control Foreign Travel Control Participant/Train	Itional Equipment: Add Attachment Total funds requested for all equipment listed in the attached file Total Equipment Travel Domestic Travel Costs (Incl. Canada, Mexico and U.S. Possessions) Foreign Travel Costs Total Travel Cost Participant/Trainee Support Costs Tuition/Fees/Health Insurance Stipends Travel Subsistence

Total Participant/Trainee Support Costs

Number of Participants/Trainees

F.	Other Direct Costs	Funds Requested (\$)
1.	Materials and Supplies	36,890.45
2.	Publication Costs	3,000.00
3.	Consultant Services	30,000.00
4.	ADP/Computer Services	4,000.00
5.	Subawards/Consortium/Contractual Costs	455,338.00
6.	Equipment or Facility Rental/User Fees	
7.	Alterations and Renovations	
8.	Stakeholders Meeting	10,000.00
9.		
10.		
	Total Other Direct Costs	539,228.45
<u>G.</u>	Direct Costs	Funds Requested (\$)
	Total Direct Costs (A thru F)	862,683.72
H. I	Indirect Cost Type Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
	Indirect 32.74	137,064.21
_	Total Indirect Costs	137,064.21
	gnizant Federal Agency ency Name, POC Name, and	
POC	C Phone Number)	
<u>. т</u>	otal Direct and Indirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	999,747.93
J. F	Fee	Funds Requested (\$)
〈 . ˈ	Total Costs and Fee	Funds Requested (\$)
	Total Costs and Fee (I + J)	999,747.93
I	Budget Justification	
Onl	ly attach one file.) 1247 FILE CORE Budger. Tust if ignation and f	

ORGANIZATI	ONAL DUNS:	077090068	secce E	Enter name of Org	ganization:	Ecolles	alth Al.	liance				
Budget Type:	: Project	Subaw	ard/Consortium	1		Budget	Period:	5 S	tart Date	: 09/01/2023	End Date: 08/31/2024	
A. Senior/Ke	y Person											
Prefix	First	Middle	Last	Suffix	Base	e Salary (\$	s) C	Month al. Acad		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
or.	Melinda		Rostal		12	23,442.0	C 5.00			51,434.13	16,186.33	67,620.48
Project Role); _{P1}											
Or.	William		Karesh		34	45,336.0	0 2.00			57,555.94	18,112.85	75,668.79
Project Role	co PI											
Dr.	Carlos		Zambrana		14	44,730.0	C 3.00			36,182.58	11,386.46	47,569.24
Project Role	E Research S	cientist, E	cologist	•			•	<u>'</u>	•			
Additional Senio	or Key Persons:	· L			Attachment					·	ons in the attached file otal Senior/Key Person	190,858.51
B. Other Pers	sonnel											
Number of Personnel	Projec	t Role				Cal.	Months Acad.	Sum.		equested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
1	Post Doctora	Associates				12.00				65,000.00	20,455.50	85,455.50
	Graduate Stu	idents										
	Undergradua	te Students										
	Secretarial/C	lerical										
1	Research As	ssistant				5.00				29,627.96	9,323.92	38,951.88
1	Operations	Assistant				2.99				11,285.09	3,551.42	14,836.5
3	Total Number	Other Person	nel								Total Other Personnel	139,243.85
								Total S	Salary, V	Wages and Frii	nge Benefits (A+B)	330,102.40

C. Equ	uipment Description		
	ems and dollar amount for each item exce uipment item	eding \$5,000	Funds Requested (\$)
Additio	nal Equipment:	Add Attachment	
	Total funds	s requested for all equipment listed in the attached file	
		Total Equipment	
D. Tra	vel		Funds Requested (\$)
1. Do	omestic Travel Costs (Incl. Canada, Mexico	and U.S. Possessions)	6,350.00
2. F o	oreign Travel Costs		50,555.02
		Total Travel Cost	56,905.02
E. Par	ticipant/Trainee Support Costs		Funds Requested (\$)
1. Tu	uition/Fees/Health Insurance		
2. Sti	ipends		
3 . Tra	avel		54,710.00
4. Su	ubsistence		
5. Ot	ther		
	Number of Participants/Trainees	Total Participant/Trainee Support Costs	54,710.00

F.	Other Direct Costs				Funds Requested (\$)
1.	Materials and Supplies				6,188.26
2.	Publication Costs				3,000.00
3.	Consultant Services				30,000.00
4.	ADP/Computer Services				24,000.00
5.	Subawards/Consortium/Con	ntractual Costs			230,379.00
6.	Equipment or Facility Renta	l/User Fees			
7.	Alterations and Renovations	;			
8.	Stakeholders Meeting				10,000.00
9.	Symposium Costs (non-pa	rticipant}			10,000.00
10.	Staff Recruitment				7,500.00
				Total Other Direct Costs	321,067.26
G. I	Direct Costs				Funds Requested (\$)
<u>п. і</u>	Indirect Cost Type		Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
١	Indirect Cost Type		1	Indirect Cost Base (\$)	Funds Requested (\$)
l	Indirect		32.74		168,392.77
Cod	nizant Federal Agency			Total Indirect Costs	168,392.77
(Age	ncy Name, POC Name, and Phone Number)				
l. T	otal Direct and Indirect C	Costs			Funds Requested (\$)
		Total Direc	et and Indirect Institu	itional Costs (G + H)	931,177.45
J. F	ee				Funds Requested (\$)
K. 1	Fotal Costs and Fee				Funds Requested (\$)
			Total (Costs and Fee (I + J)	931,177.45
L. E	Budget Justification				
(Onl	y attach one file.) 1267 EHA	. CCMF Budget Justific	ation.pdf		

RESEARCH & RELATED BUDGET - Cumulative Budget

	Totals	s (\$)
Section A, Senior/Key Person		613,455.35
Section B, Other Personnel		705,919.14
Total Number Other Personnel	1.5	
Total Salary, Wages and Fringe Benefits (A+B)		1,319,374.49
Section C, Equipment		125,489.00
Section D, Travel		323,964.53
1. Domestic	27,150.00	
2. Foreign	296,814.53	
Section E, Participant/Trainee Support Costs		54,710.00
1. Tuition/Fees/Health Insurance		
2. Stipends		
3. Travel	54,710.00	
4. Subsistence		
5. Other		
6. Number of Participants/Trainees		
Section F, Other Direct Costs		2,288,767.32
1. Materials and Supplies	154,603.06	
2. Publication Costs	9,000.00	
3. Consultant Services	165,000.00	
4. ADP/Computer Services	40,000.00	
5. Subawards/Consortium/Contractual Costs	1,852,664.26	
6. Equipment or Facility Rental/User Fees		
7. Alterations and Renovations		
8. Other 1	50,000.00	
9. Other 2	10,000.00	
10. Other 3	7,500.00	
Section G, Direct Costs (A thru F)		4,112,305.34
Section H, Indirect Costs		736,177.80
Section I, Total Direct and Indirect Costs (G + H)	[4,848,483.14
Section J, Fee	[., ,
Section K, Total Costs and Fee (I + J)		4,848,483.14
		7,070,703.17

OMB Number: 4040-0001 Expiration Date: 10/31/2019

10 YEAR R&R SUBAWARD BUDGET ATTACHMENT(S) FORM

Instructions: On this form, you will attach the 10 Year R&R Subaward Budget files for your grant application. Complete the subawardee budget(s) in accordance with the 10 Year R&R budget instructions. Please remember that any files you attach must be a PDF document.

Click here to extract the 10 Year R&R Subaward Budget Attachment

Important: Please attach your subawardee budget file(s) with the file name of the subawardee organization. Each file name must be unique.

1) Please attach Attachment 1	KCRI		Delete Attachment	View Attachment
2) Please attach Attachment 2	ома соно		Delete Attachment	View Attachment
3) Please attach Attachment 3	PHE		Delete Attachment	View Attachment
4) Please attach Attachment 4	CAWERE		Delete Attachment	View Attachment
5) Please attach Attachment 5	TVLA		Delete Attachment	View Attachment
6) Please attach Attachment 6	UofG		Delete Attachment	View Attachment
7) Please attach Attachment 7	WSU		Delete Attachment	View Attachment
8) Please attach Attachment 8		Add Attachment		
9) Please attach Attachment 9		Add Attachment		
10) Please attach Attachment 10		Add Attachment		•

OMB Number: 4040-0001 Expiration Date: 10/31/2019

54,500.00

ORGANIZATIONAL DUNS: 85050243		8505024370000	Enter name of Organization:		man jaro					
Budget Type:	Project	Subaward/Conso	ertium	Budg	et Period	d: 1	Start Date:	09/01/2019	End Date: 08/31/202	:0
A. Senior/Ke	y Person									
Prefix	First	Middle Last	Suffix Base	e Salary (\$)		Months Acad.	_	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Blandina	Mmbaga		60,000	.00 1.20			6,000.0	0 0.00	6,000.00
Project Role	e: Co PI, Epi	demiclogist								
Additional Seni	or Key Persons:		Add Attachmer	nt					requested for all Senior sons in the attached file	
								7	otal Senior/Key Person	6,000.00
B. Other Per	eannol									·
	Some				Months					
Number of Personnel	Projec	t Role		Cal.	Acad.	Sum.		equested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctora	Associates								
	Graduate Stu	dents								
	Undergradua	te Students								
1	Secretarial/C	lerical		1.20				2,400.00	c.cc	2,400.00
1	Lab Technic	ian		1.00				2,000.00	c.cc	2,000.00
1	Nurse			6.00				12,000.00	c.cc	12,000.00
1	Anthropolog	rist/Epidemiologist		12.00				30,000.00	c.cc	30,000.0
1	Finance			0.84				2,100.00	c.cc	2,100.00
	Total Blumban	Othor Doronnal							Total Othan Davagerat	78 EAR A
	Total Number	Other Personnel							Total Other Personnel	48,500.00

Total Salary, Wages and Fringe Benefits (A+B)

C.	Equipment Desc	ription			
Lis	t items and dollar a	amount for each item exceeding \$5,000			Funds Requested (\$)
Ade	ditional Equipment:		Add Attachment		
		Total funds requested for a	all equipment listed in the a	ttached file	
		·		Equipment	
D.	Travel				Funds Requested (\$)
1.		Costs (Incl. Canada, Mexico and U.S. Posse	essions)		
2.	Foreign Travel Co	sts		Ī	3,500.00
			Total	Travel Cost	3,500.00
=	Darticinant/Train	ee Support Costs			Funds Requested (\$)
1.	Tuition/Fees/Healt	* * * * * * * * * * * * * * * * * * * *			runus nequesieu (\$)
'. 2.	Stipends	ii iiistiane		L	
2. 3.	Travel			L	
4.	Subsistence			Ĺ	
5.	Other				
	Number of Par	ticipants/Trainees T	otal Participant/Trainee Su	pport Costs	
F.	Other Direct Cos	sts			Funds Requested (\$)
_	Materials and Sup				2,400.00
2.	Publication Costs				
3.	Consultant Service	98			
4.	ADP/Computer Se	rvices			
5.	Subawards/Conso	rtium/Contractual Costs			
6.	Equipment or Faci	lity Rental/User Fees			
7.	Alterations and Re	novations			
8.	Testing				0.00
9.					
10.					
			Total Othe	er Direct Costs	2,400.00

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	60,400.00
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	10.00	6,040.00
	Total Indirect Costs	6,040.00
Cognizant Federal Age (Agency Name, POC Name POC Phone Number)	ency e, and	
I. Total Direct and	Indirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	66,440.00
J. Fee		Funds Requested (\$)
K. Total Costs and		Funds Requested (\$)
	Total Costs and Fee (I + J)	66,440.00
L. Budget Justifica	ation	
(Only attach one file.)	1268 KCRI _Budget Justification.pdf Delete Attachme	nt View Attachment

OMB Number: 4040-0001 Expiration Date: 10/31/2019

55,400.00

ORGANIZATIO	ONAL DUNS:	8505024370000	Enter	name of Organization:	Kilin	anjaro	Clinic	sal Resear	ch Institute		
Budget Type:	Project	Subaward/Cor	nsortium		Budge	t Perio	d: 2	Start Date:	09/01/2020	End Date: 08/31/202	<u>:</u>
A. Senior/Ke	y Person										
Prefix	First	Middle Last	Suff	ix Base Sa	ılary (\$)	Cal.	Months Acad.	s . Sum.	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Blandina	Mmbag	à		60,000.0	00 1.2	0		6,000.0	0 0.00	6,000.00
Project Role	e: Co PI, Epi	demiologist									
Additional Seni	or Koy Baroona			Add Attachment						requested for all Senior	
Additional Seni	or Key Persons:				I L					Total Senior/Key Person	6,000.00
B. Other Per	sonnel								·	can como may recom	2,222.2
Number of						Months			equested	Fringe	Funds
Personnel	•	t Role		Г	Cal.	Acad.	Sum.		Salary (\$)	Benefits (\$)	Requested (\$)
	Post Doctora							_			
	Graduate Stu	udents									
	Undergradua	ite Students									
1	Secretarial/C	lerical			1.20				2,400.00	c.cc	2,400.00
1	Lab Technic	cian			1.00				2,000.00	c.cc	2,000.00
1	Nurse				6.00				12,000.00	c.cc	12,000.00
1	Anthropolog	yist/Epidemiologis	t.		12.00				30,900.00	c.cc	30,900.00
1	Finance				0.84				2,100.00	c.cc	2,100.00
5	Total Number	Other Personnel								Total Other Personnel	49,400.00
							Tota	ıl Salary, \	Wages and Fri	nge Benefits (A+B)	55,400.00

Ç.	Equipment Desc	ription			
Lis	t items and dollar a	amount for each item exceeding \$5,000			Funds Requested (\$)
Add	ditional Equipment:		Add Attachment		
		Total funds requested for a	all equipment listed in the a	nttached file	
		·		Equipment	
D.	Travel				Funds Requested (\$)
1.		losts (Incl. Canada, Mexico and U.S. Posse	essions)		
2.	Foreign Travel Co	sts		Ī	3,605.00
			Total	Travel Cost	3,605.00
F	Participant/Train	ee Support Costs			Funds Requested (\$)
<u></u> 1.	Tuition/Fees/Healt	• • • • • • • • • • • • • • • • • • • •		Γ	τ unus πεσμεσίου (ψ)
2.	Stipends			L [
3.	Travel			[
4.	Subsistence				
5.	Other				
	Number of Par	ticipants/Trainees To	otal Participant/Trainee Su	pport Costs	
F.	Other Direct Cos	its			Funds Requested (\$)
1.	Materials and Sup	plies			2,520.00
2.	Publication Costs				
3.	Consultant Service	es			
4.	ADP/Computer Se	rvices			
5.	Subawards/Conso	rtium/Contractual Costs			
6.	Equipment or Faci	lity Rental/User Fees			
7.	Alterations and Re	novations			
8.	Testing				0.00
9.					
10.					
			Total Othe	er Direct Costs	2,520.00

G. Direct Costs				Funds Requested (\$)
		Total Dir	rect Costs (A thru F)	61,525.00
H. Indirect Costs				
Indirect Cost Type	•	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
Indirect		10.00		6,152.50
			Total Indirect Costs	6,152.50
Cognizant Federal Age (Agency Name, POC Name POC Phone Number)	ency , and			
I. Total Direct and	Indirect Costs			Funds Requested (\$)
	Total D	Pirect and Indirect Institu	itional Costs (G + H)	67,677.50
J. Fee				Funds Requested (\$)
K. Total Costs and	Fee			Funds Requested (\$)
		Total (Costs and Fee (I + J)	67,677.50
L. Budget Justifica	ation			
(Only attach one file.)	1268 KCRI _Budget Justific	eation.pdf		

OMB Number: 4040-0001 Expiration Date: 10/31/2019

74,413.50

ORGANIZATIO	ONAL DUNS:	8505024370000	Enter name of Organization	n: Kilit	man jaro	Clinic	sal Resear	ch Institute		
Budget Type:	☐ Project	Subaward/Consor	tium	Budg	et Period	1: 3	Start Date:	09/01/2021	End Date: 08/31/20	22
A. Senior/Ke	y Person									
Prefix	First	Middle Last	Suffix Base	Salary (\$)	Cal.	Months Acad.	_	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Blandina	Mrbaga		60,000.	00 1.20			6,000.00	3.00	6,000.00
Project Role	e: Co PI, Epi	demiclogist								
			A 4 4 A 9					Total Funds r	requested for all Senior	
Additional Seni	or Key Persons:		Add Attachment					Key Pers	ons in the attached file	
								Te	otal Senior/Key Person	6,000.00
B. Other Per	sonnel									
Number of					Months		F	equested	Fringe	Funds
Personnel	Projec	t Role		Çal.	Acad.	Sum.		Salary (\$)	Benefits (\$)	Requested (\$)
	Post Doctora	Associates								
	Graduate Stu	dents								
	Undergradua	te Students								
1	Secretarial/C	erical		1.20				2,400.00	c.cc	2,400.00
2	Lab Technic	ian		12.00				48,000.00	c.cc	48,000.00
1	Nurse	·		0.00				c.cc	c.cc	0.00
1	Anthropolog	ist/Epidemiologist		6.00				15,913.50	c.cc	15,913.50
1	Finance			0.84				2,100.00	c.cc	2,100.00
6	Total Number	Other Personnel							Total Other Personnel	68,413.50

Total Salary, Wages and Fringe Benefits (A+B)

C. Equi	pment Desc	ription				
	ns and dollar a	mount for each item exceed	ding \$5,000			Funds Requested (\$)
Additiona	al Equipment:			Add Attachment		
		Total funds i	requested for all e	quipment listed in the a	ttached file	
			·		Equipment	
D. Trave	el					Funds Requested (\$)
		osts (Incl. Canada, Mexico ar	nd U.S. Possessi	ons)		, ,,
2. Fore	eign Travel Cos	sts				0.00
	·			Total	Travel Cost	0.00
E. Parti	cipant/Train	ee Support Costs				Funds Requested (\$)
I. Tuiti	ion/Fees/Healt	h Insurance				
2. Stip	ends					
3. Trav	/el					1,800.00
1. Sub	sistence				Ī	
5. Othe	er					
	Number of Par	icipants/Trainees	Total	Participant/Trainee Sup	oport Costs	1,800.00
F. Othe	er Direct Cos	ts				Funds Requested (\$)
1. Mate	erials and Supp	plies				16,802.10
2. Publ	lication Costs					
3. Con:	sultant Service	s				
4. ADP	⁹ /Computer Se	rvices				
5. Suba	awards/Conso	tium/Contractual Costs				
6. Equi	ipment or Faci	ity Rental/User Fees				
7. Alter	rations and Re	novations				
8. Test	ing					10,666.67
9						
0.						
				Total Othe	r Direct Costs	27.468.77

G. Direct Costs				Funds Requested (\$)
		Total Di	rect Costs (A thru F)	103,682.27
H. Indirect Costs				
Indirect Cost Type	•	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
Indirect		10.00		10,368.23
			Total Indirect Costs	10,368.23
Cognizant Federal Age (Agency Name, POC Name POC Phone Number)	ncy , and			
I. Total Direct and	Indirect Costs			Funds Requested (\$)
	Total D	Pirect and Indirect Institu	itional Costs (G + H)	114,050.50
J. Fee				Funds Requested (\$)
K. Total Costs and	Fee			Funds Requested (\$)
		Total (Costs and Fee (I + J)	114,050.50
L. Budget Justifica	ation			
(Only attach one file.)	1268 KCRI _Budget Justific	eation.pdf		

OMB Number: 4040-0001 Expiration Date: 10/31/2019

115,281.81

DRGANIZATIO	NAL DUNS:	Enter name of Organization:			Kilimanjaro Clinical Research Institute								
Budget Type:	Project	⊠ Subawa	ard/Consortium	1		Budget	t Perio	1:4 9	Start Date:	09/01/2022	End Date: 08/3	31/2023	
A. Senior/Ke	y Person												
Prefix	First	Middle	Last	Suffix	Base Sal	агу (\$)	Cal.	Months Acad.		Requested Salary (\$)	Fringe Benefits (\$)		Funds Requested (\$)
	Blandina		Mmbaga		6	50,000.0	0 1.2			6,000.0	0	0.00	6,000.00
Project Role	: Co PI, Epi	demiclogist											
Additional Senio	or Key Persons:	;		Ado	Attachment						requested for all Se sons in the attached		
										1	Total Senior/Key Per	rson	6,000.0
3. Other Pers	sonnel												
Number of Personnel	Projec	t Role					Months Acad.	Sum.		equested alary (\$)	Fringe Benefits (\$)		Funds Requested (\$)
	Post Doctora	l Associates			Γ								
	Graduate Stu	udents											
	Undergradua	ate Students											
1	Secretarial/C	lerical				1.20				2,400.00	С	.cc	2,400.0
2	Lab Technic	cian				12.00				48,000.00	С	.cc	48,000.0
2	Nurse					6.00				24,000.00	С	.cc	24,000.0
1	Anthropolog	gist/Epidemi	ologist			12.00				32,781.81	С	.cc	32,781.8
1	Finance					0.84				2,100.00	С	.cc	2,100.0
7	Total Number	Other Personr	nel								Total Other Person	nnel	109,281.8
								Tota	l Salary, V	Vages and Fri	nge Benefits (A	+B)	115,281.8

C.	Equipment Desc	ription					
Lis	t items and dollar Equipment item	amount for each item exceeding \$5,0	00			Fund	ds Requested (\$)
Ado	ditional Equipment:			Add Attachment			
		Total funds requested	for all e	quipment listed in the a	ttached file		
		·		•	Equipment		
D.	Travel					Fun	ds Requested (\$)
 1,		costs (Incl. Canada, Mexico and U.S. Pe	ossessi	ons)			
2.	Foreign Travel Co	•		,	[11,483.15
	Ü			Total	Travel Cost		11,483.15
E.	Participant/Train	ee Support Costs				Fun	ds Requested (\$)
1,	Tuition/Fees/Heal	,,					
2.	Stipends						
3.	Travel						
4.	Subsistence						
5.	Other						
	Number of Par	ticipants/Trainees	Total	Participant/Trainee Su	oport Costs		
F.	Other Direct Cos	ets				Fu	nds Requested (\$)
1.	Materials and Sup	plies					17,642.21
2.	Publication Costs						
3.	Consultant Service	s s					
4.	ADP/Computer Se	rvices					
5.	Subawards/Conso	rtium/Contractual Costs					
6.	Equipment or Faci	lity Rental/User Fees					
7.	Alterations and Re	novations					
8.	Testing						31,989.00
9.							
10.							
				Total Othe	er Direct Costs		49,631.21

G. Direct Costs				Funds Requested (\$)
		Total Di	rect Costs (A thru F)	176,396.17
H. Indirect Costs				
Indirect Cost Type		Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
Indirect		10.00		17,639.62
			Total Indirect Costs	17,639.62
Cognizant Federal Age (Agency Name, POC Name POC Phone Number)				
I. Total Direct and	Indirect Costs			Funds Requested (\$)
	Total Dire	ct and Indirect Institu	itional Costs (G + H)	194,035.79
J. Fee				Funds Requested (\$)
K. Total Costs and	Fee			Funds Requested (\$)
		Total	Costs and Fee (I + J)	194,035.79
L. Budget Justifica	ation			
(Only attach one file.)	1268 KCRI _Budget Justificati	on.pdf		

OMB Number: 4040-0001

0.00

0.00

2,100.00

4,500.00

10,500.00

Expiration Date: 10/31/2019 **ORGANIZATIONAL DUNS:** Enter name of Organization: 8505024370000 Kilimanjaro Clinical Research Institute Subaward/Consortium **Budget Type:** □ Project Budget Period: 5 09/01/2023 End Date: 08/31/2024 Start Date: A. Senior/Key Person Months Requested Fringe **Funds** Cal. Acad. Sum. Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Suffix Base Salary (\$) Blandina Mmbaga 60,000.00 1.20 6,000.00 0.00 6,000.00 Project Role: | Co PI, Epidemiologist Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 6,000.00 **B. Other Personnel** Months Requested Fringe **Funds** Number of Project Role Sum. Personnel Çal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates Graduate Students Undergraduate Students Secretarial/Clerical 2,400.00 1.20 2,400.00 C.CC Lab Technician 0.00 C.CC 0.00 0.00

0.00

0.00

0.84

Nurse

Finance

Anthropologist/Epidemiologist

Total Number Other Personnel

c.cc

c.cc

2,100.00

Total Salary, Wages and Fringe Benefits (A+B)

c.cc

c.cc

c.cc

Total Other Personnel

Ç.	Equipment Desc	ription			
Lis	t items and dollar a	amount for each item exceeding \$5,000			Funds Requested (\$)
Add	ditional Equipment:		Add Attachment		
		Total funds requested for a	all equipment listed in the a	ttached file	
		·		Equipment	
D.	Travel				Funds Requested (\$)
1.		Costs (Incl. Canada, Mexico and U.S. Posse	essions)		
2.	Foreign Travel Co	sts	·	Ī	0.00
			Total	Travel Cost	0.00
E.	Participant/Train	ee Support Costs			Funds Requested (\$)
1.	Tuition/Fees/Healt	h Insurance			
2.	Stipends			Ī	
3.	Travel			Ī	
4.	Subsistence				
5.	Other				
	Number of Par	ticipants/Trainees T	otal Participant/Trainee Su	pport Costs	
F.	Other Direct Cos	ets			Funds Requested (\$)
1.	Materials and Sup	plies			2,917.22
2.	Publication Costs				
3.	Consultant Service) S			
4.	ADP/Computer Se	rvices			
5.	Subawards/Conso	rtium/Contractual Costs			
6.	Equipment or Faci	lity Rental/User Fees			
7.	Alterations and Re	novations			
8.	Testing				0.00
9.					
10.					
			Total Othe	er Direct Costs	2,917.22

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	13,417.22
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	10.00	1,341.72
	Total Indirect Costs	1,341.72
Cognizant Federal Age (Agency Name, POC Name POC Phone Number)		
I. Total Direct and	Indirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	14,758.94
J. Fee		Funds Requested (\$)
K. Total Costs and		Funds Requested (\$)
	Total Costs and Fee (I + J)	14,758.94
L. Budget Justifica	ation	
(Only attach one file.)	1268 KCRI _Budget Justification.pdf	

RESEARCH & RELATED BUDGET - Cumulative Budget

	Totals	s (\$)
Section A, Senior/Key Person		30,000.00
Section B, Other Personnel		280,095.31
Total Number Other Personnel	25	
Total Salary, Wages and Fringe Benefits (A+B)		310,095.31
Section C, Equipment		
Section D, Travel		18,588.15
1. Domestic		
2. Foreign	18,588.15	
Section E, Participant/Trainee Support Costs		1,800.00
1. Tuition/Fees/Health Insurance		
2. Stipends		
3. Travel	1,800.00	
4. Subsistence		
5. Other		
6. Number of Participants/Trainees		
Section F, Other Direct Costs		84,937.20
1. Materials and Supplies	42,281.53	
2. Publication Costs		
3. Consultant Services		
4. ADP/Computer Services		
5. Subawards/Consortium/Contractual Costs		
6. Equipment or Facility Rental/User Fees		
7. Alterations and Renovations		
8. Other 1	42,655.67	
9. Other 2		
10 . Other 3		
Section G, Direct Costs (A thru F)		415,420.66
Section H, Indirect Costs		41,542.07
Section I, Total Direct and Indirect Costs (G + H)	Ī	456,962.73
Section J, Fee		
Section K, Total Costs and Fee (I + J)		456,962.73

ORGANIZATIO	ONAL DUNS:	56123891	20000	Inter name of Organ	nization:	One Ile	alth Co	ordin	ation Desi	k Prime Minist	ers Office		
Budget Type:	Project	⊠ Subav	vard/Consortium			Budget	t Period	:1 S	Start Date:	09/01/2019	End Date:	08/31/2020	
A. Senior/Ke	y Person												
Prefix	First	Middle	Last	Suffix	Base Sala	агу (\$)	Cal.	Months Acad.		Requested Salary (\$)	Frir Benef		Funds Requested (\$)
Dr.	Justine		Assenga			3,000.0	0 1.00			250.0	υ	0.00	250,00
Project Role	B: Research S	cientist, M	Molecular Epid	emiclogist									
Gr.	Jubilate		3ernard			3,000.0	0 1.00			250.0	0	0.00	250.00
Project Role	B: Research S	cientist F	Public Health	Specialist					-				
B. Other Per	or Key Persons: sonnel										sons in the at Total Senior/K		500.00
Number of Personnel	Projec	t Role					Months Acad.	Sum.		equested Salary (\$)	Fring Benefit		Funds Requested (\$)
	Post Doctora	Associates											
	Graduate Stu	udents							1				
	Undergradua	te Students			Ī								
	Secretarial/C	lerical											
	Total Number	Other Person	inel								Total Other	Personnel	
								Total	l Salary, V	Wages and Fri	nge Benefi	its (A+B)	500.00

C.	Equipment Desc	iption				
Lis	st items and dollar a Equipment item	mount for each item exceeding	g \$5,000			Funds Requested (\$)
Ade	ditional Equipment:			Add Attachment		
		Total funds requ	uested for all e	quipment listed in the a	attached file	
		•			Equipment	
D.	Travel					Funds Requested (\$)
1.	Domestic Travel C					
2.	Foreign Travel Co	ts				600.00
				Total	Travel Cost	600.00
E.	Participant/Train	ee Support Costs				Funds Requested (\$)
1.	Tuition/Fees/Healt	n Insurance				
2.	Stipends					
3.	Travel					
4.	Subsistence					
5.	Other					
	Number of Par	icipants/Trainees	Total	Participant/Trainee Su	pport Costs	
F.	Other Direct Cos	ts				Funds Requested (\$)
1.	Materials and Sup	olies				
2.	Publication Costs					
3.	Consultant Service	S				
4.	ADP/Computer Se	vices				
5.	Subawards/Conso	tium/Contractual Costs				
6.	Equipment or Faci	ty Rental/User Fees				
7.	Alterations and Re	novations				
8.						
9.						
10.						
				Total Othe	er Direct Costs	

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	1,100.00
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	10.00	110.00
	Total Indirect Costs	110.00
Cognizant Federal Age (Agency Name, POC Name POC Phone Number)		
I. Total Direct and	Indirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	1,210.00
J. Fee		Funds Requested (\$)
K. Total Costs and		Funds Requested (\$)
	Total Costs and Fee (I + J)	1,210.00
L. Budget Justifica	ation	
(Only attach one file.)	1269 ORCD PMO_Budget Justification.pdf Delete Attachme	nt View Attachment

OMB Number: 4040-0001

Expiration Date: 10/31/2019

PRGANIZATIONAL DUNS:		5612389120000		Enter name of Organization	n: One I	lealth C	ers Office				
Budget Type	e: Project	⊠ Subav	vard/Consortiu	m	Budg	et Period	l: 2 S	Start Date:	09/01/2020	End Date: 08/31/2021	
A. Senior/K	ey Person										
Prefix	First	Middle	Last	Suffix Base	Salary (\$)	Cal.	Months Acad.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	Justine		Assenga		3,090.	00 1.00			257.5	0 3.03	257,50
Project Ro	o le: Research S	cientist, N	Molecular Epi	idemiclogist							
Or.	Jubilate		Bernard		3,090.	00 1.00			257.5	0 0.00	257.50
Project Ro	ole: Research S	cientist. K	Public Health	n Specialist							
Additional Se	nior Key Persons	:		Add Attachmen	<u> [</u>					sons in the attached file Total Senior/Key Person	515.00
D 041 D-									1	Total Senior/Key Person	515.00
B. Other Pe						Months				F	Frank.
Number of Personnel		t Role			Cal.	Acad.	Sum.		equested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctora	l Associates									• • • • • • • • • • • • • • • • • • • •
	Graduate Stu	udents									
	_ │ Undergradua	ate Students									
	Secretarial/C										
]			
	Total Number	Other Persor	nnel							Total Other Personnel	
							Total	i Salary, V	Vages and Fri	nge Benefits (A+B)	515.00

Ç.	Equipment Desc	ription			
List	t items and dollar Equipment item	amount for each item exceeding \$5,000			Funds Requested (\$)
Add	litional Equipment:		Add Attachment		
		Total funds requested for all ed	juipment listed in the a	ttached file	
				Equipment	
D. '	Travel				Funds Requested (\$)
1,		Costs (Incl. Canada, Mexico and U.S. Possessio	ons)		(4)
2.	Foreign Travel Co	•	/		618.00
	· ·		Total	Travel Cost	618.00
E. I	Participant/Train	ee Support Costs			Funds Requested (\$)
1.	Tuition/Fees/Heal	· · · · · · · · · · · · · · · · · · ·			
2.	Stipends				
3.	Travel			Ī	
4.	Subsistence			Ī	
5.	Other				
	Number of Par	ticipants/Trainees Total	Participant/Trainee Su	pport Costs	
F.	Other Direct Co:	sts			Funds Requested (\$)
1.	Materials and Sup	plies			
2.	Publication Costs				
3.	Consultant Service	è s			
4.	ADP/Computer Se	rvices			
5.	Subawards/Consc	rtium/Contractual Costs			
6.	Equipment or Fac	lity Rental/User Fees			
7.	Alterations and Re	novations			
8.					
9.					
10.					
			Total Oth	or Direct Coete	

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	1,133.00
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	10.00	113.30
	Total Indirect Costs	113.30
Cognizant Federal Agen (Agency Name, POC Name, a POC Phone Number)		
I. Total Direct and Ir	ndirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	1,246.30
J. Fee		Funds Requested (\$)
K. Total Costs and		Funds Requested (\$)
	Total Costs and Fee (I + J)	1,246.30
L. Budget Justificat	ion	
(Only attach one file.)	1269 ORCD FMO_Budget Justification.pdf	

OMB Number: 4040-0001 Expiration Date: 10/31/2019

530.46

ORGANIZATIO	ONAL DUNS:	561238912	0000	Enter name of Organization	n: One He	ealth Co	pordin	nation Desi	k Prime Minist	ers Office	
Budget Type:	Project	⊠ Subaw	ard/Consortiun	n	Budge	t Period	:3 9	Start Date:	09/01/2021	End Date: 08/31/2023	
A. Senior/Ke	y Person										
Prefix	First	Middle	Last	Suffix Base S	Salary (\$)		Months Acad.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Or.	Justine		Assenga		3,183.0	00 1.00			285.2	3 0.00	265,23
Project Role	Research S	cientist, M	olecular Epi	demiologist							
Or.	Jubilate		Bernard		3,183.0	00 1.00			265.2	3 0.00	265.23
Project Role	Research S	cientist. P	ublic Health	Specialist							
D. Other Dev	1								٦	Total Senior/Key Person	530.46
B. Other Pers	sonnel										
Number of Personnel	Projec	t Role			Cal.	Months Acad.	Sum.		equested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctora	Associates									
	Graduate Stu	dents									
	Undergradua	te Students									
	Secretarial/C	lerical									
	Total Number	Other Person	nel							Total Other Personnel	
							Tota	l Salary, V	Nages and Fri	nge Benefits (A+B)	530.46

C.	Equipment Desc	ription						
Lis	t items and dollar a	amount for eac	:h item exce	eeding \$5,000			Func	ds Requested (\$)
Ado	ditional Equipment:				Add Attachment			
			Total fund:	s requested for all	equipment listed in the a	attached file		
				·		Equipment		
D.	Travel						Fund	ds Requested (\$)
1.	Domestic Travel C	Costs (Incl. Can	ada, Mexico	and U.S. Possess	sions)			
2.	Foreign Travel Co	ests				[636.54
	-				Total	Travel Cost		636.54
E.	Participant/Train	ee Support C	osts				Fund	ds Requested (\$)
1.	Tuition/Fees/Healt	th Insurance						
2.	Stipends							
3.	Travel							
4.	Subsistence							
5.	Other							
	Number of Par	rticipants/Traine	s	Tot	al Participant/Trainee Su	pport Costs		
F.	Other Direct Cos	sts					Fui	nds Requested (\$)
1.	Materials and Sup	plies						
2.	Publication Costs							
3.	Consultant Service	es						
4.	ADP/Computer Se	ervices						
5.	Subawards/Conso	ortium/Contractu	al Costs					
6.	Equipment or Faci	ility Rental/User	Fees					
7.	Alterations and Re	enovations						
8.								
9.								
10.								
-					Total Othe	er Direct Costs		

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	1,167.00
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	10.00	116.70
	Total Indirect Costs	116.70
Cognizant Federal Agen (Agency Name, POC Name, POC Phone Number)		
I. Total Direct and I	ndirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	1,283.70
J. Fee		Funds Requested (\$)
K. Total Costs and		Funds Requested (\$)
	Total Costs and Fee (I + J)	1,283.70
L. Budget Justificat	tion	
(Only attach one file.)	1269 OHCD FMO_Budget Justification.pdf	

OMB Number: 4040-0001

6,556.36

Expiration Date: 10/31/2019 **ORGANIZATIONAL DUNS:** Enter name of Organization: 5612389120000 One Health Coordination Desk Prime Ministers Office Subaward/Consortium **Budget Type:** ☐ Project **Budget Period: 4** 09/01/2022 End Date: 08/31/2023 Start Date: A. Senior/Key Person Months Requested Fringe Funds Cal. Acad. Sum. Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Suffix Base Salary (\$) 3,278.18 12.00 3,278.18 0.00 3,278.18 Justine Assenga Project Role: Research Scientist, Mclecular Epidemiclogist 3,278.18 12.00 0.00 Dr. Jubilate Bernard 3,278.18 3,278.18 Project Role: Research Scientist, Public Health Specialist Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 6,556.36 **B. Other Personnel** Months Requested **Funds** Number of Fringe Project Role Sum. Personnel Cal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates Graduate Students Undergraduate Students Secretarial/Clerical **Total Number Other Personnel** Total Other Personnel

Total Salary, Wages and Fringe Benefits (A+B)

C.	Equipment Desc	ription					
Lis	t items and dollar a	amount for each ite	em exceeding \$5,000			Funds Re	quested (\$)
Adc	ditional Equipment:			Add Attachment			
		To	otal funds requested for all o	equipment listed in the a	ttached file		
			·		Equipment		
D.	Travel					Funds Re	equested (\$)
1.	Domestic Travel C	costs (Incl. Canada,	, Mexico and U.S. Possess	ions)			
2.	Foreign Travel Co	sts					655.64
				Total	Travel Cost		655.64
E .	Participant/Train	ee Support Costs	s			Funds Re	equested (\$)
1.	Tuition/Fees/Healt	h Insurance					
2.	Stipends				Ī		
3.	Travel				Ī		
4.	Subsistence				Ī		
5.	Other						
	Number of Par	ticipants/Trainees	Tota	l Participant/Trainee Su	pport Costs		
F.	Other Direct Cos	sts				Funds F	Requested (\$)
1.	Materials and Sup	plies					
2.	Publication Costs						
3.	Consultant Service	es					
4.	ADP/Computer Se	rvices					
5.	Subawards/Conso	rtium/Contractual Co	osts				
6.	Equipment or Faci	lity Rental/User Fee	es				
7.	Alterations and Re	novations					
8.							
9.							
10.							
				Total Othe	er Direct Costs		

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	7,212.00
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	10.00	721.20
	Total Indirect Costs	721.20
Cognizant Federal Ager (Agency Name, POC Name, POC Phone Number)		
I. Total Direct and I	ndirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	7,933.20
J. Fee		Funds Requested (\$)
K. Total Costs and	Fee	Funds Requested (\$)
	Total Costs and Fee (I + J)	7,933.20
L. Budget Justifica	tion	
(Only attach one file.)	1269 ORCD PMO_Budget Justification.pdf	

OMB Number: 4040-0001

6,753.06

Expiration Date: 10/31/2019 **ORGANIZATIONAL DUNS:** Enter name of Organization: 5612389120000 One Health Coordination Desk Prime Ministers Office Subaward/Consortium **Budget Type:** ☐ Project **Budget Period: 5** 09/01/2023 End Date: 08/31/2024 Start Date: A. Senior/Key Person Months Requested Fringe Funds Cal. Acad. Sum. Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Suffix Base Salary (\$) 3,376.53 12.00 3,376.5 0.00 3,376.53 Justine Assenga Project Role: Research Scientist, Mclecular Epidemiclogist 3,376.53 12.00 0.00 Dr. Jubilate Bernard 3,376.53 3,376.53 Project Role: Research Scientist, Public Health Specialist Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 6,753.06 **B. Other Personnel** Months Requested **Funds** Number of Fringe Project Role Sum. Personnel Cal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates Graduate Students Undergraduate Students Secretarial/Clerical

Total Number Other Personnel

Total Salary, Wages and Fringe Benefits (A+B)

Total Other Personnel

C.	Equipment Desc	ription			
Lis	t items and dollar Equipment item	amount for each item exceeding \$5,000			Funds Requested (\$)
Adc	litional Equipment:		Add Attachment		
		Total funds requested for all eq	uipment listed in the a	ttached file	
				Equipment [
D. 1	Travel				Funds Requested (\$)
 1,		Costs (Incl. Canada, Mexico and U.S. Possessio	ons)		(+)
2.	Foreign Travel Co	•	- /		675.31
	v	Travel Cost	675.31		
	Darticinant/Train	ee Support Costs			Funda Damusated (\$)
1.	Tuition/Fees/Heal	· · · · · · · · · · · · · · · · · · ·		Γ	Funds Requested (\$)
'. 2.	Stipends	II IIIsurance		<u>[</u>	
2. 3.	Travel			<u>[</u>	
4.	Subsistence			<u>[</u>	
5.	Other				
		ticipants/Trainees Total	Participant/Trainee Su	pport Costs	
F.	Other Direct Cos	sts			Funds Requested (\$)
1.	Materials and Sup	plies			
2.	Publication Costs				
3.	Consultant Service	es			
4.	ADP/Computer Se	rvices			
5.	Subawards/Consc	rtium/Contractual Costs			
6.	Equipment or Fac	lity Rental/User Fees			
7.	Alterations and Re	novations			
8.					
9.					
10.					
			Total Oth	ar Direct Coete	

G. Direct Costs				Funds Requested (\$)
		Total Dir	rect Costs (A thru F)	7,428.37
H. Indirect Costs				
Indirect Cost Type		Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
Indirect		10.00		742.84
			Total Indirect Costs	742.84
Cognizant Federal Age (Agency Name, POC Name POC Phone Number)				
I. Total Direct and	Indirect Costs			Funds Requested (\$)
	Total D	Pirect and Indirect Institu	itional Costs (G + H)	8,171.21
J. Fee				Funds Requested (\$)
K. Total Costs and	Fee			Funds Requested (\$)
		Total (Costs and Fee (I + J)	8,171.21
L. Budget Justifica	ation			
(Only attach one file.)	1269 ONCD PMO_Budget Justi	ification.pdf		

RESEARCH & RELATED BUDGET - Cumulative Budget

	Tota	ıls (\$)
Section A, Senior/Key Person		14,854.88
Section B, Other Personnel		
Total Number Other Personnel		
Total Salary, Wages and Fringe Benefits (A+B)		14,854.88
Section C, Equipment		
Section D, Travel		3,185.49
1. Domestic		
2. Foreign	3,185.49	
Section E, Participant/Trainee Support Costs		
1. Tuition/Fees/Health Insurance		
2. Stipends		
3. Travel		
4. Subsistence		
5. Other		
6. Number of Participants/Trainees		
Section F, Other Direct Costs		
1. Materials and Supplies		
2. Publication Costs		
3. Consultant Services		
4. ADP/Computer Services		
5. Subawards/Consortium/Contractual Costs		
6. Equipment or Facility Rental/User Fees		
7. Alterations and Renovations		
8. Other 1		
9. Other 2		
10 . Other 3		
Section G, Direct Costs (A thru F)		18,040.37
Section H, Indirect Costs		1,804.04
Section I, Total Direct and Indirect Costs (G + H)		19,844.41
Section J, Fee		
Section K, Total Costs and Fee (I + J)		19,844.41

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIONAL DUNS: Enter name of Organization: 2333889610000 Public Health England Porton Down Subaward/Consortium 08/31/2024 **Budget Type:** □ Project **Budget Period: 1** 09/01/2023 End Date: Start Date: A. Senior/Key Person Months Requested Fringe **Funds** Cal. Acad. Sum. Suffix Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Base Salary (\$) 0.10 0.00 142,920.00 1,191.00 1,191.00 Roger lewson Project Role: | Scientific Leader Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 1,191.00 **B. Other Personnel** Months Requested Fringe **Funds** Number of Project Role Çal. Sum. Personnel Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates Graduate Students Undergraduate Students Secretarial/Clerical 10,077.00 Senior Scientist 1.10 10,077.00 C.CC 0.05 503.00 c.cc 503.00 Project Manager

1.00

Technician

Total Number Other Personnel

12,278.00

Total Salary, Wages and Fringe Benefits (A+B)

c.cc

Total Other Personnel

12,278.00

22,858.00

24,049.00

C.	Equipment Desc	ription					
Lis	t items and dollar Equipment item	amount for each item ex	ceeding \$5,000			Funds	Requested (\$)
Ade	ditional Equipment:			Add Attachment			
		Total fu	nds requested for all e	nuipment listed in the a	attached file		
			•		Equipment		
D.	Travel					Funds	Requested (\$)
1.	Domestic Travel C	Costs (Incl. Canada, Mexi	co and U.S. Possessio	ons)			
2.	Foreign Travel Co	sts					
				Total	Travel Cost		
E.	Participant/Train	ee Support Costs				Funds	Requested (\$)
1.	Tuition/Fees/Healt	th Insurance					
2.	Stipends						
3.	Travel						
4.	Subsistence						
5.	Other						
	Number of Par	ticipants/Trainees	Total	Participant/Trainee Su	pport Costs		
F.	Other Direct Cos	sts				Fund	s Requested (\$)
1.	Materials and Sup	plies					7,115.00
2.	Publication Costs						
3.	Consultant Service	es					
4.	ADP/Computer Se	ervices					
5.	Subawards/Conso	rtium/Contractual Costs					
6.	Equipment or Faci	lity Rental/User Fees					8,070.97
7.	Alterations and Re	enovations					
8.							
9.							
10.							
				Total Othe	er Direct Costs		15,185.97

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	39,234.97
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	38.00	14,713.11
	Total Indirect Costs	14,713.11
Cognizant Federal Age (Agency Name, POC Name POC Phone Number)	and	
I. Total Direct and	Indirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	53,948.08
J. Fee		Funds Requested (\$)
K. Total Costs and	l Fee	Funds Requested (\$)
	Total Costs and Fee (I + J)	53,948.08
L. Budget Justifica	ation	
(Only attach one file.)	1270 PRB_Budget Justification.pdf Delete Attach	ment View Attachment

RESEARCH & RELATED BUDGET - Cumulative Budget

	Tota	ıls (\$)
Section A, Senior/Key Person		1,191.00
Section B, Other Personnel		22,858.00
Total Number Other Personnel	4	
Total Salary, Wages and Fringe Benefits (A+B)		24,049.00
Section C, Equipment		
Section D, Travel		
1. Domestic		
2. Foreign		
Section E, Participant/Trainee Support Costs		
1. Tuition/Fees/Health Insurance		
2. Stipends		
3. Travel		
4. Subsistence		
5. Other		
6. Number of Participants/Trainees		
Section F, Other Direct Costs		15,185.97
1. Materials and Supplies	7,115.00	
2. Publication Costs		
3. Consultant Services		
4. ADP/Computer Services		
5. Subawards/Consortium/Contractual Costs		
6. Equipment or Facility Rental/User Fees	8,070.97	
7. Alterations and Renovations		
8. Other 1		
9. Other 2		
10 . Other 3		
Section G, Direct Costs (A thru F)		39,234.97
Section H, Indirect Costs		14,713.11
Section I, Total Direct and Indirect Costs (G + H)		53,948.08
Section J, Fee		
Section K, Total Costs and Fee (I + J)		53,948.08

ORGANIZATIO	ONAL DUNS:	850495478	30000	Enter name of Organ	ization:	Tanza	ania Wil	diife F	Research	Institute		
Budget Type:	Project	⊠ Subaw	vard/Consortium	า		Budg	et Period	:1 S	tart Date:	09/01/2019	End Date: 08/31/2020	
A. Senior/Ke	y Person											
Prefix	First	Middle	Last	Suffix	Base Sa	larv (\$)		Months Acad.	Sum.	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	Julius	Dollo	Keyyu			30,000.	00 1.00			2,500.00	1	2,500.00
			isease Ecclo		ahmant						requested for all Senior	
Additional Senio	or Key Persons	;		Add Atta	cnment						ons in the attached file otal Senior/Key Person	2,500.0
B. Other Pers	sonnel									•	otal Selliol/Rey Felson	2,300.0
Number of Personnel	Projec	ct Role				Çal.	Months Acad.	Sum.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctora	al Associates			Γ							
	Graduate Stu	udents			Ī							
	Undergradua	ate Students			Ī							
	Secretarial/C				F							
1	Wildlife Te					2.00				3,600.00	c.cc	3,600.0
1	Total Number	r Other Persoп	nel								Total Other Personnel	3,600.0
								Total	Salary,	Wages and Frii	nge Benefits (A+B)	6,100.0
C. Equipme	nt Descriptio	on								-		.,
List items and		int for each it	em exceeding	\$5,000				Fui	nds Reque	sted (\$)		
Additional Equ	ipment:			Add A	ttachment	t						
		Т	otal funds reque	ested for all equipment	listed in t	the attac	hed file					
					т	otal Equ	uipment					

	Travel			Funds Requested (\$)
l.	Domestic Travel Costs (Incl. Canada, Mexico and U	J.S. Possessions)		
-	Foreign Travel Costs			300.00
			Total Travel Cost	300.00
	Participant/Trainee Support Costs			Funds Requested (\$)
	Tuition/Fees/Health Insurance			-
	Stipends			
	Travel			
	Subsistence			
	Other			
_	Number of Participants/Trainees	Total Participant/I	Frainee Support Costs	
-	Other Direct Costs			Funda Baguastad (\$)
	Materials and Supplies			Funds Requested (\$)
	Publication Costs			
	Consultant Services			
	ADP/Computer Services			
	Subawards/Consortium/Contractual Costs			
	Equipment or Facility Rental/User Fees			
	Alterations and Renovations			
).				
).				
•			Total Other Direct Costs	
	Direct Costs			Funds Requested (\$)
_	Direct Costs	Total Di	rect Costs (A thru F)	Funds Requested (\$) 6,400.00
		Total Di	rect Costs (A thru F)	
	ndirect Costs			6,400.00
	ndirect Costs Indirect Cost Type	Indirect Cost Rate (%)	rect Costs (A thru F) Indirect Cost Base (\$)	6,400.00
	ndirect Costs	Indirect Cost Rate (%)		6,400.00

I. Total Direct and Indirect Costs Funds Requested (\$) Total Direct and Indirect Institutional Costs (G + H) 7,040.00 J. Fee Funds Requested (\$) K. Total Costs and Fee Funds Requested (\$) Total Costs and Fee (I + J) 7,040.00 L. Budget Justification View Attachment (Only attach one file.) Delete Attachment

1271 TAWIRI_Budget Justification.pdf

Budget Type: A. Senior/Ke		⊠ Suba	ward/Consor	lium		Budge	t Period		Start Date	e: 09/01/2020 E	End Date: 08/31/202]
Prefix	First	Middle	Last	Suffix	Base Sa	lary (\$)	Cal.	Months Acad.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	Julius	Dalla	Keyyu			30,900.0	00 1.00			2,575.00	0.00	2,575.00
Project Rok			Disease Ecc							Total Funds re	equested for all Senior	
Additional Seni B. Other Per	or Key Persons sonnel	;			dd Attachment						ons in the attached file	2,575.0
Number of Personnel	Projec	ct Role			_	Cal.	Months Acad.	Sum.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctora											
	Graduate St											
	Undergradua Secretarial/C											
	Wildlife To					2.00				3,600.00	c.cc	3,600.0
1	Total Number	r Other Perso	nnel							7	Total Other Personnel	3,600.0
								Total	l Salary,	Wages and Frin	ge Benefits (A+B)	6,175.0
				ing \$5,000	Add Attachment		ned file	Fu	inds Requi	ested (\$)		

	. Travel		Funds Requested (\$)
ı.	Domestic Travel Costs (Incl. Canada, Mexico and U.S. Possessions)		
2.	Foreign Travel Costs		309.00
	т	otal Travel Cost	309.0
Ε.	. Participant/Trainee Support Costs		Funds Requested (\$)
١.			•
2.	Stipends		
3.	Travel		
ŀ.	Subsistence		
5.	Other		
_	Number of Participants/Trainees Total Participant/Trainee	e Support Costs	
F	. Other Direct Costs		Funds Requested (\$)
	. Materials and Supplies		runus nequesteu (3)
	. Publication Costs		
3.	. Consultant Services		
4.	. ADP/Computer Services		
	. Subawards/Consortium/Contractual Costs		
6.	. Equipment or Facility Rental/User Fees		
7.	. Alterations and Renovations		
8.			
9.			
0.			
	Total	Other Direct Costs	
G .	Direct Costs		Funds Requested (\$)
	Total Direct 0	Costs (A thru F)	6,484.00
_			
	Indirect Costs		
٦.	Indirect Cost Type Indirect Cost Rate (%) Indir	rect Cost Base (\$)	Funds Requested (\$)
<u>1.</u>	maneet oost right		
1.	Indirect. 10.00	I Indirect Costs	648.40

i. Total Direct and	indirect Costs			Funds Requested (\$)
		Total Direct and Indire	ect Institutional Costs (G + H)	7,132.40
J. Fee				Funds Requested (\$)
K. Total Costs and	d Fee			Funds Requested (\$)
			Total Costs and Fee (I + J)	7,132.40
L. Budget Justific	ation			
(Only attach one file.)	1971 TAMIET Brode	or Tresifiantion pdf		

ORGANIZATIO	ONAL DUNS:	85049547	80000	Enter name of Organ	ization:	Tanza	ania Wii	dlife H	Research	Institute		
Budget Type:	Project	⊠ Subav	vard/Consortiu	m		Budg	et Period	l: 3 S	Start Date:	09/01/2021	End Date: 08/31/202	2
A. Senior/Ke	y Person											
Prefix	First	Middle	Last	Suffix	Base Sal	arv (\$)		Months Acad.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	Julius	Dalla	Keyyu			31,827.	00 1.00			2,652.2	T	2,652.25
	Research S									Total Funds	requested for all Senior	
Additional Seni	or Key Persons	: L		Add Atta	chment					Key Per	sons in the attached file	
B. Other Per	sonnel									7	Fotal Senior/Key Person	2,652.2
Number of Personnel		ct Role				Çal.	Months Acad.	Sum.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctora	al Associates			Γ							
	Graduate St	udents			Ē							
	Undergradua	ate Students			Ē							
	Secretarial/C				<u> </u>							
	Wildlife T	echnician				0.00				c.cc	c.cc	0.0
1	Total Number	r Other Person	inel								Total Other Personnel	0.0
								Total	Salary, ¹	Wages and Fri	nge Benefits (A+B)	2,652.2
	nt Descriptio d dollar amou t item		tem exceeding	g \$5,000				Fu	nds Reque	sted (\$)		
Additional Equ	ipment:			Add A	ttachment							
•		т	Intal funds regu	uested for all equipment		— — he attac	hed file					
		'	olai iailao ioqe	social for an equipment			lipment					
					•							

	Travel			Funds Requested (\$)
1.	Domestic Travel Costs (Incl. Canada, Mexico and	U.S. Possessions)		
2.	Foreign Travel Costs			318.2
			Total Travel Cost	318.2
Ξ.	Participant/Trainee Support Costs			Funds Requested (\$)
	Tuition/Fees/Health Insurance		Γ	
	Stipends		Ī	
Ι,	Travel		Ī	
ļ.,	Subsistence			
5.	Other			
	Number of Participants/Trainees	Total Participant/I	rainee Support Costs	
_	. Other Direct Costs			F 1 - B
	. Materials and Supplies			Funds Requested (\$)
	Publication Costs			
	Consultant Services			
	. ADP/Computer Services			
	Subawards/Consortium/Contractual Costs			
	Equipment or Facility Rental/User Fees			
	. Alterations and Renovations			
8.				
9.				
10.				
٠.			Total Other Direct Costs	
G.	Direct Costs			Funds Requested (\$)
		Total Dir	ect Costs (A thru F)	2,970.52
1 .	Indirect Costs			
	Indirect Cost Type	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
		10.00		297.09
	Tadi rect.			

i. Total Direct and	inairect Costs			Funds Requested (\$)
		Total Direct and Indire	ct Institutional Costs (G + H)	3,267.57
J. Fee				Funds Requested (\$)
K. Total Costs and	l Fee			Funds Requested (\$)
			Total Costs and Fee (I + J)	3,267.57
L. Budget Justifica	ation			
(Only attach one file.)	1971 TAMES Brode	or Trendicion and		

ORGANIZATIO	NAL DUNS:	85049547	80000	Enter name o	f Organization:	Tanza	ania Wil	dlife :	Research :	Institute		
Budget Type:	Project	⊠ Suba	ward/Consort	ium		Budg	et Period	l: 4 S	Start Date:	09/01/2022	End Date: 08/31/2023	3
A. Senior/Key	y Person											
Prefix	First	Middle	Last	Suffix	Base Sa	lary (\$)		Months Acad.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	Julius	Dalla	Keyyu		:	32,782.	00 1.00			2,731.8	92 0.00	2,731,82
Project Rale	Research S	Scientist,	Disease Ecc	logist								
Additional Senio	or Key Persons	;			Add Attachment					Total Funds Key Per	requested for all Senior sons in the attached file	
B. Other Pers	connel										Total Senior/Key Person	2,731.8
Number of Personnel		ct Role				Cal.	Months Acad.	Sum.		equested salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctora	al Associates										
	Graduate Stu	udents										
	Undergradua	ate Students										
	Secretarial/C	lerical										
1	Wildlife Te	echnician				0.00				c.cc	c.cc	0.0
1	Total Number	Other Perso	nnel								Total Other Personnel	0.0
								Total	l Salary, V	Wages and Fri	inge Benefits (A+B)	2,731.8
C. Equipmer	•											
List items and Equipment		nt for each	item exceedi	ng \$5,000				Fu	ınds Reques	sted (\$)		
Additional Equi	ipment:				Add Attachment							
			Total funds re	quested for all eq	uipment listed in t	he attac	hed file					
					Т	otal Equ	lipment					

<u> </u>	Travel			Funds Requested (\$)
1.	Domestic Travel Costs (Incl. Canada, Mexico and U.S.	Possessions)		
2.	Foreign Travel Costs			327.83
			Total Travel Cost	327.83
Ξ.	Participant/Trainee Support Costs			Funds Requested (\$)
	Tuition/Fees/Health Insurance		Γ	
	Stipends		Ī	
ί,	Travel		Ī	
ļ.,	Subsistence		Ī	
i.	Other			
	Number of Participants/Trainees	Total Participant/I	rainee Support Costs	
F	Other Direct Costs			Funds Requested (\$)
	Materials and Supplies			runus nequesteu (\$)
	Publication Costs			
3.	Consultant Services			
4.	ADP/Computer Services			
5.	Subawards/Consortium/Contractual Costs			
6.	Equipment or Facility Rental/User Fees			
7.	Alterations and Renovations			
8.				
9.				
0.				
			Total Other Direct Costs	
3.	Direct Costs			Funds Requested (\$)
		Total Dir	ect Costs (A thru F)	3,059.64
			•	
1 .	Indirect Costs			
	Indirect Cost Type	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
		10.00		305.90
	Indirect	10100		

I. Total Direct and Indirect Costs		Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	3,365.60
J. Fee		Funds Requested (\$)
K. Total Costs and Fee		Funds Requested (\$)
	Total Costs and Fee (I + J)	3,365.60
L. Budget Justification		
(Only attach one file)	Town i Cinna i am and C	

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIONAL DUNS: Enter name of Organization: 8504954780000 Tanzania Wildlife Research Institute Subaward/Consortium **Budget Type:** ☐ Project 09/01/2023 End Date: 08/31/2024 Budget Period: 5 Start Date: A. Senior/Key Person Months Requested Fringe Funds Cal. Acad. Sum. Salary (\$) Requested (\$) Prefix **First** Middle Last Suffix Base Salary (\$) Benefits (\$) Julius Dalla 33,765.00 1.00 2,813.7 0.00 2,813.77 Keyyu Project Role: Research Scientist, Disease Ecologist Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 2,813.77 **B. Other Personnel** Months Requested **Funds** Number of Fringe Project Role Sum. Personnel Çal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates Graduate Students Undergraduate Students Secretarial/Clerical Wildlife Technician 0.00 C.CC 0.00 0.00 **Total Other Personnel** Total Number Other Personnel 0.00 Total Salary, Wages and Fringe Benefits (A+B) 2,813.77 C. Equipment Description List items and dollar amount for each item exceeding \$5,000 Equipment item Funds Requested (\$) Additional Equipment: Add Attachment Total funds requested for all equipment listed in the attached file **Total Equipment**

<u> </u>	Travel	Funds Requested (\$)
1.	Domestic Travel Costs (Incl. Canada, Mexico and U.S. Possessions)	
2.	Foreign Travel Costs	337.6
	Total Travel Cost	337.69
Ξ.	Participant/Trainee Support Costs	Funds Requested (\$)
	Tuition/Fees/Health Insurance	
2.	Stipends	
3.	Travel	
ŀ.	Subsistence	
5 .	Other	
_	Number of Participants/Trainees Total Participant/Trainee Support Costs	
E	Other Direct Costs	Funda Baguastad (\$)
	Materials and Supplies	Funds Requested (\$)
	Publication Costs	
	Consultant Services	
	ADP/Computer Services	
	Subawards/Consortium/Contractual Costs	
6.	Equipment or Facility Rental/User Fees	
7.	Alterations and Renovations	
8.		
9.		
10.		
	Total Other Direct Costs	
G.	Direct Costs	Funds Requested (\$)
	Total Direct Costs (A thru F	3,151.42
_	Indirect Costs	
Η.		Funds Requested (\$)
1 .	Indirect Cost Type Indirect Cost Rate (%) Indirect Cost Base (\$)	1 11/110 1104 1104 (0)
н.	Indirect Cost Type Indirect Cost Rate (%) Indirect Cost Base (\$) Indirect Cost Rate (%) Indirect Cost Base (\$)	315.14

i. Total Direct and	indirect Costs			Funds Requested (\$)
		Total Direct and Indire	ect Institutional Costs (G + H)	3,466.56
J. Fee				Funds Requested (\$)
K. Total Costs and Fee				Funds Requested (\$)
			Total Costs and Fee (I + J)	3,466.56
L. Budget Justific	ation			
(Only attach one file.)	1991 TABLET Books	or Tuerrician ion adf		

RESEARCH & RELATED BUDGET - Cumulative Budget

	Tota	ls (\$)
Section A, Senior/Key Person		13,272.84
Section B, Other Personnel		7,200.00
Total Number Other Personnel	5	
Total Salary, Wages and Fringe Benefits (A+B)		20,4/2.84
Section C, Equipment		
Section D, Travel		1,592.74
1. Domestic		
2. Foreign	1,592.74	
Section E, Participant/Trainee Support Costs		
1. Tuition/Fees/Health Insurance		
2. Stipends		
3. Travel		
4. Subsistence		
5. Other		
6. Number of Participants/Trainees		
Section F, Other Direct Costs		
1. Materials and Supplies		
2. Publication Costs		
3. Consultant Services		
4. ADP/Computer Services		
5. Subawards/Consortium/Contractual Costs		
6. Equipment or Facility Rental/User Fees		
7. Alterations and Renovations		
8. Other 1		
9. Other 2		
10. Other 3		
Section G, Direct Costs (A thru F)	22,065.58	
Section H, Indirect Costs	2,206.55	
Section I, Total Direct and Indirect Costs (G + H)	24,272.13	
Section J, Fee		
Section K, Total Costs and Fee (I + J)		24,272.13

OMB Number: 4040-0001 Expiration Date: 10/31/2019

A Senior/Key Person Profix First Middle Last Suffix Base Salary (8) Cal. Acad. Sum. Requested Salary (8) Requested (8) Project Role: Co. PT Add Attachment Total Funds requested for all Senior Key Persons: In the attached file Total Senior Key Persons in the attached file Serior Serior Students Sudents Sudents Sucertainal/Ceical Secretarial/Ceical Secretarial/Ceical Secretarial/Ceical Sudents Sudents Sudents Sudents Sudents Sudents Sudents Sucertainal/Ceical Sudents Suden	ORGANIZATIO	RGANIZATIONAL DUNS: 5612352670000 Enter nam			Enter name of O	rganization:	Tanza	unia Vet	erinar	y Laborat	ory Agency		
Prefix First Middle Last Sulfix Base Salary (\$) Cal Acad. Sum. Salary (\$) Cal Acad. Sum. Salary (\$)	Budget Type:	-	⊠ Subaw	ard/Consortium	1		Budge	et Perioc	l: 1 S	Start Date:	09/01/2019	End Date: 08/31/202	0
Project Role: Ca PT Additional Senior Key Persons: Add Attachment Total Funds requested for all Senior Key Persons in the attached file Total Senior/Key Person 3,000.00 B. Other Personnel Number of Project Role Cal. Acad. Sum. Requested Fringe Benefits (S) Requested (S) Post Doctoral Associates Students Secretaria/Clerical Secretaria/Clerical Secretaria/Clerical Total Number Other Personnel Total Senior/Key Person 3,000.00 Total Salary, Wages and Fringe Benefits (A+B) 3,450.00 C. Equipment Description List Items and dollar amount for each item exceeding \$5,000 Equipment Item Funds Requested (S) Funds Requested (S) Funds Requested (S) Funds Requested (S) Funds Requested (S) Funds Requested (S) Funds Requested (S) Funds Requested (S)	Prefix	-	Middle	Last	Suffix	Base Sa	lary (\$)	Cal.					
Add Attachment	Dr.	Furaha		Mramba				00 1.00)		3,000.0	0 0.00	3,000.00
Add Attachment Key Persons in the attached file Total Senior/Key Person 5,000.00 B. Other Personnel Number of Project Role Cal. Acad. Sum. Requested Fringe Benefits (\$) Requested (\$) Post Doctoral Associates Graduate Students Undergraduate Students Undergraduate Students Secretarial/Clerical Secretarial/Clerical Total Number Other Personnel C. Equipment Description List items and dollar amount for each item exceeding \$5,000 Equipment item Total funds requested for all equipment listed in the attached file	Project Role	CC PI											
Number of Project Role Cal. Months Requested Salary (\$) Benefits (\$) Requested (\$)	Additional Senio	or Key Persons:			Add	Attachment					Total Funds Key Pers	requested for all Senior sons in the attached file	
Number of Project Role Post Doctoral Associates Graduate Students Undergraduate Students Secretarial/Clerical Secretarial/Clerical Total Number Other Personnel C. Equipment Description List items and dollar amount for each item exceeding \$5,000 Equipment: Total funds requested for all equipment: Add Attachment Total funds requested for all equipment listed in the attached file Total funds requested for all equipment listed in the attached file Project Role Requested Salary (\$) Requested Fringe Benefits (\$) Requested (\$) Funds Requested (\$) Funds Requested (\$)	B. Other Per	sonnel									ī	otal Senior/Key Person	3,000.00
Graduate Students Undergraduate Students Secretarial/Clerical Total Number Other Personnel Total Salary, Wages and Fringe Benefits (A+B) C. Equipment Description List items and dollar amount for each item exceeding \$5,000 Equipment item Funds Requested (\$) Total funds requested for all equipment listed in the attached file	Number of		t Role				Cal.		Sum.				
Undergraduate Students Secretarial/Clerical Total Number Other Personnel Total Salary, Wages and Fringe Benefits (A+B) C. Equipment Description List items and dollar amount for each item exceeding \$5,000 Equipment item Funds Requested (\$) Add Attachment Total funds requested for all equipment listed in the attached file													
Secretarial/Clerical 3 Technician 1.00 450.00 C. Equipment Description List items and dollar amount for each item exceeding \$5,000 Equipment item Funds Requested (\$) Total funds requested for all equipment listed in the attached file						Ĺ							
Total Number Other Personnel Total Salary, Wages and Fringe Benefits (A+B) C. Equipment Description List items and dollar amount for each item exceeding \$5,000 Equipment item Funds Requested (\$) Add Attachment Total funds requested for all equipment listed in the attached file						L							
C. Equipment Description List items and dollar amount for each item exceeding \$5,000 Equipment item Funds Requested (\$) Add Attachment Total funds requested for all equipment listed in the attached file	3						1.00				450.00	c.cc	450.00
C. Equipment Description List items and dollar amount for each item exceeding \$5,000 Equipment item Funds Requested (\$) Add Attachment Add Attachment Isted in the attached file	.3	Total Number	Other Person	nel								Total Other Personnel	450.00
List items and dollar amount for each item exceeding \$5,000 Equipment item Add Attachment Total funds requested for all equipment listed in the attached file									Total	l Salary, '	Wages and Fri	nge Benefits (A+B)	3,450.00
Total funds requested for all equipment listed in the attached file	List items and	d dollar amoui		em exceeding	\$5,000				Fu	nds Reque	ested (\$)		
Total funds requested for all equipment listed in the attached file										1			
	Additional Equ	ipment:			A	dd Attachment							
Total Equipment			Т	otal funds reque	sted for all equipn								

D. 1	ravel			Funds Requested (\$)
1.	Domestic Travel Costs (Incl. Canada, Mexico and U.S	. Possessions)		
2.	Foreign Travel Costs			120.00
			Total Travel Cost	120.00
E. F	articipant/Trainee Support Costs			Funds Requested (\$)
1.	Tuition/Fees/Health Insurance		Γ	·
2.	Stipends			
3.	Travel		Ī	
4.	Subsistence			
5.	Other			
	Number of Participants/Trainees	Total Participant/I	rainee Support Costs	
F. (Other Direct Costs			Funds Requested (\$)
1.	Materials and Supplies			2,000.00
2.	Publication Costs			
3.	Consultant Services			
4.	ADP/Computer Services			
5.	Subawards/Consortium/Contractual Costs			
6.	Equipment or Facility Rental/User Fees			
7.	Alterations and Renovations			
8.	Testing			0.00
9.				
10.				
			Total Other Direct Costs	2,000.00
G F	irect Costs			Freedo Bournes data
G. L	meet costs	Total Dir	rect Costs (A thru F)	Funds Requested (\$) 5,570.00
		Total Bit		3,3.0,00
H. I	ndirect Costs			
_	Indirect Cost Type	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
(verhead	10.00		557.00
			Total Indirect Costs	557.00
(Age	nizant Federal Agency cy Name, POC Name, and Phone Number)			

I. Total Direct and Indirect Costs Funds Requested (\$) Total Direct and Indirect Institutional Costs (G + H) 6,127.00 J. Fee Funds Requested (\$) K. Total Costs and Fee Funds Requested (\$) Total Costs and Fee (I + J) 6,127.00 L. Budget Justification View Attachment (Only attach one file.) Delete Attachment

1272 TVLA _Budget Justification.pdf

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIONAL DUNS: Enter name of Organization: 5612352670000 Tanzania Veterinary Laboratory Agency Subaward/Consortium **Budget Type:** ☐ Project 09/01/2020 End Date: 08/31/2021 Budget Period: 2 Start Date: A. Senior/Key Person Months Requested Fringe Funds Cal. Acad. Sum. Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Suffix Base Salary (\$) Furaha Mramba 37,080.00 1.00 3,090.00 0.00 3,090.00 Project Role: |CC PI Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 3,090.00 **B. Other Personnel** Months Requested **Funds** Number of Fringe Project Role Sum. Personnel Çal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates Graduate Students Undergraduate Students Secretarial/Clerical Technician 1.00 463.50 0.00 463.50 **Total Number Other Personnel Total Other Personnel** 463.50 Total Salary, Wages and Fringe Benefits (A+B) 3,553.50 C. Equipment Description List items and dollar amount for each item exceeding \$5,000 Equipment item Funds Requested (\$) Additional Equipment: Add Attachment Total funds requested for all equipment listed in the attached file **Total Equipment**

	Travel			Funds Requested (\$)
۱.	Domestic Travel Costs (Incl. Canada, Mexico and U	.S. Possessions)		
2.	Foreign Travel Costs			120.0
			Total Travel Cost	120.00
Ξ.	Participant/Trainee Support Costs			Funds Requested (\$)
1.	Tuition/Fees/Health Insurance			1 177
2.	Stipends			
3.	Travel			
4.	Subsistence			
5.	Other			
	Number of Participants/Trainees	Total Participant/I	rainee Support Costs	
F.	Other Direct Costs			Funds Requested (\$)
1.	Materials and Supplies			2,000.00
2.	Publication Costs			
3.	Consultant Services			
4.	ADP/Computer Services			
5.	Subawards/Consortium/Contractual Costs			
6.	Equipment or Facility Rental/User Fees			
7.	Alterations and Renovations			
8.	Testing			0.00
9.				
10.				
			Total Other Direct Costs	2,000.00
_	Discret Contr			
u.	Direct Costs	Total Dir	rect Costs (A thru F)	Funds Requested (\$) 5,673.50
		Total Dit	ect costs (A third i)	3,073.30
H. I	ndirect Costs			
	Indirect Cost Type	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
	Overbead	10.00		567.35
			Total Indirect Costs	567.35

i. Total Direct and	mairect Costs			Funds Requested (\$)
		Total Direct and Inc	direct Institutional Costs (G + H)	6,240.85
J. Fee				Funds Requested (\$)
K. Total Costs and	d Fee			Funds Requested (\$)
			Total Costs and Fee (I + J)	6,240.85
L. Budget Justific	ation			
(Only attach one file.)	1272 TVLA Budge	Testification odf		

OMB Number: 4040-0001 Expiration Date: 10/31/2019

42,025.06

ORGANIZATIONAL DUNS: 5612352670000			70000	Enter name of Orga	nization:	Tanza	inia Vet	erinar	ry Laborat	ory Agency		
Budget Type:	Project	⊠ Subaw	vard/Consortiun	n		Budge	et Period	:3 9	Start Date:	09/01/2021	End Date: 08/31/20	022
A. Senior/Ke	y Person											
Prefix	First	Middle	Last	Suffix	Base Sala	агу (\$)		Months Acad.	s . Sum.	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	Furaha		Mramba			8,192.	00 6.00			19,096.2	0 0.00	19,096.20
Project Role	Co PI											
				Add At	tashmant						requested for all Senior	
Additional Senio	or Key Persons:			Add At	tachment					Key Per	sons in the attached file	
										1	Total Senior/Key Person	19,096.20
B. Other Pers	sonnel											
Number of Personnel	Projec	t Role				Cal.	Months Acad.	Sum.		equested salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctoral	Associates										
	Graduate Stu	dents										
	Undergradua	te Students										
	Secretarial/C	lerical										
3	Technician					12.00				5,728.86	c.cc	5,728.80
1	ELISA Techn	ician				12.00				5,000.00	c.cc	5,000.00
1	PCR Technic	ian				12.00				5,000.00	c.cc	5,000.00
1	Tick 10 Tec	hnician				12.00				7,200.00	c.cc	7,200.00
6	Total Number	Other Person	inel								Total Other Personnel	22,928.88

Total Salary, Wages and Fringe Benefits (A+B)

C.	Equipment Desc	ription						
Lis	t items and dollar Equipment item	amount for each it	em exceeding \$5,0	000			Funds Re	quested (\$)
Ado	ditional Equipment:				Add Attachment			
			otal funds requested	l for all ed	uipment listed in the	attached file		
			·	,	•	l Equipment		
D.	Travel						Funds Re	quested (\$)
 1,		Costs (Incl. Canada	, Mexico and U.S. P	ossessio	ons)			4
2.	Foreign Travel Co	•	, , , , , , , , , , , , , , , , , , , ,		,	[1,620.00
	.				Total	Travel Cost		1,620.00
E.	Participant/Train	ee Support Cost	S				Funds Re	quested (\$)
1.	Tuition/Fees/Healt							
2.	Stipends					[
3.	Travel					[1,800.00
4.	Subsistence					[·
5.	Other							
	Number of Par	ticipants/Trainees		Total	Participant/Trainee Su	pport Costs		1,800.00
F.	Other Direct Cos	sts					Funds F	lequested (\$)
1.	Materials and Sup	plies						2,300.00
2.	Publication Costs							
3.	Consultant Service	es						
4.	ADP/Computer Se	ervices						
5.	Subawards/Conso	rtium/Contractual C	osts					
6.	Equipment or Faci	ility Rental/User Fee	es					
7.	Alterations and Re	enovations						
8.	Testing							123,893.33
9.								
10.								
					Total Oth	er Direct Costs		126,193.33

G. Direct Costs				Funds Requested (\$)
		Total Di	rect Costs (A thru F)	171,638.39
H. Indirect Costs				
Indirect Cost Type	Indirect Co	st Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
Overhead	10.00	0		17,163.84
			Total Indirect Costs	17,163.84
Cognizant Federal Age (Agency Name, POC Name, POC Phone Number)	cy and			
I. Total Direct and I	ndirect Costs			Funds Requested (\$)
	Total Direct and Indi	rect Institu	itional Costs (G + H)	188,802.23
J. Fee				Funds Requested (\$)
K. Total Costs and	Fee			Funds Requested (\$)
		Total	Costs and Fee (I + J)	188,802.23
L. Budget Justifica	ion			
(Only attach one file.)	1272 TVLA _Budget Justification.pdf			

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIONAL DUNS: Enter name of Organization: 5612352670000 Tanzania Veterinary Laboratory Agency Subaward/Consortium **Budget Type:** ☐ Project 09/01/2022 End Date: 08/31/2023 **Budget Period: 4** Start Date: A. Senior/Key Person Months Requested Fringe Funds Cal. Acad. Sum. Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Suffix Base Salary (\$) Furaha Mramba 39,338.00 1.00 3,278.18 0.00 3,278.18 Project Role: |CC PI Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 3,278.18 **B. Other Personnel** Months Requested **Funds** Number of Fringe Project Role Sum. Personnel Çal. Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates Graduate Students Undergraduate Students Secretarial/Clerical Technician 0.00 C.CC 0.00 0.00 **Total Number Other Personnel Total Other Personnel** 0.00 Total Salary, Wages and Fringe Benefits (A+B) 3,278.18 C. Equipment Description List items and dollar amount for each item exceeding \$5,000 Equipment item Funds Requested (\$) Additional Equipment: Add Attachment Total funds requested for all equipment listed in the attached file **Total Equipment**

D. '	Travel			Funds Requested (\$)
1.	Domestic Travel Costs (Incl. Canada, Mexico and U.S. F	Possessions)		
2.	Foreign Travel Costs			120.00
			Total Travel Cost	120.00
E. I	Participant/Trainee Support Costs			Funds Requested (\$)
1.	Tuition/Fees/Health Insurance			
2.	Stipends			
3.	Travel			
4.	Subsistence			
5.	Other			
	Number of Participants/Trainees	Total Participant/I	rainee Support Costs	
F.	Other Direct Costs			Funds Requested (\$)
1.	Materials and Supplies			2,000.00
2.	Publication Costs			
3.	Consultant Services			
4.	ADP/Computer Services			
5.	Subawards/Consortium/Contractual Costs			
6.	Equipment or Facility Rental/User Fees			
7.	Alterations and Renovations			
8.	Testing			0.00
9.				
10.				
			Total Other Direct Costs	2,000.00
<u>с</u> і	Direct Conto			
u. I	Direct Costs	Total Dir	ect Costs (A thru F)	Funds Requested (\$) 5,398.18
		Total Dit	ect costs (A tillu i)	3,390.10
H. I	ndirect Costs			
	Indirect Cost Type In	direct Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
[Overbead	10.00		539.82
			Total Indirect Costs	539.82
(Age	nizant Federal Agency ncy Name, POC Name, and Phone Number)			

i. Total Direct and	indirect Costs			Funds Requested (\$)
		Total Direct and In	direct Institutional Costs (G + H)	5,938.00
J. Fee				Funds Requested (\$)
K. Total Costs and	d Fee			Funds Requested (\$)
			Total Costs and Fee (I + J)	5,938.00
L. Budget Justific	ation			
(Only attach one file.)	1979 TWI & Fredress	Tues i Ciens ion rodf		

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIO	ONAL DUNS:	56123526	70000	Enter name of	Organization:	Tanza	Canzania Veterinary Laboratory Agency						
Budget Type:	☐ Project	⊠ Subav	ward/Consorti	um		Budge	et Period	1:5 9	Start Date:	09/01/2023	End Date:	08/31/2024	
A. Senior/Ke	v Person												
A. Jelliol/Re	y reison							Months					
Prefix	First	Middle	Last	Suffix	Base Sal	lary (\$)		Acad.		Requested Salary (\$)	Frir Benef		Funds Requested (\$)
Dr.	Furaha		Mramba			40,518.	00 1.00)		3,376.5	53	0.00	3,376.53
Project Role	co PI]		
					41.80					Total Funds	requested fo	rall Senior ┌	
Additional Seni	or Key Persons:				dd Attachment					Key Pe	rsons in the at	ttached file	
											Total Senior/K	(ey Person	3,376.5
B. Other Per	sonnel												
Number of Personnel	Projec	t Role				Cal.	Months Acad.	Sum.		equested Salary (\$)	Fring Benefit		Funds Requested (\$)
	Post Doctora	Associates											
	Graduate Stu	idents											
	Undergradua	te Students											
	Secretarial/C	lerical											
3	Technician					0.00				c.cc		c.cc	0.0
3	Total Number	Other Person	nel								Total Other	Personnel	0.0
								Tota	l Salary, \	Nages and Fr	inge Benefi	its (A+B)	3,376.5
												_	
C. Equipme	nt Descriptio	n											
	d dollar amoui	nt for each i	tem exceedii	ng \$5,000									
Equipment	t item							Fi	ınds Reque	sted (\$)			
Additional Equ	lipment:				Add Attachment								
			Total funds red	— uested for all equi	pment listed in t	he attacl	ned file						
				•		otal Equ							

	[ravel			Funds Requested (\$)
1.	Domestic Travel Costs (Incl. Canada, Mexico and U	J.S. Possessions)		
2.	Foreign Travel Costs			120.0
			Total Travel Cost	120.0
Ξ. Ι	Participant/Trainee Support Costs			Funds Requested (\$)
	Tuition/Fees/Health Insurance			1 177
	Stipends			
	Travel			
	Subsistence			
	Other			
	Number of Participants/Trainees	Total Participant/I	Trainee Support Costs	
F.	Other Direct Costs			Funds Requested (\$)
1.	Materials and Supplies			2,000.00
2.	Publication Costs			
3.	Consultant Services			
4.	ADP/Computer Services			
5.	Subawards/Consortium/Contractual Costs			
6.	Equipment or Facility Rental/User Fees			
7.	Alterations and Renovations			
3.	Testing			0.0
9.				
0.				
			Total Other Direct Costs	2,000.00
: 1	Direct Costs			Funds Requested (\$)
	onect obsta	Total Dir	rect Costs (A thru F)	5,496.53
			, , , , , , , , , , , , , , , , , , ,	
1. I	ndirect Costs			
	Indirect Cost Type	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
	Overhead	10.00		549.65
			Total Indirect Costs	

I. Total Direct and India	ect Costs	F	funds Requested (\$)
	Total Direct and Indirect Inst	itutional Costs (G + H)	6,046.18
J. Fee		F	unds Requested (\$)
K. Total Costs and Fee		F	unds Requested (\$)
	Tota	al Costs and Fee (I + J)	6,046.18
L. Budget Justification			
(Only attach one file.)	THE Endroy Transfer and and		

RESEARCH & RELATED BUDGET - Cumulative Budget

Section B, Other Personnel		Totals (\$)	
Total Number Other Personnel 18	Section A, Senior/Key Person		31,840.91
10 25,693.27	Section B, Other Personnel		23,842.36
Section C, Equipment Section D, Travel 2,100.00	Total Number Other Personnel	18	
2,100.00 1. Domestic 2,100.00 2,100.00 Section E, Participant/Trainee Support Costs 1,800.00 1. Turtion/Fees/Health Insurance 2. Stipends 3. Travel 1,800.00 4. Subsistence 1,800.00 4. Subsistence 1,800.00 5. Other 6. Number of Participants/Trainees 10,300.00 2. Publication Costs 134,193.33 1. Materials and Supplies 10,300.00 2. Publication Costs 134,193.33 3. Consultant Services 10,300.00 4. ADP/Computer Services 10,300.00 5. Subawards/Consortium/Contractual Costs 10,300.00 6. Equipment or Facility Rental/User Fees 123,893.33 9. Other 1 123,893.33 9. Other 2 10,000.00 10,000.	Total Salary, Wages and Fringe Benefits (A+B)		55,683.27
1. Domestic 2. Foreign 2, 100.00 Section E, Participant/Trainee Support Costs 1. Tuition/Fees/Health Insurance 2. Stipends 3. Travel 4. Subsistence 5. Other 6. Number of Participants/Trainees Section F, Other Direct Costs 1. Materials and Supplies 2. Publication Costs 3. Consultant Services 4. ADP/Computer Services 5. Subawards/Consortium/Contractual Costs 6. Equipment or Facility Rental/User Fees 7. Alterations and Renovations 8. Other 1 9. Other 2 10. Other 3 Section G, Direct Costs (A thru F) Section H, Indirect Costs Section J, Fee Section J, Fee	Section C, Equipment		
2. Foreign	Section D, Travel		2,100.00
2,100.00 1,800.00	1. Domestic		
1. Tuition/Fees/Health Insurance 2. Stipends 3. Travel 4. Subsistence 5. Other 6. Number of Participants/Trainees Section F, Other Direct Costs 134,193.33 1. Materials and Supplies 10,300.00 2. Publication Costs 3. Consultant Services 4. ADP/Computer Services 5. Subawards/Consortium/Contractual Costs 6. Equipment or Facility Rental/User Fees 7. Alterations and Renovations 8. Other 1 123,893.33 9. Other 2 10. Other 3 Section G, Direct Costs (A thru F) Section H, Indirect Costs Section I, Total Direct and Indirect Costs (G + H) Section J, Fee	2. Foreign	2,100.00	
2. Stipends 3. Travel	Section E, Participant/Trainee Support Costs		1,800.00
3. Travel	1. Tuition/Fees/Health Insurance		
4. Subsistence 5. Other 6. Number of Participants/Trainees Section F, Other Direct Costs 1. Materials and Supplies 2. Publication Costs 3. Consultant Services 4. ADP/Computer Services 5. Subawards/Consortium/Contractual Costs 6. Equipment or Facility Rental/User Fees 7. Alterations and Renovations 8. Other 1 9. Other 2 10. Other 3 Section G, Direct Costs (A thru F) Section H, Indirect Costs Section I, Total Direct and Indirect Costs (G + H) Section J, Fee Section K, Total Costs and Fee (L+1)	2. Stipends		
5. Other 6. Number of Participants/Trainees Section F, Other Direct Costs 134,193.33 1. Materials and Supplies 10,300.00 2. Publication Costs 3. Consultant Services 4. ADP/Computer Services 5. Subawards/Consortium/Contractual Costs 6. Equipment or Facility Rental/User Fees 7. Alterations and Renovations 8. Other 1 123,893.33 9. Other 2 10. Other 3 Section G, Direct Costs (A thru F) Section H, Indirect Costs Section I, Total Direct and Indirect Costs (G + H) Section J, Fee Section K, Total Costs and Fee (L + J)	3. Travel	1,800.00	
6. Number of Participants/Trainees Section F, Other Direct Costs 134,193.33 1. Materials and Supplies 10,300.00 2. Publication Costs 3. Consultant Services 4. ADP/Computer Services 5. Subawards/Consortium/Contractual Costs 6. Equipment or Facility Rental/User Fees 7. Alterations and Renovations 8. Other 1 123,893.33 9. Other 2 10. Other 3 Section G, Direct Costs (A thru F) Section H, Indirect Costs Section I, Total Direct and Indirect Costs (G + H) Section J, Fee Section K, Total Costs and Fee (I + I)	4. Subsistence		
Section F, Other Direct Costs 134,193.33 1. Materials and Supplies 10,300.00 2. Publication Costs 3. Consultant Services 4. ADP/Computer Services 5. Subawards/Consortium/Contractual Costs 6. Equipment or Facility Rental/User Fees 7. Alterations and Renovations 8. Other 1 123,893.33 9. Other 2 10. Other 3 Section G, Direct Costs (A thru F) Section H, Indirect Costs Section I, Total Direct and Indirect Costs (G + H) Section J, Fee Section K, Total Costs and Fee (I + I)	5. Other		
1. Materials and Supplies 10,300.00 2. Publication Costs 3. Consultant Services 4. ADP/Computer Services 5. Subawards/Consortium/Contractual Costs 6. Equipment or Facility Rental/User Fees 7. Alterations and Renovations 8. Other 1 123,893.33 9. Other 2 10. Other 3 Section G, Direct Costs (A thru F) Section H, Indirect Costs Section I, Total Direct and Indirect Costs (G + H) Section J, Fee Section K Total Costs and Fee (I + J)	6. Number of Participants/Trainees		
2. Publication Costs 3. Consultant Services 4. ADP/Computer Services 5. Subawards/Consortium/Contractual Costs 6. Equipment or Facility Rental/User Fees 7. Alterations and Renovations 8. Other 1	Section F, Other Direct Costs		134,193.33
3. Consultant Services 4. ADP/Computer Services 5. Subawards/Consortium/Contractual Costs 6. Equipment or Facility Rental/User Fees 7. Alterations and Renovations 8. Other 1	1. Materials and Supplies	10,300.00	
4. ADP/Computer Services 5. Subawards/Consortium/Contractual Costs 6. Equipment or Facility Rental/User Fees 7. Alterations and Renovations 8. Other 1 123,893.33 9. Other 2 10. Other 3 Section G, Direct Costs (A thru F) Section H, Indirect Costs 19,377.66 Section I, Total Direct and Indirect Costs (G + H) Section J, Fee Section K, Total Costs and Fee (L + I)	2. Publication Costs		
5. Subawards/Consortium/Contractual Costs 6. Equipment or Facility Rental/User Fees 7. Alterations and Renovations 8. Other 1	3. Consultant Services		
6. Equipment or Facility Rental/User Fees 7. Alterations and Renovations 8. Other 1 123, 893.33 9. Other 2 10. Other 3 Section G, Direct Costs (A thru F) 193,776.60 Section H, Indirect Costs 19,377.66 Section I, Total Direct and Indirect Costs (G + H) Section J, Fee	4. ADP/Computer Services		
7. Alterations and Renovations 8. Other 1 123, 893.33 9. Other 2 10. Other 3 Section G, Direct Costs (A thru F) Section H, Indirect Costs 193,776.60 Section I, Total Direct and Indirect Costs (G + H) Section J, Fee Section K Total Costs and Fee (L + I)	5. Subawards/Consortium/Contractual Costs		
8. Other 1	6. Equipment or Facility Rental/User Fees		
9. Other 2 10. Other 3 Section G, Direct Costs (A thru F) Section H, Indirect Costs 193,776.60 Section I, Total Direct and Indirect Costs (G + H) Section J, Fee Section K Total Costs and Fee (I + I)	7. Alterations and Renovations		
10. Other 3 Section G, Direct Costs (A thru F) Section H, Indirect Costs 193,776.60 193,776.60 193,776.60 193,776.60 193,776.60 193,776.60 193,776.60	8. Other 1	123,893.33	
Section G, Direct Costs (A thru F) Section H, Indirect Costs 19,377.66 Section I, Total Direct and Indirect Costs (G + H) Section J, Fee Section K Total Costs and Fee (I + I)	9. Other 2		
Section H, Indirect Costs 19,377.66 Section I, Total Direct and Indirect Costs (G + H) 213,154.26 Section K, Total Costs and Fee (I + I)	10. Other 3		
Section I, Total Direct and Indirect Costs (G + H) Section J, Fee Section K Total Costs and Fee (L + J)	Section G, Direct Costs (A thru F)		193,776.60
Section J, Fee Section K Total Costs and Fee (L+.I)	Section H, Indirect Costs		19,377.66
Section K. Total Costs and Fee (L + .I)	Section I, Total Direct and Indirect Costs (G + H)		213,154.26
Section K, Total Costs and Fee (I + J)	Section J, Fee		
	Section K, Total Costs and Fee (I + J)		213,154.26

OMB Number: 4040-0001 Expiration Date: 10/31/2019

18,099.00

42,525.00

ORGANIZATIONAL DUNS: Enter name of Organization: 2290760960000 University of Glasgow Subaward/Consortium 08/31/2020 **Budget Type:** ☐ Project **Budget Period: 1** 09/01/2019 End Date: Start Date: A. Senior/Key Person Months Requested Fringe Funds Cal. Acad. Sum. Suffix Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Base Salary (\$) Sarah Cleaveland 176,250.00 1.20 17,625.00 0.00 17,625.00 Project Role: |CC PI 136.020.00 0.60 0.00 Brian Willett 6,801.00 6,801.00 Project Role: Research Scientist, Viral Immunologist Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 24,426.00 **B. Other Personnel** Months Requested Fringe **Funds** Number of Project Role Sum. Salary (\$) Personnel Cal. Acad. Benefits (\$) Requested (\$) Post Doctoral Associates Graduate Students Undergraduate Students Secretarial/Clerical 1.20 7,560.00 0,00 Administrator 7,560.00 Lab Technician 3.00 10,539,00 0.00 10,539.00

Total Number Other Personnel

Total Salary, Wages and Fringe Benefits (A+B)

C.	Equipment Desc	ription						
Lis	t items and dollar a	amount for each	item exceeding	\$5,000			Func	ds Requested (\$)
Add	ditional Equipment:				Add Attachment			
			Total funds requi	ested for all e	quipment listed in the a	ttached file		
			·			Equipment		
D.	Travel						Fun	ds Requested (\$)
1.	Domestic Travel C	Costs (Incl. Canad	 la, Mexico and U	.S. Possessi	ons)			
2.	Foreign Travel Co	sts						8,330.00
	-				Total	Travel Cost		8,330.00
E.	Participant/Train	ee Support Co	sts				Fun	ds Requested (\$)
1.	Tuition/Fees/Healt							
2.	Stipends					[
3.	Travel							
4.	Subsistence							
5.	Other							
	Number of Par	ticipants/Trainees		Total	Participant/Trainee Su	pport Costs		
F.	Other Direct Cos	sts					Fu	nds Requested (\$)
1.	Materials and Sup	plies						
2.	Publication Costs							
3.	Consultant Service	es						
4.	ADP/Computer Se	ervices						
5.	Subawards/Conso	rtium/Contractual	Costs					
6.	Equipment or Faci	lity Rental/User F	es					
7.	Alterations and Re	enovations						
8.								
9.								
10.								
-					Total Othe	er Direct Costs		

G. Direct Costs				Funds Requested (\$)
		Total Di	rect Costs (A thru F)	50,855.00
H. Indirect Costs				
Indirect Cost Type		Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
Indirect		10.00		5,085.50
			Total Indirect Costs	5,085.50
Cognizant Federal Age (Agency Name, POC Name POC Phone Number)	ncy and			
I. Total Direct and	ndirect Costs			Funds Requested (\$)
	Total Direct	and Indirect Institu	itional Costs (G + H)	55,940.50
J. Fee				Funds Requested (\$)
K. Total Costs and	Fee	Total	Coots and Eco (L. I)	Funds Requested (\$)
		Total	Costs and Fee (I + J)	55,940.50
L. Budget Justifica	tion			
(Only attach one file.)	1273 UoG_Budget Justification.	pdf	Delete Attachme	nt View Attachment

OMB Number: 4040-0001 Expiration Date: 10/31/2019

19,028.37

44,320.51

ORGANIZATIONAL DUNS: Enter name of Organization: 2290760960000 University of Glasgow Subaward/Consortium 08/31/2021 **Budget Type:** ☐ Project Budget Period: 2 09/01/2020 End Date: Start Date: A. Senior/Key Person Months Requested Fringe Funds Cal. Acad. Sum. Suffix Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Base Salary (\$) Sarah Cleaveland 182,500.00 1.20 18,249.98 0.00 18,249.95 Project Role: |CC PI 0.60 0.00 Brian Willett 140,843.00 7,042.16 7,042.16 Project Role: Research Scientist, Viral Immunologist Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 25,292.14 **B. Other Personnel** Months Requested Fringe **Funds** Number of Project Role Sum. Salary (\$) Personnel Cal. Acad. Benefits (\$) Requested (\$) Post Doctoral Associates Graduate Students Undergraduate Students Secretarial/Clerical 1.20 7,945,56 0,00 Administrator 7,945.56 Lab Technician 3.00 11,082,81 0.00 11,082.81

Total Number Other Personnel

Total Salary, Wages and Fringe Benefits (A+B)

C.	Equipment Desc	ription					
Lis	t items and dollar Equipment item	amount for each item exceeding \$5	,000			Fund	ds Requested (\$)
Ado	ditional Equipment:			Add Attachment			
		Total funds requeste	ed for all e	quipment listed in the a	ttached file		
				•	Equipment		
n	Travel					Eus	do Portugated (\$)
<u>u,</u> 1,		losts (Incl. Canada, Mexico and U.S.	Doceneria	anc)	[Fun	ds Requested (\$)
ı. 2.	Foreign Travel Co	•	F 05565511	nis,	[
۷.	Foreign Have Co	513			[11,721.40
				Total	Travel Cost		11,721.40
E.	Participant/Train	ee Support Costs				Fun	ds Requested (\$)
1.	Tuition/Fees/Heal	h Insurance					
2.	Stipends						
3.	Travel						
4.	Subsistence						
5.	Other						
	Number of Par	ticipants/Trainees	Total	Participant/Trainee Su	pport Costs		
F.	Other Direct Cos	its				Fu	nds Requested (\$)
1.	Materials and Sup	olies					
2.	Publication Costs						
3.	Consultant Service	es					
4.	ADP/Computer Se	rvices					
5.	Subawards/Conso	rtium/Contractual Costs					
6.	Equipment or Faci	lity Rental/User Fees					
7.	Alterations and Re	novations					
8.	Lab Costs						19,500.00
9.							
10.							
				Total Othe	er Direct Costs		19,500.00

G. Direct Costs				Funds Requested (\$)
		Total Di	rect Costs (A thru F)	75,541.91
H. Indirect Costs				
Indirect Cost Type		Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
Indirect		10.00		7,554.19
			Total Indirect Costs	7,554.19
Cognizant Federal Age (Agency Name, POC Name POC Phone Number)	and			
I. Total Direct and	ndirect Costs			Funds Requested (\$)
	Total Direc	ct and Indirect Institu	itional Costs (G + H)	83,096.10
J. Fee				Funds Requested (\$)
K. Total Costs and	Fee			Funds Requested (\$)
		Total (Costs and Fee (I + J)	83,096.10
L. Budget Justifica	tion			
(Only attach one file.)	1273 UoG_Budget Justification	.pdf		

OMB Number: 4040-0001 Expiration Date: 10/31/2019

ORGANIZATIONAL DUNS: Enter name of Organization: 2290760960000 University of Glasgow Subaward/Consortium 08/31/2022 **Budget Type:** ☐ Project **Budget Period: 3** 09/01/2021 End Date: Start Date: A. Senior/Key Person Months Requested Fringe Funds Cal. Acad. Sum. Suffix Salary (\$) Benefits (\$) Requested (\$) Prefix **First** Middle Last Base Salary (\$) Sarah Cleaveland 188,969.00 1.20 18,896.94 0.00 18,896.94 Project Role: |CC PI 0.60 0.00 Brian Willett 145,836.00 7,291.8. 7,291.81 Project Role: Research Scientist, Viral Immunologist Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 26,188.75 **B. Other Personnel** Months Requested Fringe **Funds** Number of Project Role Sum. Salary (\$) Personnel Cal. Acad. Benefits (\$) Requested (\$) Post Doctoral Associates Graduate Students Undergraduate Students Secretarial/Clerical

1.20

12.00

Total Salary, Wages and Fringe Benefits (A+B)

8,349,99

46,626,72

0,00

0.00

Total Other Personnel

8,349.99

46,626.72

54,976.71

81,165.46

Administrator

Lab Technician

Total Number Other Personnel

C.	. Equipment Description			
Lis	st items and dollar amount for each item exceeding \$5,000 Equipment item			Funds Requested (\$)
Ade	dditional Equipment:	Add Attachment		
	Total funds requested for all equip	ment listed in the a	ttached file	
			Equipment	
D.	. Travel			Funds Requested (\$)
 1.				(+)
2.	· · · · · · · · · · · · · · · · · · ·			19,002.47
	Ç	Total	Travel Cost	19,002.47
_				
	. Participant/Trainee Support Costs		Г	Funds Requested (\$)
1.			L	
2. -	•			
3.				3,500.00
4. -				
5.				
	Number of Participants/Trainees Total Part	icipant/Trainee Su _l	oport Costs	3,500.00
F.	. Other Direct Costs			Funds Requested (\$)
1.	. Materials and Supplies			2,651.00
2.	2. Publication Costs			
3.	S. Consultant Services			
4.	ADP/Computer Services			
5.	. Subawards/Consortium/Contractual Costs			
6.	. Equipment or Facility Rental/User Fees			
7.	. Alterations and Renovations			
8.	Lab Costs			19,500.00
9.				
10.	,			
		Total Othe	er Direct Costs	22,151.00

G. Direct Costs				Funds Requested (\$)
		Total Di	rect Costs (A thru F)	125,818.93
H. Indirect Costs				
Indirect Cost Type		Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
Indirect		10.00		12,581.89
			Total Indirect Costs	12,581.89
Cognizant Federal Age (Agency Name, POC Name, POC Phone Number)				
I. Total Direct and I	ndirect Costs			Funds Requested (\$)
	Total Direct	and Indirect Institu	ıtional Costs (G + H)	138,400.82
J. Fee				Funds Requested (\$)
K. Total Costs and	Fee			Funds Requested (\$)
		Total •	Costs and Fee (I + J)	138,400.82
L. Budget Justifica	ion			
(Only attach one file.)	1273 UoG_Budget Justification.p	odf		

OMB Number: 4040-0001 Expiration Date: 10/31/2019

57,834.04

84,951.18

ORGANIZATIONAL DUNS: Enter name of Organization: 2290760960000 University of Glasgow Subaward/Consortium 08/31/2023 **Budget Type:** ☐ Project **Budget Period: 4** 09/01/2022 End Date: Start Date: A. Senior/Key Person Months Requested Fringe Funds Cal. Acad. Sum. Suffix Salary (\$) Benefits (\$) Requested (\$) Prefix **First** Middle Last Base Salary (\$) Sarah Cleaveland 195,668.00 1.20 19,586.84 0.00 19,566.84 Project Role: |CC PI 0.60 0.00 7,550.30 Brian Willett 151.006.00 7,550.30 Project Role: Research Scientist, Viral Immunologist Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 27,117.14 **B. Other Personnel** Months Requested Fringe **Funds** Number of Project Role Sum. Salary (\$) Personnel Cal. Acad. Benefits (\$) Requested (\$) Post Doctoral Associates Graduate Students Undergraduate Students Secretarial/Clerical 1.20 8,776.67 0,00 Administrator 8,776.67 Lab Technician 12.00 49,057,37 0.00 49,057.37

Total Number Other Personnel

Total Salary, Wages and Fringe Benefits (A+B)

C.	Equipment Desc	ription			
Lis	t items and dollar a	amount for each item exceeding \$5,000			Funds Requested (\$)
Add	ditional Equipment:		Add Attachment		
		Total funds requested for	r all equipment listed in the a	ttached file	
		·		Equipment	
D.	Travel				Funds Requested (\$)
 1.		costs (Incl. Canada, Mexico and U.S. Pos	sessions)		
2.	Foreign Travel Co	,	,	Ī	16,112.89
	Ū		Total	Travel Cost	16,112.89
_	Darticinant/Train	ee Support Costs			Funds Requested (\$)
1.	Tuition/Fees/Healt	* * * * * * * * * * * * * * * * * * * *		Г	runus nequesteu (\$)
'. 2.	Stipends	ii iiistialiee		L	
2. 3.	Travel			L	
4.	Subsistence			L [
 5.	Other				
		ticipants/Trainees	Total Participant/Trainee Su	pport Costs	
F.	Other Direct Cos	sts			Funds Requested (\$)
1.	Materials and Sup	plies			2,651.00
2.	Publication Costs				
3.	Consultant Service	es			
4.	ADP/Computer Se	rvices			
5.	Subawards/Conso	rtium/Contractual Costs			
6.	Equipment or Faci	lity Rental/User Fees			
7.	Alterations and Re	novations			
8.	Lab Costs				19,500.00
9.					
10.					
			Total Othe	er Direct Costs	22,151.00

G. Direct Costs				Funds Requested (\$)
		Total Di	rect Costs (A thru F)	123,215.07
H. Indirect Costs				
Indirect Cost Type		Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
Indirect		10.00		12,321.51
			Total Indirect Costs	12,321.51
Cognizant Federal Age (Agency Name, POC Name POC Phone Number)	ncy and			
I. Total Direct and	ndirect Costs			Funds Requested (\$)
	Tot	tal Direct and Indirect Institu	itional Costs (G + H)	135,536.58
J. Fee				Funds Requested (\$)
K. Total Costs and	Fee			Funds Requested (\$)
		Total (Costs and Fee (I + J)	135,536.58
L. Budget Justifica	ition			
(Only attach one file.)	1273 UpG_Budget Justif	Tication.pdf		

OMB Number: 4040-0001

Expiration Date: 10/31/2019

ORGANIZATIO	ONAL DUNS:	229076096	0000	Enter name of Org	janization:	Unive	rsity o	f Glas	gow			
Budget Type:	Project	⊠ Subaw	ard/Consortium	1		Budge	et Period	1:5 9	Start Date:	09/01/2023	End Date: 08/31/202	4
A. Senior/Ke	y Person											
Prefix	First	Middle	Last	Suffix	Base Sala	агу (\$)	Cal.	Months Acad.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	Sacah		Cleaveland		20	2,605.	00 1.20			20,280.4	9 0.00	20,260.49
Project Role	e: Co PI											
Or.	Brian		willett		15	6,359.	0.60)		7,817.9	6 0.00	7,817.96
Project Role	e: Research S	cientist, V	iral Immunolo	gist								
B. Other Per	sonnel						Months] equested	Foliano	28,078.45 Funds
Personnel	Projec	t Role				Cal.	Acad.	Sum.		equested Salary (\$)	Fringe Benefits (\$)	Requested (\$)
	Post Doctora	l Associates										
	Graduate Stu											
	Undergradua											
	Secretarial/C	lerical										
1	Administra	lor				1.20				9,225.16	0.00	9,225.16
1	Lab Technic	cian				3.00				12,786.80	0.00	12,786.80
2	Total Number	Other Person	nel								Total Other Personnel	22,011.96
								Tota	l Salary, V	Vages and Fri	nge Benefits (A+B) 「	50,090.41

C.	Equipment Desc	ription					
Lis	t items and dollar a	amount for each item exc	eeding \$5,000			Funds Reque	ested (\$)
Adc	ditional Equipment:			Add Attachment			
		Total fun	ds requested for all e	quipment listed in the a	ttached file		
			•		Equipment		
D.	Travel					Funds Reque	ested (\$)
1.	Domestic Travel C	osts (Incl. Canada, Mexico	o and U.S. Possessi	ons)		·	
2.	Foreign Travel Co	sts					12,402.46
				Total	Travel Cost		12,402.46
E .	Participant/Train	ee Support Costs				Funds Reque	ested (\$)
1.	Tuition/Fees/Healt					<u> </u>	
2.	Stipends						
3.	Travel						
4.	Subsistence						
5.	Other						
	Number of Par	ticipants/Trainees	Total	Participant/Trainee Su	pport Costs		
F.	Other Direct Cos	ts				Funds Requ	uested (\$)
1.	Materials and Sup	olies					
2.	Publication Costs						
3.	Consultant Service	es .					
4.	ADP/Computer Se	rvices					
5.	Subawards/Conso	rtium/Contractual Costs					
6.	Equipment or Faci	ity Rental/User Fees					
7.	Alterations and Re	novations					
8.							
9.							
10.							
				Total Othe	er Direct Costs		

G. Direct Costs				Funds Requested (\$)
		Total Di	rect Costs (A thru F)	62,492.87
H. Indirect Costs				
Indirect Cost Type		Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
Indirect		10.00		6,249.29
			Total Indirect Costs	6,249.29
Cognizant Federal Age (Agency Name, POC Name POC Phone Number)	and			
I. Total Direct and	ndirect Costs			Funds Requested (\$)
	Total Direct	and Indirect Institu	itional Costs (G + H)	68,742.16
J. Fee				Funds Requested (\$)
K. Total Costs and	Fee			Funds Requested (\$)
		Total (Costs and Fee (I + J)	68,742.16
L. Budget Justifica	tion			
(Only attach one file.)	1273 UoG_Budget Justification.p	oaf		

RESEARCH & RELATED BUDGET - Cumulative Budget

	Totals (\$)
Section A, Senior/Key Person	131,102.48
Section B, Other Personnel	171,950.08
Total Number Other Personnel	10
Total Salary, Wages and Fringe Benefits (A+B)	303,052.56
Section C, Equipment	
Section D, Travel	67,569.22
1. Domestic	
2. Foreign	67,569.22
Section E, Participant/Trainee Support Costs	3,500.00
1. Tuition/Fees/Health Insurance	
2. Stipends	
3. Travel	3,500.00
4. Subsistence	
5. Other	
Number of Participants/Trainees	
Section F, Other Direct Costs	63,802.00
Materials and Supplies	5,302.00
2. Publication Costs	
3. Consultant Services	
4. ADP/Computer Services	
5. Subawards/Consortium/Contractual Costs	
Equipment or Facility Rental/User Fees	
7. Alterations and Renovations	
8. Other 1	58,500.00
9. Other 2	
10. Other 3	
Section G, Direct Costs (A thru F)	437,923.78
Section H, Indirect Costs	43,792.38
Section I, Total Direct and Indirect Costs (G + H)	481,716.16
Section J, Fee	
Section K, Total Costs and Fee (I + J)	481,716.16

OMB Number: 4040-0001 Expiration Date: 10/31/2019

6,000.00

2,000.00

36,500.00

71,913.23

ORGANIZATIONAL DUNS: Enter name of Organization: 4148530100000 Washington State University Subaward/Consortium 08/31/2020 **Budget Type:** □ Project **Budget Period: 1** 09/01/2019 End Date: Start Date: A. Senior/Key Person Months Requested Fringe **Funds** Cal. Acad. Sum. Salary (\$) Benefits (\$) Requested (\$) Prefix **First** Middle Last Suffix Base Salary (\$) 2.75 Felix Jankester 130,958.00 30,011.23 5,402.02 35,413.23 Project Role: |CC PI Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 35,413.23 **B. Other Personnel** Months Requested Fringe **Funds** Number of Project Role Çal. Sum. Personnel Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates Graduate Students Undergraduate Students Secretarial/Clerical Veterinarian 12.00 28,500.00 C.CC 28,500.00

6.00

1.00

Human Field Assistant

Total Number Other Personnel

Admin

6,000.00

2,000.00

Total Salary, Wages and Fringe Benefits (A+B)

c.cc

c.cc

C.	Equipment Desc	cription									
Lis	t items and dollar Equipment item	r amount	or each it	em exc	eeding \$	5,000			Fund	ds Requested (\$)	
Add	ditional Equipment:						Add Attachment				
			7	otal fund	ds request	ed for all ed	quipment listed in the a	attached file			
					•			l Equipment			
D.	Travel								Fun	ds Requested (\$)	
1.	Domestic Travel 0	Costs (Inc	I. Canada	, Mexico	and U.S.	Possessio	ons)				
2.	Foreign Travel Costs							45,000.00			
	Total Travel Cost								45,000.00		
E.	Participant/Train	nee Sup _l	ort Cost	ts					Fun	ds Requested (\$)	
1.	Tuition/Fees/Heal	ılth İnsurai	ice								
2.	Stipends										
3.	Travel										
4.	Subsistence										
5.	Other										
	Number of Par	articipants/	Frainees			Total	Participant/Trainee Su	pport Costs			
F.	Other Direct Co:	sts							Fu	nds Requested (\$)	
1.	Materials and Sup	pplies								2,000.00	
2.	Publication Costs	5									
3.	Consultant Service	ces								9,920.00	
4.	ADP/Computer Se	Services									
5.	Subawards/Consc	ortium/Co	ntractual C	osts							
6.	Equipment or Fac	cility Renta	.l/User Fe∉	∍s							
7.	Alterations and Re	lenovation	3								
8.	Permits									2,787.62	
9.	Waste Managemen	nt								525.00	
10.	Equipment Insur	rance								1,000.00	
							Total Oth	er Direct Costs		16,232.62	

G. Direct Costs				Funds Requested (\$)
		Total Di	rect Costs (A thru F)	133,145.85
H. Indirect Costs				
Indirect Cost Type		Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
Indirect		26.00		34,617.92
			Total Indirect Costs	34,617.92
Cognizant Federal Age (Agency Name, POC Name, POC Phone Number)				
I. Total Direct and I	ndirect Costs			Funds Requested (\$)
	Total Direct	and Indirect Institu	itional Costs (G + H)	167,763.77
J. Fee				Funds Requested (\$)
	_			
K. Total Costs and	Fee			Funds Requested (\$)
		Total	Costs and Fee (I + J)	167,763.77
L. Budget Justifica	tion			
(Only attach one file.)	1274 CCMF WSU budget justifica	tion v01	Delete Attachn	nent View Attachment

OMB Number: 4040-0001

Expiration Date: 10/31/2019

41,500.00

76,913.23

ORGANIZAT	IONAL DUNS:	41485303	_00000	Enter name of O	rganization:	Washi	ngton S	ate U	niversit	-у		
Budget Type	e: Project	⊠ Suba	ward/Consortiu	m		Budge	et Period	:2 S	tart Date	e: 09/01/2020	End Date: 08/31/202	
A. Senior/K	Cey Person											
Prefix	First	Middle	Last	Suffix	Base Sala	агу (\$)	Cal.	Months Acad.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	Felix		Lankester		13	0,958.0	00 2.75			30,011.21	5,402.02	35,413.23
Project Re	ole: Co PI											
B. Other Pe	·	ct Role					Months			Requested	otal Senior/Key Person L	35,413.21 Funds
Personnel	Post Doctora				Г	Cal.	Acad.	Sum.	1 <u> </u>	Salary (\$)	Benefits (\$)	Requested (\$)
	Graduate Str		,		L	[
	- Middudic St											
	╡											
	Undergradua	ate Students										
	Undergradua Secretarial/C	ate Students Derical				12.33				28.500.00	c.cc	28,500.0
	Undergradua	ate Students Clerical				12.00				28,500.00 11,000.00	c.cc	28,500.00 11,000.00

Total Number Other Personnel

Total Salary, Wages and Fringe Benefits (A+B)

C.	Equipment Desc	ription						
Lis	t items and dollar Equipment item	amount for each	item exceedi	ing \$5,000			Funds R	equested (\$)
Ado	ditional Equipment:				Add Attachment			
			Total funds re	quested for all e	quipment listed in the a	attached file		
				4		l Equipment		
D	Travel						Eurado D	lawrented (#)
	Domestic Travel C	Costo / Ingl. Conce	la Maviaa aa	d II C. Doggoodi		[Funas R	lequested (\$)
1.	Foreign Travel Co	•	ia, Mexico and	u U.S. Possessii	ons)	[0.00
2.	Foreign Traver Co	sis				[45,019.52
					Total	Travel Cost		45,019.52
E.	Participant/Train	ee Support Co	sts				Funds R	equested (\$)
1.	Tuition/Fees/Healt	th Insurance						
2.	Stipends							
3.	Travel							
4.	Subsistence							0.00
5.	Other							
	Number of Par	rticipants/Trainees		Total	Participant/Trainee Su	pport Costs		0.00
F.	Other Direct Cos	sts					Funds	Requested (\$)
1.	Materials and Sup	plies						2,000.00
2.	Publication Costs							
3.	Consultant Service	es						14,000.00
4.	ADP/Computer Se	ervices						
5.	Subawards/Conso	ortium/Contractual	Costs					
6.	Equipment or Faci	ility Rental/User F	ees					
7.	Alterations and Re	enovations						
8.	Permits							2,871.25
9.	Waste Managemen	t						525.00
10.	Equipment Insur	ance						1,000.00
					Total Oth	er Direct Costs		20,396.25

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru I	F) 142,329.00
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$	Funds Requested (\$)
Indirect	26.00	37,005.54
	Total Indirect Cost	ts 37,005.54
Cognizant Federal Agen (Agency Name, POC Name, a POC Phone Number)		
I. Total Direct and Ir	ndirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + F	H) 179,334.54
J. Fee		Funds Requested (\$)
K. Total Costs and		Funds Requested (\$)
	Total Costs and Fee (I +	J) 179,334.54
L. Budget Justificat	ion	
(Only attach one file.)	1274 CCRF WSU budget justification v01	

RESEARCH & RELATED BUDGET - Budget Period 3

OMB Number: 4040-0001 Expiration Date: 10/31/2019

3,000.00

38,413.23

					sity	nivers	tate U	Engton S	n: Wash	e of Organization	Enter name	00000	414853010	MAL DUNS:	RGANIZATI	JKU
	2	08/31/2022	End Date:	09/01/2021	ate:	Start Da	:3 9	et Period	Budg		m	vard/Consortiu	⊠ Subaw	Project	ıdget Type:	Bud
														y Person	Senior/Ke	A. S
Funds equested (\$)		nge fits (\$)		Requested Salary (\$)			Months Acad.	Cal.	Salary (\$)	Base	Suffix	Last	Middle	First	efix	Prefi
35,413.23		5,402.02		30,011.21				00 2.7	130,958.			Lankester		Felix	,	Dr.
														Co PI	Project Role	F
35,413.7		ttached file	requested for sons in the att Total Senior/K	Key Pers					t	Add Attachment			;	or Key Persons:		
Funds		Key Person	sons in the at Total Senior/K Fring	Key Pers			Sum.	Months Acad.	Cal.	Add Attachmen			et Role	sonnel	Other Per Number of Personnel	B. C
		Key Person	sons in the at	Key Pers			Sum.			Add Attachmen			ct Role	sonnel	Other Per	B. C
Funds		Key Person	sons in the at Total Senior/K Fring	Key Pers			Sum.			Add Attachmen			et Role	sonnel Projec	Other Per	B. C
Funds		Key Person	sons in the at Total Senior/K Fring	Key Pers			Sum.			Add Attachmen			et Role al Associates udents	sonnel Project Post Doctora	Other Per	B. C
Funds		Key Person	sons in the at Total Senior/K Fring	Key Pers			Sum.			Add Attachmen			et Role al Associates udents ate Students	Project Post Doctora Graduate Stu	Other Per	B. C
Funds		Key Person	sons in the at Total Senior/K Fring	Key Pers			Sum.			Add Attachmen			et Role al Associates udents ate Students Clerical	Project Post Doctora Graduate Stu Undergradua	Other Per	B. C
		Key Person	sons in the at Total Senior/K Fring	Key Pers			Sum.			Add Attachmen			et Role al Associates udents	Project Post Doctora Graduate Stu	Other Per	B. C

Total Number Other Personnel

Total Salary, Wages and Fringe Benefits (A+B)

Total Other Personnel

C.	Equipment Desc	cription								
Lis	t items and dollar Equipment item	r amount fo	each ite	m excee	ding \$5,00	0			Fund	ds Requested (\$)
Add	ditional Equipment:						Add Attachment			
			То	tal funds	requested f	or all eq	uipment listed in the a	attached file		
					•	•		l Equipment		
D.	Travel								Fund	ds Requested (\$)
1.	Domestic Travel 0	Costs (Incl	Canada,	Mexico a	nd U.S. Po	ssessio	ns)			
2.	Foreign Travel Co	osts								10,994.51
							Total	Travel Cost		10,994.51
E.	Participant/Train	nee Suppe	rt Costs	j					Fund	ds Requested (\$)
1.	Tuition/Fees/Heal	ilth Insuranc	e							
2.	Stipends									
3.	Travel									
4.	Subsistence									
5.	Other									
	Number of Par	articipants/T	ainees			Total I	Participant/Trainee Su	pport Costs		
F.	Other Direct Co:	ests							Fu	nds Requested (\$)
1.	Materials and Sup	pplies								2,000.00
2.	Publication Costs	5								
3.	Consultant Service	ces								2,000.00
4.	ADP/Computer Se	Services								
5.	Subawards/Consc	ortium/Cont	actual Co	sts						
6.	Equipment or Fac	cility Rental/	Jser Fees	;						
7.	Alterations and Re	lenovations								
8.	Permits									2,650.00
9.	Waste Mangement	t								0.00
10.	Equipment Insur	rance								1,000.00
							Total Oth	er Direct Costs		7,650.00

G. Direct Costs			Funds Requested (\$)
	Total Dire	ect Costs (A thru F)	57,057.74
H. Indirect Costs			
Indirect Cost Type	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	26.00		14,835.01
	٦	Total Indirect Costs	14,835.01
Cognizant Federal Ager (Agency Name, POC Name, POC Phone Number)			
I. Total Direct and I	ndirect Costs		Funds Requested (\$)
	Total Direct and Indirect Institut	tional Costs (G + H)	71,892.75
J. Fee			Funds Requested (\$)
K. Total Costs and			Funds Requested (\$)
	Total C	costs and Fee (I + J)	71,892.75
L. Budget Justifica	ion		
(Only attach one file.)	1274 CCHF WSU budget justification v01		

RESEARCH & RELATED BUDGET - Budget Period 4

OMB Number: 4040-0001 Expiration Date: 10/31/2019

3,000.00

38,413.23

ORGANIZATI	ONAL DUNS:	414853010	₀₀₀₀ E	nter name of Org	ganization:	Washi	ngton S	tate U	niversit	У		
Budget Type:	Project	⊠ Subaw	ard/Consortium			Budge	et Period	1:4 9	Start Date	: 09/01/2022	End Date: 08/31/202	3
A. Senior/Ke	ey Person											
Prefix	First	Middle	Last	Suffix	Base Sala	агу (\$)	Cal.	Months Acad.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Dr.	Felix		Lankester			0,958.0	00 2.75	5		30,011.21	5,402.02	35,413.23
Project Rol	le: Co PI											
Additional Sen B. Other Per	ior Key Persons: rsonnel			Add	Attachment					Key Pers	requested for all Senior cons in the attached file cotal Senior/Key Person	35,413.23
Number of Personnel	Projec	t Role				Cal.	Months Acad.	Sum.		Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
	Post Doctora	Associates			Г							,
	Graduate Stu	idents			Ī							
	Undergradua	te Students			Ī							
	Secretarial/C	lerical							Ī [
1	 	i Assistant				0.00				1,000.00	c.cc	1,000.00
1	Admin					1.00				2,000.00	c.cc	2,000.00

Total Number Other Personnel

Total Salary, Wages and Fringe Benefits (A+B)

Total Other Personnel

C.	Equipment Desc	cription								
Lis	t items and dollar Equipment item	r amount fo	r each ite	m excee	eding \$5,00	00			Fund	ds Requested (\$)
Add	ditional Equipment:						Add Attachment			
			To	otal funds	requested t	for all eq	uipment listed in the a	attached file		
					·			l Equipment		
D.	Travel								Fun	ds Requested (\$)
1.	Domestic Travel (Costs (Incl	Canada,	Mexico ε	and U.S. Po	ssessio	ns)			
2.	Foreign Travel Co	osts								39,466.18
							Total	Travel Cost		39,466.18
E.	Participant/Trair	nee Supp	rt Costs	S					Fun	ds Requested (\$)
1.	Tuition/Fees/Heal	ilth Insuranc	e							
2.	Stipends									
3.	Travel									
4.	Subsistence									
5.	Other									
	Number of Pa	articipants/T	ainees			Total I	Participant/Trainee Su	pport Costs		
F.	Other Direct Co:	sts							Fu	nds Requested (\$)
1.	Materials and Sup	pplies								2,000.00
2.	Publication Costs	3								
3.	Consultant Servic	ces								2,000.00
4.	ADP/Computer Se	Services								
5.	Subawards/Consc	ortium/Con	ractual Co	osts						
6.	Equipment or Fac	cility Rental	User Fees	3						
7.	Alterations and Re	lenovations								
8.	Permits									2,729.50
9.	Waste Managemen	nt								525.00
10.	Equipment Insur	rance								1,000.00
							Total Oth	er Direct Costs		8,254.50

G. Direct Costs		Funds Requested (\$)
	Total Direct Costs (A thru F)	86,133.91
H. Indirect Costs		
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost Base (\$)	Funds Requested (\$)
Indirect	26.00	22,394.82
	Total Indirect Costs	22,394.82
Cognizant Federal Agen (Agency Name, POC Name, a POC Phone Number)		
I. Total Direct and Ir	idirect Costs	Funds Requested (\$)
	Total Direct and Indirect Institutional Costs (G + H)	108,528.73
J. Fee		Funds Requested (\$)
K. Total Costs and I		Funds Requested (\$)
	Total Costs and Fee (I + J)	108,528.73
L. Budget Justificat	ion	
(Only attach one file.)	1274 CCMF WSU budget justification v01	

RESEARCH & RELATED BUDGET - Budget Period 5

OMB Number: 4040-0001 Expiration Date: 10/31/2019

38,413.23

ORGANIZATIONAL DUNS: Enter name of Organization: 4148530100000 Washington State University Subaward/Consortium **Budget Type:** 08/31/2024 □ Project **Budget Period: 5** 09/01/2023 End Date: Start Date: A. Senior/Key Person Months Requested Fringe **Funds** Cal. Acad. Sum. Suffix Salary (\$) Benefits (\$) Requested (\$) Prefix First Middle Last Base Salary (\$) 2.75 Felix Jankester 130,958.00 30,011.23 5,402.02 35,413.23 Project Role: |CC PI Total Funds requested for all Senior Add Attachment **Additional Senior Key Persons:** Key Persons in the attached file Total Senior/Key Person 35,413.23 **B. Other Personnel** Months Requested Fringe **Funds** Number of Project Role Çal. Sum. Personnel Acad. Salary (\$) Benefits (\$) Requested (\$) Post Doctoral Associates Graduate Students Undergraduate Students Secretarial/Clerical Human Field Assistant 0.00 1,000.00 c.cc 1,000.00 1.00 2,000.00 c.cc 2,000.00 Admin **Total Number Other Personnel Total Other Personnel** 3,000.00

Total Salary, Wages and Fringe Benefits (A+B)

C.	Equipment Desc	cription									
Lis	t items and dollar Equipment item	r amount	or each it	tem exc	ceeding	\$5,000				Fun	ds Requested (\$)
Add	ditional Equipment:							Add Attachment			
			7	rotal fun	nds reau	ested for a	ıll equ	uipment listed in the	attached file		
							•	-	l Equipment		
D.	Travel									Fun	nds Requested (\$)
1.	Domestic Travel (Costs (In	J. Canada	, Mexic	o and U	J.S. Posse	ssion	ns)			
2.	Foreign Travel Co	osts									13,494.52
								Total	Travel Cost		13,494.52
E.	Participant/Trair	nee Sup	ort Cos	ts						Fun	nds Requested (\$)
1.	Tuition/Fees/Heal	alth Insura	ice								
2.	Stipends										
3.	Travel										
4.	Subsistence										
5.	Other										
	Number of Pa	articipants	Trainees			Te	otal F	articipant/Trainee Su	pport Costs		
F.	Other Direct Co	osts								Fu	ınds Requested (\$)
1.	Materials and Sup	pplies									2,000.00
2.	Publication Costs	3									
3.	Consultant Servic	ces									2,000.00
4.	ADP/Computer Se	Services									
5.	Subawards/Consc	sortium/Co	ntractual C	Costs							
6.	Equipment or Fac	cility Renta	d/User Fed	es							
7.	Alterations and Re	Renovation	5								
8.	Permits										2,811.39
9.	Waste Managemer	nt									c.cc
10.	Equipment Insur	rance									1,000.00
								Total Oth	er Direct Costs		7,811.39

G. Direct Costs		Fun	ds Requested (\$)
	Total Direct Costs (A	. thru F)	59,719.14
H. Indirect Costs			
Indirect Cost Type	Indirect Cost Rate (%) Indirect Cost	Base (\$) Fun	ds Requested (\$)
Indirect	26.00		15,526.97
	Total Indirec	t Costs	15,526.97
Cognizant Federal Ager (Agency Name, POC Name, POC Phone Number)			
I. Total Direct and I	ndirect Costs	Fun	ds Requested (\$)
	Total Direct and Indirect Institutional Costs	(G + H)	75,246.11
J. Fee		Fun	ds Requested (\$)
K. Total Costs and	Fee	Fun	ds Requested (\$)
	Total Costs and Fe	e (I + J)	75,246.11
L. Budget Justifica	tion		
(Only attach one file.)	1274 CCRF WSU budget justification v01		

RESEARCH & RELATED BUDGET - Cumulative Budget

	Totals (\$)	
Section A, Senior/Key Person		177,066.15
Section B, Other Personnel		87,000.00
Total Number Other Personnel	12	
Total Salary, Wages and Fringe Benefits (A+B)		264,066.15
Section C, Equipment		
Section D, Travel		153,974.73
1. Domestic	0.00	
2. Foreign	153,974.73	
Section E, Participant/Trainee Support Costs		0.00
Tuition/Fees/Health Insurance		
2. Stipends		
3. Travel		
4. Subsistence	0.00	
5. Other		
Number of Participants/Trainees		
Section F, Other Direct Costs		60,344.76
Materials and Supplies	10,000.00	
2. Publication Costs		
3. Consultant Services	29,920.00	
4. ADP/Computer Services		
5. Subawards/Consortium/Contractual Costs		
6. Equipment or Facility Rental/User Fees		
7. Alterations and Renovations		
8. Other 1	13,849.76	
9. Other 2	1,575.00	
10. Other 3	5,000.00	
Section G, Direct Costs (A thru F)		478,385.64
Section H, Indirect Costs		124,380.26
Section I, Total Direct and Indirect Costs (G + H)		602,765.90
Section J, Fee		
Section K, Total Costs and Fee (I + J)		602,765.90

EcoHealth Alliance (EHA): Y1-5

A. Senior Personnel

We request a total of \$466,612 to support co-PI/Key Personnel (KP) over the five years of the proposed project.

Melinda Rostal, DVM, PI, will commit 5 months (\$42,315) per annum (p.a.) (Y1-OY2) with a 5% annual increase (due to the exceptionally high cost of living increases in New York City). She will coordinate the many partners involved in this collaboration. She will work with our Tanzanian colleagues to ensure all the proper permits, IACUC/IRB equivalents are submitted and approved. She will also manage the U.S.-based IACUC and IRB. She will make multiple trips to Tanzania, including for the annual meeting, meetings with local collaborators and local stake holders, to assist with community preparation prior to the start of the field work in Year 1 and Option Year 1 as well as to provide feedback to the communities, and one to conduct training and assist with the start of sampling. She will work closely with the field coordinator and Key Personnel (KP) on the various parts of the project and ensure all aspects of the project are progressing on schedule and effectively.

William B Karesh, DVM, co-PI, will commit 1 month of time p.a. in Y1-OY1. We request 1 month's (mo.) salary (\$23,676) p.a. for co-PI Karesh, with a 5% increase p.a. PI Karesh will be very involved in the CCHF symposium that will be hosted and therefore we request 2 mo. salary in OY2 (\$57,556). PI Karesh will meet with PIs, Key Personnel and senior governmental officials in Tanzania to initiate the project. He will work with Co-PI Rostal to coordinate the wide array of partners involved in this collaboration and promote stakeholder engagement.

Carlos Zambrana-Torrelio, PhD, will commit 0.5 mo. p.a. in Y1, Y3, OY1. We request 0.5 mo. p.a. (\$4,961) for those years with a 5% increase p.a. KP Zambrana-Torrelio will advise on the ecological analyses and study design during the Y1, Y3 and OY1. KP Zambrana-Torrelio will commit 2 months in Y2 (\$20,837) in order to analyze the environmental gradient data from the transects and the remote sensing data and 3 months in OY2 (\$36,183) to mentor the post-doctoral fellow. In OY2 KP Zambrana-Torrelio will mentor the Tanzanian post-doctoral fellow in conducting the spatial analysis to identify correlates between environmental factors and CCHFV seropositivity.

B. Other Personnel

We request a total of \$538,110 to support Other Personnel over the five years of the proposed project.

Field Coordinator, PhD will commit 12 months p.a. (Y1-OY1) to the project. We request \$65,000 p.a. with a 5% annual increase. The field coordinator will spend a significant amount of time in Tanzania ensuring that the field, laboratory and training activities proceed smoothly. The field coordinator will interface directly with the students to ensure they gain experience in how to safely conduct field work. They will directly manage the field team for tick, animal and human sampling and will frequently communicate with community and collaborating partners. The coordinator will ensure that the capacity building activities and equipment purchases proceed smoothly and will help finalize and organize the training workshops and the participants who will attend.

Research and Operations Assistants. The research assistant will commit 5 months p.a. (Y1-OY2) to assist in the development of reports, coordination of collaborators, and data cleaning/maintenance and analysis. In Y1 we request \$24,375 for salary for the research assistant, with a 5% annual increase. We will have an operations assistant committed to 3.5 mo. in Y1 and 2.0 mo. p.a. (Y2-OY2) thereafter. In Year 1 we request \$16,247 of salary, with a 5% annual increase. In Y1 the operations assistant will need the additional time in order to initially establish and process the subcontracts with new partners. Once the subcontracts are established, the operations assistant will only need 2 mo. p.a. to maintain them and assist with communication among the collaborators, managing subcontracts and invoicing from the subcontractors.

In OY2 we request support for a Tanzanian post-doctoral fellow based at EcoHealth Alliance for the year. We request \$65,000 p.a. for a 12-month fellowship in New York City with \$20,456 of fringe (calculated at the rate of 31.47%).

Fringe Benefits

Fringe benefits are calculated as 31.47% of base salary for PIs, KPs and other project staff p.a. (not including student stipends), with \$54,034 requested in Y1 and \$314,652 over the full five years.

C. Equipment

We request \$125,489 in Y1 to purchase equipment. We request \$77,489 to fund a four-wheel drive vehicle for the project. As the project vehicle will be out in the field daily for most of Y1-OY1, it will be more cost effective for the project to purchase a vehicle rather than to rent one. We request \$23,000 to purchase a generator for the TVLA Arusha laboratory. Currently, the laboratory does not have a generator and all laboratory work must cease during frequent power outages. More crucially, the samples collected for this project must remain frozen until PCR or serological assays can be conducted. Multiple freeze-thaw cycles would be very detrimental to the success in detecting CCHFV. We request \$5,000 for a large centrifuge that can spin many blood tubes at once as human, livestock and small mammal sampling will be ongoing concurrently. Finally, we request \$20,000 for a -80 ultra freezer to be installed at TVLA after the generator is installed. This will permit our samples to be maintained at the appropriate temperature (KCRI already has this capacity in their facility).

D. Travel

International Travel

All flights to/from Tanzania from/to New York City were calculated at \$2,000 RT airfare to/from Arusha and \$300 for flights from Arusha to Dar es Salam. Lodging and M&I for Arusha is \$240 a day and \$309 in Dar es Salam, and are within the federal guidelines for foreign travel per diem rates.

The following travel is requested on an annual basis:

PI Rostal will make two trips per year to the field site and to Dar es Salam to oversee field and laboratory work and meet with collaborators (Trip: \$2,000 airfare + \$1,680(\$240*7 days) + \$300 airfare to Dar es Salam + \$1,545(\$309*5 days) + \$200 misc. travel costs (\$100 per location) = \$5,725*2 trips = \$11,450). Co-PI Karesh will visit Tanzania once a year to meet with collaborators and join the Annual Stakeholders and Partners Meeting once in Y1- OY5 (\$2,000)

airfare + \$2,163(\$309*7 days) + \$100 misc. travel costs = \$4,263). The field coordinator will make at least two trips per year, the time the coordinator will stay in the field each year will vary as described below (Trip: \$2,000 airfare + \$1,680 (\$240*7 days) + \$300 airfare to Dar es Salam + \$1,545(\$309*5 days) + \$200 misc. travel costs (\$100 per location) = \$5,725*2 trips = \$11,450). In total this amounts to \$27,163 p.a.

There is also a cost of \$2,000 per person p.a. for a permit to enter Tanzania for the purpose of research. We are requesting \$4,000 in Y1, for Dr. Rostal and the field coordinator to conduct research in Tanzania. This cost will increase at a rate of 3% per year to be included in international travel as well.

This provides a baseline of \$31,163 per year (not including the 3% increase in the cost of permits per year).

U.S. Domestic Travel

The following is requested on an annual basis:

We are requesting \$1,750 for PI Rostal or co-PI Karesh to attend the DTRA Annual Technical Review (\$400 airfare/train + \$1,250(\$250 lodging and M & I * 5 nights + \$100 misc. travel costs = 1,750).

Year 1

International: \$67,571 Domestic: \$1,750

In Year 1, we request an additional trip with 14 days in Arusha and 7 in Dar es Salaam (to have additional meetings with government partners and be in the field as the project is starting) for PI Rostal at the same rate as described above (Trip: \$2,000 airfare + \$3,360 (\$240 * 14 days) + \$300 airfare to Dar es Salam + \$2,163(\$309*7 days) + \$200 misc. travel costs (\$100 per location) = \$8,023). Additionally, we request that one of the two baseline trips have an additional 6 days in Arusha (\$240*6 = \$1,440). For the field coordinator who will be spending time in the field with the team, we request an additional 14 days per trip in Arusha (\$14*\$240 = 3,360*2\$ trips = \$6,720) and two additional trips for 21 days in Arusha and with only one additional trip of 5 days in Dar es Salam (Trip 1: \$2,000 airfare + \$5,040(\$240 * 21 days) + \$300 airfare to Dar es Salam + \$1,545(\$309*5 days) + \$200 misc. travel costs (\$100 per location) = \$9,085; Trip 2: \$2,000 airfare + \$5,040(\$240 * 21 days) + \$100 misc. travel costs = \$7,140).

We request funds for a permit to conduct research in a protected area (e.g. Serengeti), which costs \$2,000 per person for Dr. Rostal and the field coordinator in Y1 and Y2, for a total of \$4,000 in Y1.

Year 2

International: \$78,513 Domestic: \$6,350

In Year 2, we request one additional trips to the field site in Arusha and to Dar es Salaam (with 1 additional day in Dar es Salaam) for PI Rostal to have meetings with partners and ensure the field work is going smoothly at the same rate as described above (Trip: \$2,000 airfare + \$1,680 (\$240*7 days) + \$300 airfare to Dar es Salam + \$1,854(\$309*6 days) + \$200 misc. travel costs (\$100 per location)= \$6,034). For the field coordinator to support the field work, we request an additional 21 days per trip in Arusha (20*\$240 = 4,800*2 trips = \$9,600) and two additional trips to the field site in Arusha (for 27 days) with one of those including a trip to Dar es Salam for 4

days to meet with stakeholders (Trip 1: \$2,000 airfare + \$6,480(\$240*27 days) + \$300 airfare to Dar es Salam + \$1,236(\$309*4 days) + \$200 misc. travel costs (\$100 per location)= \$10,216; Trip 2: Trip 1: \$2,000 airfare + \$6,480(\$240*27 days) + \$100 misc. travel costs = \$8,580). To ensure the environmental transects are being conducted correctly, we request KP Zambrana-Torrelio have one trip to Arusha in Y2. We request \$3,780(\$2,000 airfare + \$1,680(\$240*7 days) + \$100 misc. travel costs). We also request funds to present the project at an international conference, estimated at \$4,900 (\$1,300 flight + \$500 registration fee + \$3,000(\$500 lodging and M & I * 6 days) + \$100 misc. travel costs).

We also request funds to support presenting the project at two domestic conferences (Trip: \$600 flight + \$350 registration + \$1,250(\$250 lodging and M&I * 5 days) + <math>\$100 misc. travel costs = \$2,300 *2 = \$4,600).

We request funds for a permit to conduct research in a protected area (e.g. Serengeti), which costs \$2,000 per person for Dr. Rostal and the field coordinator in Y1 and Y2, for a total of \$4,000 in Y2.

Year 3

International: \$41,207 Domestic: \$6,350

In Year 3, we request funds to present the project at two international conferences, estimated at \$4,900 each (\$1,300 flight + \$500 registration fee + \$3,000(\$500 lodging and M & I * 6 days) + \$100 misc. travel costs), for a total of \$9,800.

We also request funds to support presenting the project at two domestic conferences (Trip: \$600 flight + \$350 registration + \$1,250(\$250 lodging and M&I * 5 days) + <math>\$100 misc. travel costs = \$2,300 *2 = \$4,600).

Option Year 1

International: \$58,969 Domestic: \$6,350

In Option Year 1, we request that PI Rostal have 3 additional days in Dar es Salaam to be able to join the team for the policy workshop, in addition to her regular meetings in Dar es Salaam. We request \$927(\$309*3) in OY1 for this. Co-PI Karesh have a second trip to assist with the CCHF policy workshop in Dar es Salaam, thus we request \$4,263(\$2,000 airfare + \$2,163(\$309*7 days) + \$100 misc. travel costs). To assist with the human incidence study, we also request that the field coordinator spend an additional 14 days during one trip to Arusha (14 additional days * \$240 = \$3,360) and that they may take one additional trip with 21 days in Arusha (Trip: \$2,000 airfare + \$5,040(\$240*21 days) + \$300 airfare to Dar es Salam + \$1,545(\$309*5 days) + \$200 misc. travel costs (\$100 per location) = \$9,085). We also request funds to present the project at two international conferences, estimated at \$4,900 (\$1,300 flight + \$500 registration fee + \$3,000(\$500 lodging and M & I * 6 days) + \$100 misc. travel costs) each, for a total of \$9,800.

We also request funds to support presenting the project at two domestic conferences (Trip: \$600 flight + \$350 registration + \$1,250(\$250 lodging and M&I * 5 days) + \$100 misc. travel costs = \$2,300 *2 = \$4,600).

Option Year 2

International: \$50,555 Domestic: \$6,350 In Year 4, we request 1 additional day in Arusha on one trip for PI Rostal to have sufficient time to support community engagement and give final results and 2 extra days on each trip to Dar es Salaam (1*\$240 + 2 days*\$309*2 trips = \$1,476). Co-PI Karesh have a second trip to assist with the East Africa CCHF symposium in Dar es Salaam, thus we request \$4,263(\$2,000 airfare + \$2,163(\$309*7 days) + \$100 misc. travel costs). We also request that the research assistant and Key Personnel Zambrana-Torrelio may come to the CCHF in East Africa Symposium in Dar es Salam (Trip: \$2,000 airfare + \$2,163(\$309*7 days) + \$100 misc. travel costs = \$4,263 * 2 people = \$8,526). The field coordinator will not make any trips this year, which is less (-)\$11,450 from the annual travel baseline given above. We request that the Tanzanian post-doctoral fellow be permitted to make two trips to Tanzania during the year, one for the annual meeting and one for the CCHF Symposium (Trip: \$2,000 airfare + \$2,163 (\$309*7 days) + \$100 misc. travel costs = \$4,263 * 2 trips = \$8,526). We also request funds to present the project at two international conferences, estimated at \$4,900 (\$1,300 flight + \$500 registration fee + \$3,000(\$500 lodging and M & I * 6 days) + \$100 misc. travel costs) for a total of \$9,800.

We also request funds to support presenting the project at two domestic conferences (Trip: \$600 flight + \$350 registration + \$1,250(\$250 lodging and M&I * 5 days) + \$100 misc. travel costs = \$2,300 *2 = \$4,600).

E. Participant Support Costs

We request \$54,710 in participant support costs during the five years.

CCHF Symposium

We request \$54,710 to support a symposium on CCHF in East Africa in OY2. We request \$1,500(\$510*2 nights in Dar es Salaam + \$480 flight to Dar es Salaam) per person for 20 CCHF researchers or people interested in CCHF from East Africa (\$30,000) and \$3,530(\$510*3 nights in Dar es Salaam + \$2,000 flight) per person for 7 international CCHF researchers (\$24,710).

F. Other Direct Costs

Materials and Supplies

Y1: \$66,773

In Y1, we request \$32,103 to cover field supply costs. This includes enough cryovials, blood tubes, needles, syringes and vacutainer holders for the people, cattle, small mammals and ticks sampled and collected in the first year (which is half of the total number that will be sampled during the first cross-sectional study; \$13,126). This also includes biosafety equipment for the team such as nitrile gloves (with extended cuffs) and biohazard bags (coveralls will be purchased locally and are under the GAH-T budget, \$3,322). To conduct the surveys and bolster participation among cattle owners we request \$7 per livestock animal to provide an incentive such as free deworming for that animal for the owners to have their cattle participate, we also request \$2 per participant to provide a snack and juice box to participants that give a blood sample to prevent light-headedness after giving blood (\$6,000), and we request funds to purchase 8 tablets on which to administer the questionnaires (8*\$240 = \$1,920). For small mammal trapping and anesthesia (in order to ethically obtain blood sample) we request \$7,735, which will cover anesthetic supplies (\$1,500) and the purchase of traps (50*\$76.14 large Tomahawk traps for hares = \$3,807; 30* \$59.73 medium Tomahawk traps = \$1,792.80; and 23*\$27.6 Sherman traps for rodents = \$634.80).

As these supplies will be purchased in the United States to ensure there are no delays to the project due to procurement we request \$10,000 to cover shipping the supplies to Tanzania. We request \$3,600 to purchase a label printer for the field team to ensure samples are properly marked and funds to purchase two theory computers and accessories (e.g. a computer bag, mouse or keyboard etc.) for the team to use on the project (2*\$2000 = \$4,000). This subtotal is \$17,600.

We also request funds to support TVLA's laboratory infrastructure that do not meet the definition of equipment, we request \$2,400 for a laboratory grade refrigerator, \$120 for a thermometer for the new refrigerator, an ELISA plat reader lamp (\$180), a sterial microscope (\$3,600), a water distiller (\$3,000), pH Meter (\$120) and an ELISA washer (\$2,400). We request \$1,500 for supplies to support the project's student, \$750 in miscellaneous costs and \$3,000 in labels and printer ribbon for the label printer. This subtotal is \$17,070.

Y2: \$40,069

In Y2, we request \$28,284 to cover field supply costs. This includes enough cryovials, blood tubes, needles, syringes and vacutainer holders for the people, cattle, small mammals and ticks sampled and collected in the second year (which is half of the total number that will be sampled during the first cross-sectional study; \$13,490) with an anticipated 3% increase in the cost of supplies for each year. This also includes biosafety equipment for the team such as nitrile gloves (with extended cuffs) and biohazard bags (coveralls will be purchased locally and are under the GAH-T budget, \$3,407). To conduct the surveys and bolster participation among cattle owners we request \$7 per livestock animal to provide an incentive such as free deworming for that animal for the owners to have their cattle participate, we also request \$2 per participant to provide a snack and juice box to participants that give a blood sample to prevent lightheadedness after giving blood (\$6,180), and we request funds to purchase 8 tablets on which to administer the questionnaires (8*\$247.2 = \$1,978). For small mammal trapping and anesthesia (in order to ethically obtain blood sample) we request \$3,229, which will cover anesthetic supplies (\$1,545) and the purchase of replacement traps (10*\$78.42 large Tomahawk traps for hares = \$784.24; 10* \$61.55 medium Tomahawk traps = \$615.53; and 10*\$28.42 Sherman traps for rodents = \$284.28).

As these supplies will be purchased in the United States to ensure there are no delays to the project due to procurement we request \$5,150 to cover shipping the supplies to Tanzania. We request \$2,000 to purchase a theory computer and accessories (e.g. a computer bag, mouse or keyboard etc.) for the team to use on the project. This subtotal is \$7,150.

We request \$1,545 for supplies to support the project's student, and \$3,090 in labels and printer ribbon for the label printer; these costs reflect a 3% increase from the previous year. This subtotal is \$4,635.

Y3: \$4,683

In Y3, we request \$1,500 to cover laboratory supplies purchased specifically for the workshop (e.g. cryovials, ELISA plates, Eppendorf tubes, pipette tips etc.).

We request \$3,183 for supplies to support the project students; this cost reflects a 3% increase from the previous year. This subtotal is \$3,183.

OY1: \$36,890

In OY1, we request \$22,120 to cover field supply costs. This includes enough cryovials, blood tubes, needles, syringes and vacutainer holders for resampling all of the people that were

sampled in Y1-Y2 (\$16,711) with an anticipated 3% increase in the cost of supplies for each year. This also includes biosafety equipment for the team such as nitrile gloves (with extended cuffs) and biohazard bags (coveralls will be purchased locally and are under the GAHT budget, \$2,836). To conduct the surveys, we request \$2 per participant to provide a snack and juice box to participants that give a blood sample to prevent light-headedness after giving blood (\$2,573).

As these supplies will be purchased in the United States to ensure there are no delays to the project due to procurement we request \$5,464 to cover shipping the supplies to Tanzania. We request \$2,000 to purchase a theory computer and accessories (e.g. a computer bag, mouse or keyboard etc.) for the team to use on the project. This subtotal is \$7,464.

We request \$3,278 for supplies to support two project's students, \$3,278 in labels and printer ribbon for the label printer; these costs reflect a 3% increase from the previous year, and \$750 in miscellaneous costs. This subtotal is \$7,306.

OY2: \$6,188

In OY2, we request \$1,500 to cover supplies needed by the post-doctoral fellow for his/her project.

We request \$3,000 to purchase a theory computer and accessories (e.g. a computer bag, mouse or keyboard etc.) with GIS and other required software for the Tanzanian post-doctoral.

We request \$1,688 for supplies to support the project's student; this cost reflects a 3% increase from the previous year.

Publication Costs

We request \$9,000 to cover the costs of publishing in open-access, peer-reviewed, scientific journals. We request \$1,500 to publish one article per year in Y2-Y3 and \$3,000 p.a. in OY1-OY2 to publish two articles per year.

Consultants

We requested funds for a Tanzanian-based PhD student to be supported by a stipend for \$25,000 p.a. (Y1-Y3) to work for the project. The PhD student will contribute to the project through the completion of their research project. Three additional masters' level graduate students will be supported in subsequent years, each for 2 years at a rate of \$15,000 p.a. (\$90,000).

ADP / Computer Services

We requested \$4,000 p.a. (\$20,000) for communication costs, such as printing fees for reports for stakeholders and frequent communication with all partners and the field team. In OY2 we request \$20,000 to cover the costs of server uses and back-ups in order to analyze the large satellite images and remote sensing data.

Subawards / Consortium / Contractual Costs

We request the following for each subcontractor in Y1 and over the total five years. For the details of justification please see the budget justification attached to each subaward below.

Kilimanjaro Clinical Research Institute: Y1 \$66,440 for a total of \$456,963.

One Health Coordination Desk – Prime Minister's Office: Y1\$1,210 for a total of \$19,844. Public Health England: Y1\$0 for a total of \$53,948.

Tanzania Wildlife Research Institute: Y1\$7,040 for a total of \$24,272.

Tanzania Veterinary Laboratory Agency: Y1\$6,127 for a total of \$213,154.

University of Glasgow: Y1 55,941 for a total of \$481,716.

Washington State University and Global Animal Health Tanzania: Y1\$167,764 for a total of \$602,766.

Other Stakeholder and Partners Meeting

We request funds to support a stakeholder and partners meeting in Dar es Salam, this includes the cost of the conference space and amenities, printing documents for the meeting. We request \$10,000 p.a. for a total of \$50,000 during the 5-year project.

We request \$10,000 for the rental of the conference facilities for the CCHF Symposium in OY2.

Other – Recruitment

We request \$7,500 to cover the costs of recruitment of the Tanzanian post-doctoral fellow in OY2 in order to cover the costs of the legal and visa filing fees associated with obtaining a work visa for the fellow. This will also cover moving expenses etc. that will need to be reimbursed to the fellow.

H. Indirect Costs

We are requesting the federally agreed indirect cost of 32.74% on all direct costs, which amounts to roughly \$115,763-\$156,398 p.a. We have applied this IC rate to the first \$25,000 of the subcontracts valued over \$25,000 p.a. (\$25,000 x 5 subcontracts x 0.3274(%) = \$40,925) and two subcontracts valued at a combined total of \$44,117 (\$44,117 x 0.3274(%) = \$14,443) for a total of \$55,369.

Washington State University & WSU Global Animal Health Tanzania (GAHT)

A. Senior/Key Personnel

We request \$177,066 to support Key Personnel over the five years of the proposed project.

Dr. Felix Lankester, Co-PI, will commit 2.75 months per year in each year of this project. We request an annual salary of \$30,011 at 23% effort each year. Dr. Lankester is a Clinical Assistant Professor at Washington State University's Paul G. Allen School for Global Animal Health. Based in East Africa, Dr. Lankester has conducted zoonotic disease research since 2009 and has extensive experience with project leadership within the African and One Health research contexts. He serves as Country Representative of WSU's non-profit subsidiary Global Animal Health Tanzania (GAHT), legally registered in Tanzania to facilitate in-country research and support research capacity-building activities on zoonotic infectious diseases. Dr. Lankester will oversee all GAHT activities and supervise GAHT project staff, assist in the coordination of the field activities, serve as liaison with high level Ministerial collaborators and interested parties within the Government of the United Republic of Tanzania, and will collaborate with the PI on data analysis and the drafting of manuscripts, reports and policy documents.

Fringe Benefits

Fringe benefits are calculated as 18% of Dr. Lankester's base salary with \$5,402 requested each year.

B. Other Personnel

We request \$84,000 to support Other Personnel over the five years of the proposed project. WSU Global Animal Health Tanzania (GAHT) maintains an office to support its investigators with local hiring and payroll, procurement, accounting, vehicle maintenance, research permitting, and logistics. The GAHT office manages funds in-country using accounting software fully compliant with WSU's audited standards and with oversight by and regular reconciliations with WSU Allen School finance staff. No fringe benefits are requested for Other Personnel.

Veterinarian, (TBD) A Tanzanian registered veterinarian will be hired for the Animal Health team. She or he will commit 12 months (at 100% effort) per year in years 1 and 2 only. We request \$28,500 for salary in each year. The veterinarian will lead the Animal Health team, coordinating activities such as the selection of households for sampling, collection of biological samples from livestock species, implementation of survey tools and the management and transportation of samples to the respective diagnostic laboratory facilities for analysis. In addition, the veterinarian will work with the wildlife sampling team from the Tanzanian Wildlife Research Institute to collect biological samples from wild herbivore species.

Field Assistant, (TBD) A field assistant on the Animal Health team will be required only in years 1 and 2. The field assistant will commit 6 months in year 1 and 11 months in year 2 with additional support of 1 month in year 3, option year 1, and option year 2. We request \$6,000 for year 1 (50% effort); \$11,000 for year 2 (100% effort); \$1,000 in each year for years 3, option year 1, and option year 2 (8.3% effort, each). The responsibilities of the field assistant will include driving and maintaining road worthiness of the project vehicle and assisting the field teams during field sampling activities, and surveys.

Sarah Mollel, Project Administrator/Coordinator will commit 1.0 calendar month per year (8.3% effort) in each year of the project. We request \$2,000 per year for Ms. Mollel. Administrative oversight for the proposed project will be provide by Ms. Mollel. This will include being responsible for the distribution of Tanzanian-based project funds, ensuring up-to-date accounting of all field expenses, liaising with Tanzanian review boards to ensure permits are in place and current, managing the road-worthiness of the field vehicles (insurance, servicing, repair work etc.) and organizing travel arrangements.

D. Travel

International Travel

Funds are requested for Dr. Lankester's travel to project meetings and project-related professional conferences at international locations outside of Tanzania. Two international trips outside of Tanzania across the 5-year project period are budgeted at \$3255 in years 3 and option year 1: (\$1,115 airfare from Arusha to Washington DC) + \$1535 (5 nights x \$307) + \$480 (6 days * \$80) meals and incidentals) + \$125 for ground transportation). Totaling \$6,510 over all of the years of the project.

International Travel - Domestic Travel in Tanzania

We request support for our local field team within Tanzania to conduct and oversee project activities. These include support for the project veterinarian and the field assistant on the Animal Health field team. We request \$7,200 in years 1 and 2 to cover travel costs include lodging and per diem within Screngeti National Park. This will cover each of the two persons (\$60/day x 60 days). This totals \$14,400 over the two years.

We request \$7,00 in year 1 and option year 1 each for two field personnel travel outside of Serengeti Park. Costs include lodging and per diem for two persons each in year 1 and option year 1 (\$58.33/day x 60 days). This totals \$14,000 over the two years.

We request \$3,500 (\$35/day*100 days) in years 1 and 2 totaling \$7,000. Funds are also budgeted for the driver/field assistant travel in option year 1 to conduct the human incidence study (\$40/day x 200 days = \$8,000).

We request support to cover cost of project vehicle fuel for trips to field locations, totaling \$13,888.97 in year 1. Mileage is calculated as 40,000 km/year in years 1 and 2 for the cross-sectional study; 26,667 km in option year 1 for the human incidence study; 24,000 km in years 2 and option year 2 for travel around Arusha for local meetings. Fuel is budgeted at \$0.2083335/km for a total of \$34,722.32 over the 5-years of our project.

An additional field vehicle will be required during portions of the field work to adequately accommodate project personnel and supplies. We request \$6,840 to cover the vehicle rental for 38 days in years 1 and 2 each as well as an estimated 30 days in option year 1. We request \$6,840 in year 1 (\$190 x 38 days) for a total of \$20,140 during the five years of our project.

The PhD student working on the project is estimated to have the following expenses for accommodation

- 40 days within Screngeti National Park in each of years 1, 2, and option year 1 (\$60/day x 40 = \$2,400 per year).
- 100 travel days outside the National Park in each of years 1, 2, and option year 1. We request \$3,500 (\$35/day x 100) in years 1, 2, and option year 1.
- Additional travel is requested in years 3 and option year 2 for only 2 months' time (\$983.33 in each year).

Travel support within Tanzania is also requested for Dr. Lankester and for the Project Administrator. Dr. Lankester's travel includes:

- Community outreach to provide information on the study and share results. Cost per year is estimated at \$1,906 (\$546.18 for fuel + \$1,200 (\$60 x 20 days). Only two months are expected to be required in year 1 (\$291.03) with 12 months required in all other years and 40 days per year (\$60 x 40 = \$2,400). The five year estimated cost is \$12,075.75.
- 2 trips for 2 days each annually to Dar es Salaam and Dodoma for meetings with United Republic of Tanzania Ministry officials and other stakeholders for our project. The cost per trip is calculated at \$525 (\$300 flight + \$450 for lodging and MIEs estimated at \$225 x 2 days) x 2 = \$1,050 x 2 = \$2,100 each year for only years 2, 3, and option years 1 and 2 totaling \$8,400 for the five years.

- 4 trips for 3 days each in years 2 and option year 1 to field sites to supervise and evaluate the field activities and sampling procedures. The average per trip cost is \$555 (\$375 flight + \$540 for lodging and MIEs estimated at \$180 x 3 days) x 4 trips = \$2,220 in each of years 2 and option year 1 totaling \$4,440. Two additional trips are estimated for years 3 and option year 2 at \$1,110 per year.
- Project Administrator Sarah Mollel will require occasional travel for purposes of securing
 research permits, procurement, assisting with outreach activities and other project-related duties.
 We estimate this at \$600 per year in years 2, 3, and option years 1 and 2 with \$2,400 requested
 for the full 5-year period.

E. Participant Support Costs

No participant support costs requested.

F. Other Direct Costs

- Materials and Supplies (\$10,000.00)
 - We request \$2,000.00 per year to support purchase of materials and supplies. These annual expenses will be required for community outreach and field supplies including printer paper (10 reams at \$7.00 each = \$70), toner (4 cartridges for CMYK at \$150 each with an extra K or black cartridge, since most printing will be in black and white = \$750), field notebooks (at \$10 two each for ten field personnel = \$200), dedicated field coveralls (\$22 each for 10 field personnel with two back-up coveralls per field team personnel = \$660), buckets (at \$8 each with a total of 15 estimated to be used during the sampling year = \$120), and disinfectants (\$50 per bottle and 4 required for the field sampling year = \$200).
- Consultant Services (\$25,920)
 - We request support for a consultant with expertise in mammalogy and species identification. She or he will be contracted to aid in identification of rodents and other mammal species captured in the live animal traps. Biological samples collected from these animals before they are released will be assayed for virus which will enable reservoirs and vectors of the CCHF virus to be determined. Consequently, accurate species identification is critical. The current annual rate for these services is estimated at \$6,000. We will require only 9 months of this service in year 1 (prorated to 66% -> \$3,960) and 12 months in year 2 (100% time -> \$6000).
 - We request support for translation services and estimate these at \$2,000 per year = \$10,000). These translation services will pay for translation of survey tools from English into Swahili and vernacular tribal languages. Translation services will be sourced in Arusha town.
 - We request support for the field team vehicle maintenance including tire replacement, minor repairs, oil changes, other regular services. We estimate these at \$6,000 per year and only require them in years 1 and 2 during field activities. In year 1 and as the vehicle will be new, we request only 9 months' coverage (66%) \$3,960 and \$6,000 in year 2 for maintenance during the cross-sectional study during which the field vehicle will be frequently required for field work. The vehicle will primarily be used to go back and forth between the laboratories in Moshi and Arusha, as well as to the communities for meetings with community leaders.
- Other Permits (\$13,849.75)
 We request funding for annual Tanzanian work permits for Dr. Lankester. We estimate this cost in year one at \$2,787 with a 3% increase per year in each of the five years of the project to account for inflation and exchange rate fluctuations.
- Other Medical Waste Management (\$1,575.00)

We have estimated medical waste management for biohazardous waste disposal at \$1,575 with an annual cost of \$525 in each year of field work, so only in years 1, 2, and option year 1.

Other – Equipment Insurance (\$5,000.00)
 Insurance coverage for field vehicles and for project (field and laboratory) equipment is estimated at \$1,000 per year

H. Indirect Costs

WSU's off-campus federally negotiated and approved research rate for indirect costs is 26% of all allowable direct costs. We request a total of \$124,425.83 over the five years of our proposed project.

Public Health England-Porton Down Budget Justification

A. Senior Personnel

We request a total of \$1,191 to support Key Personnel (KP) during the project.

Roger Hewson, Ph.D, Scientific Leader. Virologist will commit 0.1 months in OY2 of the project. KP Hewson will engage with project partners, supervise and oversee scientific reporting from PHE. We request a total of \$1,191.

B. Other Personnel

We request a total of \$22,858 to support Other Personnel during the proposed project.

Stuart Dowall, Ph.D, Senior Scientist, Virologist will commit 1.1 months in OY2 of the project. KP Dowall will set up DEFRA license applications for sample transport and liaise with colleagues in Tanzania on sample details, plan and supervise the containment level 4 activity, collate data and lead the scientific reporting. We request a total of \$10,077

Technicians: Kevin Richards, Ph.D and James Pitman. Two experienced CL4 laboratory virologists will commit 1 month each in OY2 in order to confirm 100 wildlife samples using virus neutralization assays. CCHFV is a Hazard Group 4 pathogen necessitating work with infectious substances to be carried out at Containment Level 4, and the UK operates a dual worker or buddy system for all laboratory work with HG4 pathogens. We request \$6,139 per person per month for a total of \$12,278 for both.

Project Manager: Neil McLeod. The project manager will commit 0.05 months in OY2 in order to manage staff and budgets to ensure efficient project progress. We request \$503 in OY2.

F. Other Direct Costs

We request a total of \$15,190 for direct costs during the project.

Materials and Supplies

We will conduct 100 CCHFV virus neutralization assays to confirm the positive ELISA results on the wildlife samples, as this has not previously been assessed for this multispecies commercial ELISA. This includes the cost of running the test as well as laboratory supplies such as petri dishes, culture media, reagents, tubes etc. We request \$7,119 in OY2 to procure these supplies and conduct the testing.

6. Facility Rental

CCHFV is a Hazard Group 4 pathogen necessitating work with infectious substances to be carried out at Containment Level 4. We request \$8,071 in OY2 to support the use of the CL-4 laboratory for 2 weeks in order to complete the testing indicated above.

H. Indirect Costs

We are requesting the federally agreed indirect cost of 37.5% on all direct costs during the project. We request \$14,715 in OY2.

University of Glasgow (UoG)

A. Senior Personnel

We request a total of \$131,107 to support co-PI/Key Personnel (KP) over the five years of the proposed project.

Sarah Cleaveland, Ph.D., co-PI, will commit 1.2 months (mo.) per annum (p.a.) for all five years, with an increase of approximately (allowing for exchange rates) 3.4% annually. We request \$17,625 in Y1 and \$94,600 total. Co-PI Cleaveland will provide key support and oversight for the field epidemiological studies by contributing to the design and implementation of the field study, liaising with partner institutions and stakeholders in Tanzania and linking with policy makers at national, regional and international levels for the dissemination of findings and development of guidelines.

Brian Willett, Ph.D., Research Scientist, Viral Immunologist, will commit 0.6 mo. p.a. for all five years with an increase of approximately 3.4% annually. We request \$6,801 in Y1 and \$36,507 for all five years. Key Personnel Willett will provide oversight, support and training for CCHFV serological and molecular analyses and will coordinate activities with collaborating laboratories (Public Health England, Pirbright Institute).

B. Other Personnel

We request a total of \$171,950 to support Other Personnel over the five years of the proposed project.

Technician. A full-time laboratory technician based in KP Willett's laboratory will commit 3 mo. per year in Y1, Y2, and OY1. We request \$10,539 in Y1 with an approximately (allowing for exchange rates) 4.8% increase annually (the other personnel are paid on a Grade 5 scale vs the Senior Personnel that are paid on a professional scale at Glasgow). The technician will commit 12 mo. per year in Y3 and OY1 as the in-country laboratory work will be conducted during these two years. We request \$46,627 in Y3, totalling \$130,092 across all five years. The laboratory technician will support the laboratory analyses, including optimisation of assays, and establishment of laboratory diagnostic capacity in Tanzania.

John Claxton, Administrator, will commit 1.2 months p.a. for all five years with an approximately (allowing for exchange rates) 4.8% increase annually. We request \$7,560 in Y1 and a total of \$41,857 for all five years. Mr. Claxton, a highly experienced international project manager, will provide support for financial management and reporting, sub-contracts and agreements, ethical clearance, procurement and shipment of supplies.

D. Travel

We request a total of \$63,032 for international travel across all five years.

We request 2 trips per year for either co-PI Cleaveland or the laboratory technician in Y1-OY1. Each trip is estimated at a \$1,300 flight + \$700(\$70 x 10 days for food and lodging in Arusha) + \$480(flight to Dodoma or Dar es Salaam) + \$300(\$150 x 2 days for food and lodging in Dar es Salaam) = \$2,780. We request \$5,560 in Y1 with a 3% increase in costs per year for a total of \$23,260 across four years.

In Y3 and OY1 we request an additional \$28.52 per day for the technician to an extended stay (about 6 months and 2 months respectively) in Tanzania to support the laboratory assays and establishment of diagnostic capacity (this amount covers rental costs for staying at the UoG research house at KCMC-KCRI). We request \$5,305(\$28.52 x 186 days) to cover this extended stay in Y3 and \$1,974 (\$28.52 x 67.2 days x 3% increase) in OY1, totalling \$7,279.

In OY2 we request 2 trips to for co-PI Cleaveland and 1 trip for KP Willett. As this year will be more focused on building relationships, co-PI will spend more time in Dar es Salaam and less time in Arusha. For co-PI Cleaveland we request trip 1: \$3,035(\$1,300 flight + \$280(\$70 x 4 days) + \$380 flight to Dar es Salaam + \$750(\$150*5)*12% increase from Y1; trip 2: \$3,360(\$1,300 flight + \$420(\$70 x 6 days) + \$380 flight to Dar es Salaam + \$900(\$150*6) *12%; and for KP Willett to join the CCHF Symposium \$2,890 (\$1,300 flight + \$380 flight to Dar es Salaam + \$900(\$150*6)*12% increase from Y1. For a total of \$9,285.

We request \$23,525 over five years for research visas. We request a permit for the technician in Y1 to assist with the installation of capacity building equipment at TVLA, 2 permits per year in Y2-OY1 for the technician and co-PI Cleaveland and one permit in OY2 for co-PI Cleaveland. We request \$2,770 in Y1 with a 3% increase across all years.

E. Participant Support Costs

We request \$3,500 in Y3 for travel subsistence costs for participants (\$50 per day * 5 days * 10 participants *2 trainings). Costs for the UoG trainer are covered by travel costs.

F. Other Direct Costs.

We request a total of \$63,830 in other direct costs across 5 years.

In Y3 and OY1 we request \$2,650 with a 3% increase p.a. for the shipment of samples from Tanzania to the University of Glasgow. This is required for quality assurance of assays carried out in Tanzania and based on recent estimates for similar shipments provided by Arusha Freight.

Lab work

We request a total of \$58,500 for laboratory work across the 5 years. Materials and consumables costs are based upon the average actual annual expenditure (over 4 years) by researchers within this laboratory performing similar experiments to those in the project. These costs were extracted from the University of Glasgow purchasing system Agresso. All consumables purchased benefit from significant bulk purchase discounts negotiated centrally with major suppliers including Thermo Fisher, QIAgen, and VWR International.

We request a total of \$18,322 over the five years for immunologicals and viral detection. We request \$3,862 in Y2-OY1 (\$4,038 total; \$1,700 in Y2, \$479 in Y3 and \$2,410, which averages at \$1,346 p.a. but is adjusted to account for the number of kits purchased per year as indicated below) for the purchase and production of the human ELISA reagents, including antibody reagents, secondary antibody conjugates, specific control sera, buffers, blocking agents and substrates for ELISA. This will produce sufficient reagent to facilitate ELISA analyses at KCRI, UoG and the laboratories participating in the workshops. These funds will also be used to purchase of sufficient CCHF Multispecies ELISA kits (430 animals can be tested per kit) at the end of Y2 for analyses at TVLA on the 3,200 animal samples in Y3 (\$1,205 per kit * 7 kits = \$8,435), and a contingency of kits sufficient to process an additional 1000 samples in each of Y4 (\$1,205 per kit * 3 kits = \$3,615) and Y5 (2 kits = \$2,410) for confirmatory analyses and assay validation at UoG. Thus, we request a sufficient number of kits to test 5,200 samples over the three years (5,200/430 = 12 kits * \$1,205 = \$14,460.

We request a total of \$22,049 over the five years for cell culture plasticware/media for the synthesis and purification of recombinant antigens (for the human ELISA). This includes culture flasks, plates, media and supplements, ELISA plates, plate sealers, reservoirs, pipettes, tips and tubes. This includes using pre-cast polyacrylamide gels, buffers and supplies for the iBlot transfer system, Sarstedt tubes and storage boxes for sera. We request \$3,322 in Y2 to prepare sufficient reagent for KCRI to begin testing at the start of Y3 and

increasing to \$9,364 p.a. in Y3 and OY1 for full production to be used by KCRI, given to the laboratories participating in the training and for UoG to confirm the results in 1000 samples.

We request \$3,504 p.a. in Y2-OY1 for a total of \$10,511 over the five years for molecular biologicals, nucleic acid purification kits, restriction enzymes and kits for mutagenesis and sequencing for vector preparation and cloning, and transfection. Also included in this category are preparing primers and probes for viral detection by real-time PCR for TVLA to use, confirmatory testing primers for sub-cloning and mutagenesis, and small-scale sequence confirmation of plasmid constructs.

We request \$2,539 p.a. (Y2-OY1) for general laboratory supplies, including microcentrifuge tubes, plates, petri dishes, fine chemicals, and general laboratory costs.

H. Indirect Costs

We request a total of \$43,792 in overhead, a rate of 10% per year on other direct costs, over the five years of the proposed project.

TVLA Budget Justification

A. Senior Personnel

We request a total of \$28,563 to support Key Personnel over the five years of the proposed project.

Dr. Furaha Mramba, Co-PI, Entomologist, will commit 1 months per year. We request salary of \$3,000 in Year 1, with a 3% increase for Y2-Y5, respectively. Her time with increase in Y3 to 6.0 months in order to support the testing of samples in the TVLA laboratory. Co-PI Mramba is the Chief Executive of TVLA and holds a PhD in medical entomology. Co-PI Mramba will conduct or supervise the identification and diagnostic testing of animals and ticks, oversee the design, implementation and analysis of the animal study and facilitate communication with stakeholders.

B. Other Personnel

We request a total of \$23,842 to support Other Personnel over the five years of the proposed project.

Laboratory Technicians.

There will be three technicians, who will who commit 1 months per year in Y1 and Y2 to assist with the installation of the equipment purchased for the TVLA laboratory in Arusha (e.g. generator for the building, an ultrafreezer – see the EcoHealth Alliance Y1 part C for a full list of items to be installed), for which we are requesting \$450. Salaries will increase of 3% in subsequent years. They will commit to 12 months per year for Y3 in order to assist with the diagnostic testing of samples. For this we are requesting \$6,642.36 over the five years of the project.

During Year 3 we will hire three additional technicians to conduct the diagnostic testing of samples and tick identification. This includes one ELISA technician and one PCR technician that will be based in Arusha and who will commit 12 months per year for Y3 to assist with sera and ticks, respectively, for which we request \$5,000 per technician. The technician hired to identify ticks will be contracted for 12 months from the TVLA lab in Tanga, for which we request \$7,200.

D. Travel

We request a total of \$2,100 to support travel over the five years of the proposed project.

In order to complete the tick identifications in Y3 of the project, we request \$1,140 that will cover six 14-day trips to Arusha. Transportation is calculated at \$50 per day ($$50/day \times 6$ trips = 300) and overnights are calculated at an average cost of \$10 per day, for 6 trips of 14 days each ($$10/day \times 14$ days \times 6$ trips = 840).

Co-PI Mramba will require one trip per year during Y1, Y2, OY1, and OY2 for project meetings and to visit stakeholders, calculated at \$50 per day for transportation, and \$10 per day for 7 days for field visit (\$120 per year). During Y3 when there is active laboratory work and tick identifications ongoing, co-PI Mramba will make 3 additional trips to visit the laboratory in Arusha, for which we are requesting \$480 in Y3.

E. Participant Support Costs

We request a total of \$1,800 for a CCHF Diagnostics Training Workshop held at TVLA during Y3 of the project. These funds will be used to support the travel costs of the trainees during the 5-day workshop.

F. Other Direct Costs

We request a total of \$134,193 for other direct costs over the five years of the proposed project.

We request \$123,893 for testing during Y3 of the project, including PCR testing and serology. We request \$30,656 for PCR testing covering 1,200 cattle samples, 1,800 small mammal samples and 200 wildlife samples, at a discounted rate of \$9.58 (the rate is discounting as the University of Glasgow is providing the multispecies ELISA kits for analysis). We request \$93,238 for serology testing covering 200 wildlife samples and 3296 tick pools, at a cost of 60,000 Tanzanian Shilling, or \$26.67 USD, per test.

We request \$10,300 over the five years of the project for supplies. There will a cost of \$2,000 each year in fuel for the generator to maintain samples (which will begin to be collected in Year 1) at -80°C during power outages. In Y3 only, we request \$300 for a 100 pack of 20 mL Petri dishes.

H. Indirect Costs

We request a total of \$19,378 in overhead, a rate of 10% per year on other direct costs, over the five years of the proposed project.

KCRI Budget Justification

A. Senior Personnel

We request a total of \$38,000 to support Key Personnel over the five years of the proposed project.

Blandina Mmbaga, Co-PI, Epidemiologist, will commit 1.2 months per year. We request salary of \$6,000 in Year 1-Y5. Co-PI Mmbaga will commit 2.8 months per year in OY1 as we will have both human field sampling and lab testing ongoing. Co-PI Mmbaga is the Research Director of KCRI and holds a PhD in Public Health and Epidemiology. Co-PI Mmbaga will contribute to the study design, lead the implementation of field work with human subjects and the laboratory analysis of human samples, provide training and mentorship, develop policy recommendations and facilitate collaboration with stakeholders.

B. Other Personnel

We request a total of \$288,095.31 to support Other Personnel over the five years of the proposed project.

Technicians. We request \$2,000 per year in Y1-2 for a laboratory technician, who will commit 1 months per year to aliquot the serum samples that come in from the field and store them. In Y3 of project, the laboratory technician will increase their time commitment to 12 months per year, and a second laboratory technician will be hired committing 12 months per year, for which we are requesting \$24,000 per technician for Y3-4 to complete the ELISA testing on the human sera collected in Y1, Y2 and OY1.

Nurses. We request \$48,000 over the five years of the project for two nurses. In Y1-2, we request support for one nurse who will commit 6 months per year at a rate of \$12,000 per year who will collect blood samples from participants in the serosurvey (Task 2). In OY1 of the project, we request \$24,000 for two nurses who will each commit 6 months for the year in order to collect blood samples for the incidence study.

Administrator. We request \$2,400 in Y1 to support a Program Administrator who will assist co-PI Mmbaga in the administration of the project. We request a total of \$12,000 over the five years of the project.

Anthropologist/Epidemiologist. We request \$30,000 for an Anthropologist/Epidemiologist, with a 3% increase in subsequent years, who will commit 12.0 months Y1-2, OY1 and 6 months in Y3 to contribute to the development of the serosurvey and incidence studies, field data collection and data analysis.

We request \$10,500 over the five years of the project to support a Finance Specialist who will commit .84 months per year for Y1-5. The Finance Specialist will work with project staff to ensure timely invoicing for all program expenses.

D. Travel

We request \$3,500 per year, with a 3% annual increase, for Year 1 and 2 and \$11,483 in OY1 for travel. This will cover a travel stipend of \$35 per day for 100 days in each of Y1 and Y2 for the original serosurvey and 150.5 days in OY1 for the incidence study for the nurse(s) while they are working in the field. We request \$18,588 over the five years.

E. Participant Support Costs

We request a total of \$1,800 for a CCHFV Diagnostics Training Workshop Y3 of the project. We will host a workshop to train participants from local and national public health laboratories to conduct CCHFV ELISA and PCR testing as well as to understand the importance of including CCHFV as a differential diagnosis.

F. Other Direct Costs

We request a total of \$84,948.19 for other direct costs over the five years of the proposed project.

We request \$2,400 for the storage of samples in Y1 of the project, and an increase of 5% in each subsequent year for a total of \$13,261.52 over the five years of the project. We request \$14,156.10 for laboratory access and utilization for the processing of human IgG ELISA samples in Y3 of the project, and an increase of 5% in Y4 for a total of \$29,020.01 over the five years of the project. There is a separate cost to perform the tests, for which we request a total of \$42,656, \$10,667 in Y3 to perform 800 tests and \$31,989 in Y4 to perform 2400 tests all at a cost of 30,000 Tanzanian Shilling, or \$13.33 USD, per test.

H. Indirect Costs

We request a total of \$40,484 in overhead, a rate of 10% per year, over the five years of the proposed project.

One Health Coordination Desk (OHCD-PMO) Budget Justification

A. Senior Personnel

We request a total of \$14,855 to support Key Personnel over the five years of the proposed project.

Dr. Justine Assenga, Research Scientist, Molecular Epidemiologist, will commit 1.0 months per year for which we request salary support of \$250 in Year 1, with a 3% increase per annum (p.a.). Dr. Justine Assenga is the Animal Health Focal Person at the Ministry of Livestock and Fisheries One Health Coordination Desk and will join meetings, assist with keeping the government ministries apprised of our activities, contribute to the development of the epidemiological plan as well as facilitate communication to stakeholders. In order to prepare for and facilitate the policy workshop and CCHF Symposium, Dr. Assenga's time will increase from 1 month to 12 months per year in Y4-5 for a total of \$7,427 over the five years of the project.

Dr. Jubilate Bernard, Research Scientist, Public Health Specialist, will commit 1.0 months per year for which we request salary support of \$250 in Year 1, with a 3% increase p.a. Dr. Jubilate Bernard is the Animal Health Focal Person at the Ministry of Livestock and Fisheries One Health Coordination Desk will join meetings, assist with keeping the government ministries apprised of our activities, contribute to the development of the epidemiological plan as well as facilitate communication to stakeholders. In order to prepare for and facilitate the policy workshop and CCHF Symposium, Dr. Bernard's time will increase from 1 month to 12 months per year in Y4-5 for a total of \$7,427 over the five years of the project.

D. Travel

We request a total of \$3,185 to support local travel for them in Tanzania over the five years of the proposed project.

We request \$600 in Y1 for so that both Dr. Assenga and Dr. Bernard may attend project meetings held in Tanzania and take other meetings to improve One Health stakeholder relationships. Travel expenses will increase at a rate of 3% per year over the five years of the project.

H. Indirect Costs

We request a total of \$3,185 in overhead over the five years of the project. The rate of overhead will be 10% each year, starting with \$110 in Y1.

TAWIRI Budget Justification

A. Senior Personnel

We request a total of \$13,273 to support Key Personnel over the five years of the proposed project.

Julius Dotto Keyyu, Ph.D., Research Scientist, Disease Ecologist, will commit 1.0 months per year. We request salary of \$2,814 in Year 1, with a 3% increase for Y2-Y5, respectively. Dr. Julius D. Keyyu is a Chief Research Officer who holds a PhD in ecosystem and population health specifically on disease ecology. Dr. Keyyu will support the wildlife sampling team, create the animal epidemiological study design, implementation and analysis and facilitate communication with stakeholders.

B. Other Personnel

We request a total of \$7,200 to support Other Personnel over the five years of the proposed project.

Wildlife Technician. There will be one wildlife technician, who will support the team while they are sampling small mammals in the protected area. They will be paid \$60 per day for food an accommodation, each working for 60 days (\$60 x 60 days x 2 years) for a total of \$7,200, for Year 1 and Year 2 of the project.

D. Travel

We request a total of \$1,593 to support local travel in Tanzania over the five years of the proposed project.

We request \$300 in Y1 for Key Personnel Keyyu to join project meetings and meet with stakeholders. Local travel expenses will increase at a rate of 3% per year throughout the project.

H. Indirect Costs

We request a total of \$22,066 in overhead, a rate of 10% per year on other direct costs, over the five years of the proposed project.

\$996,590

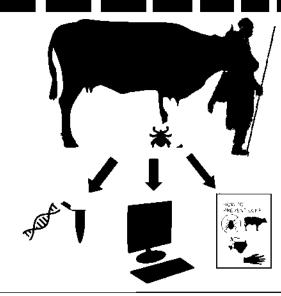
Crimean-Congo Hemonthagic Fever:

Reducing an Emerging Health Threat in Tanzania, PI: Melinda Rostal, EcoHealth

Alliance CPANT12750679

Objective: Conduct the first collaborative One Health investigation of Crimean-Congo hemorrhagic fever virus (CCHFV) in Tanzania to estimate current seroprevalence of CCHFV in people, cattle and wildlife, identify risk factors associated with seroprevalence and develop threat reduction policy recommendations for the government of Tanzania.

Method: Work with local partners and government to scientifically investigate CCHFV infection patterns in people, animals, vector ecology and ecological determinants to improve awareness in local communities, the government and among the medical and research community in Tanzania and recommend policies to reduce the threat of CCHF outbreaks.



Status of effort: The collaborative team has been established and already generated preliminary data.

Personnel Supported: We plan to support 20 researcher scientists, 8 technicians, 1 Post-Doc, and 4 graduate students.

Publications & Meetings: We plan to publish at least 6 peer-reviewed articles and present at at least 10 meetings.

Major Goals and Milestones:

- •Raise awareness about CCHF within communities, health laboratories and government (Y1-OY2).
- •Estimate the seroprevalence in humans, cattle and wildlife and the prevalence in ticks (Y1-3).
- •Build capacity through laboratory diagnostic and policy workshops, and an international CCHF symposium.

Funding Profile Yr 1: \$997,801 Yr 2: \$927,086

Yr 3: \$992,671 OYr 1: \$999,748 OYr 2: \$931,177

Contact information PI: Dr. Melinda Rostal, rostal

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UNCLASSIFIED

Statement of Work

Project Title: Crimean-Congo Hemorrhagic Fever: Reducing an Emerging Health Threat in Tanzania

Document Date: March 18, 2018.

Objective: The objective of this grant is to reduce the threat of Crimean-Congo hemorrhagic fever (CCHF) by determining the presence and scale of CCHF virus (CCHFV) circulation in Tanzania. The awardee shall establish a multi-disciplinary team of Tanzanian and international One Health professionals to collect fundamental data on CCHFV, conduct rigorous scientific analyses and support the Government of Tanzania in the development of policies to control and reduce the threat of CCHF. Using a One Health approach the awardee shall investigate the following three hypotheses: 1) CCHFV is circulating in ticks, livestock and wildlife in Tanzania; 2) CCHFV is present and circulating in the human population in Tanzania; 3) CCHFV prevalence, seroprevalence and vector abundance will vary across an environmental disturbance gradient from peri-urban communities, to pastoral rangelands, to protected wildlife areas. The awardee shall support the capacity of Tanzanian human and animal health laboratories to detect anti-CCHFV antibodies, train Tanzanian field researchers and provide vital data to Tanzanian government partners and stakeholders to develop policies to prepare for and reduce the threat of a CCHF outbreak.

Scope: The grantee proposes a five-year multi-disciplinary study of epidemiology, ecology and impact of CCHF in northern Tanzania. The grantee team shall focus on the following major goals and milestones:

- Improve awareness of and capacity to respond to potential CCHF epidemics.
 - Host an annual stakeholders' and partners' meeting in Tanzania (Y1-OY2);
 initiate and maintain diagnostic capacity for detection of CCHFV (Y2-OY1);
 provide training for students and scientists (Y1-OY2).
- Use a One Health approach to identify CCHFV infection patterns in wildlife, cattle and humans across an environmental disturbance gradient.
 - Establish field study protocols (Y1); implement small mammal, cattle and human serosurveys (Y1-2); conduct serological assays on blood samples (Y3-OY1); conduct longitudinal study in humans (OY1); train a Tanzanian post-doctoral fellow to use spatial analyses to determine environmental correlates of CCHFV infection risk (OY2).
- Determine the abundance and CCHFV infection prevalence of tick vectors.
 - Establish tick field study protocols (Y1); implement tick sampling (Y1-2);
 conduct PCR assays on *Hyalomma* spp. ticks (Y3); analyze tick abundance in relation to environmental factors (Y3).
- Support One Health communication and policy development to reduce the threat of CCHF.
 - Host a policy development workshop (OY1); host an East African CCHF symposium (OY2).

Background: Crimean-Congo hemorrhagic fever is a WHO Blueprint R&D priority disease for which there is an urgent need for accelerated research given its epidemic potential and the lack of countermeasures against CCHFV. The Department of Health and Human Services considers CCHF as having the potential to pose a severe threat to human health. Similarly, Tanzania identified viral hemorrhagic fevers as one of six priority zoonoses of greatest national concern. Clinical signs and symptoms include fever, headache, thrombocytopenia, hemorrhagic disease and death in 30-40% of patients. CCHFV can be transmitted via multiple routes, including direct contact with infected animal tissues and transmission from Hyalomma spp. ticks. Human-to-human transmission has frequently been reported and if isolation practices are not implemented, nosocomial outbreaks can occur. Though it is not known to cause disease in animals, CCHFV circulates among both small mammals and large ruminants. Little is known about the status of CCHFV in Tanzania as the most recent cattle serosurvey occurred in 1974-75 (identifying a 9% seroprevalence) and despite neighboring Uganda and Kenya reporting multiple cases, no studies have investigated CCHF in humans in Tanzania.

Similar to the situation with Ebola virus prior to the 2014-16 outbreak, CCHFV antibodies were detected in people in Turkey as far back as 1980, yet no cases were reported until the start of the large outbreak in 2002-06 during which there were 1,103 confirmed cases. This "sudden" appearance of CCHF has been described in many regions that thereafter remain endemic for the virus, including Pakistan, Crimea and Turkey. **Human epidemics have often been linked to environmental and social changes,** which are associated with an increase in the abundance of CCHFV vectors. Thus using a One Health approach is vital to understanding CCHFV ecology, particularly in regions where environmental changes might drive disease emergence. CCHF is a frequent threat faced by U.S. warfighters working in endemic countries in Central Asia and the Middle East. Indeed, war is considered a driver for the emergence of CCHF as demonstrated by the outbreak among 200 Soviet troops in Crimea.

Key references include (further references can be found in the Project Narrative):

Pigott, D. M. et al. Local, national, and regional viral haemorrhagic fever pandemic potential in Africa: a multistage analysis. The Lancet 390, 2662-2672 (2017).

Messina, J. P. et al. The global distribution of Crimean-Congo hemorrhagic fever. Trans R Soc Trop Med Hyg 109, 503-513 (2015).

Hoogstraal, H. The epidemiology of tick-borne Crimean-Congo hemorrhagic fever in Asia, Europe, and Africa. J Med Entomol 15, 307-417 (1979).

Tasks/Scientific Goals: (given in the format: Year.Task.Subtask)

Task Y1.1-YO2.1: Improve the capacity within Tanzania to understand the potential impacts of CCHF and strengthen One Health collaborations between sectors.

Strengthening Tanzania's capacity to consider CCHF as a differential diagnosis, conduct CCHFV diagnostic assays and improve inter-sector communication about this important zoonosis will improve their ability to identify, respond and prevent CCHF outbreaks. 1) The grantee shall mentor four graduate students or FETP fellows in fields that can contribute to our understanding of the epidemiology and ecology of CCHFV in Tanzania (Y1-OY2). 2) The awardee shall provide equipment to TVLA to permit them to sustainably maintain the sample cold chain and diagnostic workflow (e.g. a generator and an ultrafreezer) in Y1. 3) The awardee

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shall train all field and laboratory staff (based on what is pertinent for their role) in: biosafety, safe and humane handling of animals, ethical conduct of research with human subjects, biosecurity, etc. in Y1, Y3 and OY1. 4) Through the annual meetings (Y1-OY2), additional meetings throughout the year and communication among stakeholders and between project partners the project shall strengthen the communication between relevant One Health sectors. 5) As the grantee knows of no laboratories conducting CCHFV diagnostics in Tanzania, the awardee shall provide intensive training in the use of serological and polymerase chain reaction (PCR) based assays for the diagnosis of CCHFV (Y3-OY1). The awardee shall select an assay for testing humans that requires recombinant antigen that would be possible to produce in country or in a neighboring country in order to improve the sustainability of the establishment of these assays at diagnostic laboratories in Tanzania. The awardee shall conduct two laboratory workshops on the importance of CCHFV and its diagnosis (Y3). 6) Following a majority of the field and laboratory work, the awardee shall host a policy workshop to present the results to an invited group of government and non-government representatives and using those results develop and provide a set of policy recommendations for the reduction of the threat of CCHFV in Tanzania to the Government of Tanzania (OY1). 7) The awardee shall train one Tanzanian post-doctoral fellow in the spatial ecology of infectious diseases at EcoHealth Alliance in New York City (OY2). 8) The awardee shall host a symposium on CCHF in East Africa and invite global leaders in CCHF research to exchange ideas on additional research that is needed, ways of increasing support for the growing group of CCHF experts in East Africa and ideas about the applicability of control measures being used in other regions that may be transferable to the situation in East Africa (OY2).

- 1.1.1-OY2.1.1 Train a minimum of four graduate students in fields related to CCHFV.
- 1.1.2-Y3.1.2 Strengthen the capacity of the Arusha Regional TVLA laboratory.
- 1.1.3-OY1.1.3 Train staff in situ in epidemiological field methods.
- 1.1.4-OY2.1.4 Support One Health relationships between partners and stakeholders.
- 1.1.5-OY1.1.5 Support laboratory capacity to conduct CCHFV diagnostics.
- 3.1.6 Host one workshop on diagnostic testing for CCHFV at each KCRI and TVLA.
- OY1.1.7 Host a workshop to support CCHF policy development in Tanzania.
- OY2.1.8 Mentor a Tanzanian post-doctoral fellow in spatial ecology of infectious diseases.
- OY2.1.9 Host East African CCHF Symposium.

Task Y1.2-YO1.2: Determine CCHFV infection patterns, risk factors and incidence in humans.

To identify and characterize the risk of infection with CCHFV in people within the study area in northern Tanzania the grantee shall conduct several epidemiological studies. Despite the lack of CCHF outbreaks reported in Tanzania, there are confirmed cases of CCHF in neighboring Uganda and Kenya, the vector is present in Tanzania and we have previously identified circulating antibodies in livestock within the proposed study area. In order to confirm our hypothesis that CCHFV does infect people in Tanzania, the grantee shall 1) finalize IRB approvals in the U.S. and obtain the required permits and ethical approvals in Tanzania (Y1). 2) The awardee shall conduct a cross-sectional study approximately 1,586 people. People who

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enroll shall be given a questionnaire in Swahili and asked to provide a blood sample (Y1-Y2). 3) Laboratory testing using an enzyme linked immunosorbent assay (ELISA) will be conducted at KCRI in Y3-OY1. A subset of samples will be shipped to UoG for confirmation. 4) A preliminary analysis of initial results of the human serosurvey will be completed in Y3 and reported with the results from the animal serosurveys (Y3). 5) In OY1 we will re-sample all willing participants to determine the incidence of CCHFV infection within the sampled population. These samples will be tested at KCRI as described in subtask 1.2.3.

- 1.2.1 Obtain local permissions and approvals to work with human subjects.
- 1.2.2-OY1.2.2 Conduct a cross-sectional study in people within the study area.
- 3.2.3-OY1.2.3 Conduct serological assays for the presence of anti-CCHFV antibodies.
- 3.2.4-OY1.2.4 Analyze human serosurvey results.
- OY1.2.5 Conduct incidence sampling among cross-sectional study participants.

Task Y1.3-Y3.3: Determine CCHFV infection patterns in cattle across varying environments.

The grantee shall conduct a cross-sectional study in cattle (and other animals, see Task 4) throughout the pastoral livestock and peri-urban areas of the study area to determine whether there is a difference in seroprevalence. 1) The awardee shall finalize the U.S. IACUC approvals and obtain all appropriate permits and ethical approvals required in Tanzania (Y1). 2) The grantee shall collect blood samples and ticks from cattle in Y1-Y2. The grantee shall use conduct an environmental disturbance assessment transect at each site to complement remote sensing data to establish the disturbance levels across the study area. 3) The collected ticks will be identified at TVLA by an experienced entomologist (Y3). 4) Cold chain will be maintained and the serum samples will be transferred to TVLA for analysis with the ID Screen® CCHF Double Antigen Multi-Species ELISA by IDVet. The ticks shall be tested for CCHFV via PCR at TVLA (Y3). A subset of samples shall be shipped to UoG for confirmation. 5) The cattle serosurvey results shall be analyzed and reported at the end of Y3.

- 1.3.1 Obtain local permits and permissions.
- 1.3.2-3.3.2 Conduct a cross-sectional serosurvey in cattle across two levels of environmental disturbance.
- 3.3.3 Collect and identify *Hyalomma spp.* ticks from sampled cattle.
- 3.3.4 Conduct laboratory analyses on cattle ticks and sera.
- 3.3.5 Analyze cattle serosurvey results.

Task Y1.4-OY2.4: Determine CCHFV seroprevalence and infection patterns in wildlife and ticks.

Using a One Health approach the grantee shall conduct a cross-sectional study to compare the tick burden, CCHFV seroprevalence (in wildlife only) and CCHFV prevalence (in ticks only) across three different levels of environmental disturbance: peri-urban, pastoral livestock and protected areas. 1) The awardee shall finalize the U.S. IACUC approvals and obtain all appropriate permits and ethical approvals required in Tanzania (Y1). 2) The awardee shall trap small mammals at the sites where people and livestock are also being sampled as well as in the protected area (Y1-Y2). 3) The grantee shall also conduct tick transects to collect ticks from the vegetation (Y1-Y2). The cold chain shall be maintained and samples will be transferred to TVLA. 4) Ticks shall be speciated by an experienced TVLA technician. 5) Serum samples shall

PI: Melinda K. Rostal

Thrust Area 6 - Cooperative Counter Weapons of Mass Destruction Research with Global Partners FRCWMD

be tested with the multispecies CCHFV ELISA kit. *Hyalomma* spp. ticks shall be tested for CCHFV by PCR (Y3). 6) The grantee shall work with partner TAWIRI to access banked serum and ticks collected from wild ruminants in protected areas (Y3). 7) The awardee shall complete and analysis and report of the wildlife serosurvey results at the end of Y3. 8) Since the multispecies ELISA has not been validated using seropositive sera from wildlife (it has been assessed in seropositive livestock samples) the grantee shall transfer 100 samples to PHE for confirmation using the gold standard CCHFV virus neutralization assay (OY2).

- 1.4.1 Obtain local permits and permissions.
- 1.4.2-2.4.2 Conduct cross-sectional study in small mammals.
- 1.4.3-2.4.3 Collect ticks from vegetation at study sites.
- 3.4.4 Identify ticks collected from small mammals and transects.
- 3.4.5 Conduct laboratory analyses for CCHFV antibodies and viral RNA.
- 3.4.6 Test banked serum from wild ungulates.
- 3.4.7 Analyze wildlife serosurvey results.
- OY2.4.8 Confirm seropositive wildlife samples with virus neutralization assays.

Task Y1.5-OY2.5: Disseminate reports to relevant stakeholders.

The awardee shall synthesize all research and capacity building activities described above and 1) An Annual Research Performance Progress Report, Quad Chart and Metrics will be submitted to DTRA and the project shall submit the Annual Sample Repository information using a DTRAspecified format (Y1-OY2). Quarterly reports shall also be submitted as requested by DTRA. 2) An annual report shall be made to local stakeholders. 3) A stakeholder meeting shall be held annually to describe the project and the current results. Community feedback meetings shall be held to provide aggregate findings and engage with local stakeholders through the project. 4) Scientific and general reports shall be generated and presentations of findings shall be made at national and/or international meetings (e.g. ASM, ASTHM, IMED, One Health etc.) as indicated in the performance schedule below. The grantee shall attend the Annual Technical Review when invited to the review by DTRA. 5) Samples will be maintained in biobanks at KCRI and TVLA. with a subset of duplicated samples stored at UoG and PHE following confirmatory testing of these samples (Y1-OY2). Access to all samples collected and data generated during the course of the project will be maintained, up to and including at least 12 months after the project end date. 6) In Y3 a synthetic report on the cross-sectional studies will be submitted to DTRA. These dissemination pathways shall provide opportunities to gain stakeholder input, including to inform policy to reduce the threat of CCHF in Tanzania. The awardee shall submit a Research Performance Final Report and submit a Final Metrics File at the end of the entire project period.

- 1.5.1-OY2.5.1 Submit reports, including sample repository data, to DTRA.
- 1.5.2-OY2.5.2 Complete annual report to local stakeholders.
- 1.5.3-OY2.5.3 Host annual partners' and stakeholders' meeting.
- 1.5.4-OY2.5.4 Conduct presentations/meetings at times and places specified in the grant schedule, including DTRA Annual Technical Review.
- 1.5.5-OY2.5.5 Maintain samples in biobanks.
- 3.5.6 Complete reports on results of human, cattle and wildlife cross-sectional studies and comparison across the gradient.

Task OY2.6: Identify environmental correlates with CCHFV seroprevalence.

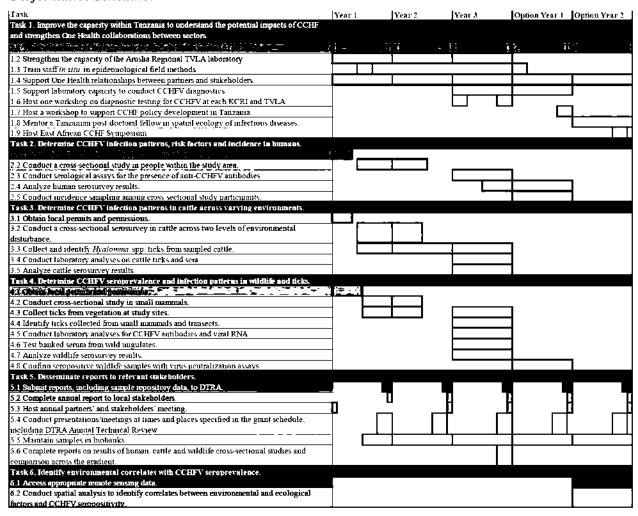
Thrust Area 6 - Cooperative Counter Weapons of Mass Destruction Research with Global Partners FRCWMD

The grantee shall 1) access remote sensing data sets including the following remote sensing products: NASA's ECOSTRESS data (ECOsystem Spaceborne Thermal Radiometer Experiment on Space Station) that provides data on vegetation water stress and LandSat data, as well as remote sensing derived data such as normalized difference vegetation index (NDVI) and enhanced vegetation index (EVI). 2) Spatially explicit correlates shall be performed to understand the relationship between environmental factors and seropositivity in humans, livestock and wildlife as well as vector and viral prevalence.

OY2.6.1 Access appropriate remote sensing data.

OY2.6.2 Conduct spatial analysis to identify correlates between environmental and ecological factors and CCHFV seropositivity.

Performance Schedule:



OMB Number: 4040-0001 Expiration Date: 10/31/2019

SF 424 (R&R)	3. DATE RECEIVED BY STATE State Application Identifier
` '	
1. TYPE OF SUBMISSION	4. a. Federal Identifier
Pre-application Application Changed/Corrected Application	b. Agency Routing Identifier
2. DATE SUBMITTED Applicant Identifier	
	c. Previous Grants.gov Tracking ID
5. APPLICANT INFORMATION	Organizational DUNS: 0770900860000
Legal Name: EcoHealth Alliance	
Department: Division:	
Street1: 460 W 34th St	
Street2: Suite 1701	
City: New York County / Par	ish:
State: NY: New York	Province:
Country: USA: UNITED STATES	ZIP / Postal Code: 10001-2302
Person to be contacted on matters involving this application	
Prefix: Dr. First Name: Melinda	Middle Name:
Last Name: Rostal	Suffix:
Position/Title: Senior Research Scientist	
Street1: 460 W 34tH: St	
Street2: 17th Floor	
City: New York County / Par	rish:
State: NY: New York	Province:
Country: USA: UNITED STATES	ZIP / Postal Code: [10001 2302
Phone Number: 2123804489 Fax Number: 212	3804465
Email: restal@ecchealthalliance.org	
6. EMPLOYER IDENTIFICATION (EIN) or (TIN): 311726494	
7. TYPE OF APPLICANT: M: Nonprofit with 501C3 IRS	Status (Other than Institution of Higher Education)
Other (Specify):	
Small Business Organization Type Women Owned Soc	ially and Economically Disadvantaged
	appropriate box(es).
New Resubmission A. Increase	Award B. Decrease Award C. Increase Duration D. Decrease Duration
Renewal Continuation Revision E. Other (sp	ecify):
Is this application being submitted to other agencies? Yes No	What other Agencies?
	LOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: 12.351
Defense Threat Reduction Agency	Scientific Research - Combating Weapons of Mass Destruction
11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT:	
Crimean-Congo Hemorrhagic Fever: Reducing an Emerging	Realth Threat in Tanzania
12. PROPOSED PROJECT: 13. CONGRESSIONAL DISTRICT	F OF APPLICANT
Start Date Ending Date	
Start Date	

14. PROJECT DIRECTOR/PRINCIPAL INVESTIGATOR CONTACT IN	NFORMATION
Prefix: Dr. First Name: Melinda	Middle Name:
Last Name: Rostal	Suffix:
Position/Title: Seption Research Scientist	
Organization Name: Ecolleaith Alliance	
Department: Division:	
Street1: 460 w 34th St	
Street2: 17th Floor	
City: New York County / F	Parish:
State: NY: New York	Province:
Country: USA: UNITED STATES	ZIP / Postal Code: 10001-2302
Phone Number: 2123804460 Fax Number: 2	123804465
Email: rostal@ecohealthalllance.org	
15. ESTIMATED PROJECT FUNDING	16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?
a. Total Federal Funds Requested 4,848,483.14	a. YES THIS PREAPPLICATION/APPLICATION WAS MADE
b. Total Non-Federal Funds c.cc	AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON:
c. Total Federal & Non-Federal Funds 4,848,483.14	DATE:
d. Estimated Program Income	b. NO PROGRAM IS NOT COVERED BY E.O. 12372; OR
0.00	PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW
administrative penalties. (U.S. Code, Title 18, Section 1001)	
	this list, is contained in the announcement or agency specific instructions.
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory	
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory	y Documentation
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory 19. Authorized Representative	y Documentation Add Attachment
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory 19. Authorized Representative Prefix: Dr. First Name: Aleksei	y Documentation
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Chmura	Add Attachment Middle Name:
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Ohmura Position/Title: Authorized Organizational Representative	Add Attachment Middle Name:
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory 19. Authorized Representative Prefix: pr. First Name: Aleksei Last Name: chmura Position/Title: Authorized Organizational Representative Organization: Ecoflealth Alliance	Add Attachment Middle Name:
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Chmura Position/Title: Authorized Organizational Representative Organization: Ecofleaith Alliance Department: Division:	Add Attachment Middle Name:
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Ohmura Position/Title: Authorized Organizational Representative Organization: Ecofleaith Alliance Department: Division: Street1: 460 W 34th St.	Add Attachment Middle Name:
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Ohmura Position/Title: Authorized Organizational Representative Organization: Ecofleaith Alliance Department: Division: Street1: 460 W 34th St. Street2: 17th Floor	Middle Name: Suffix:
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Ohmura Position/Title: Authorized Organizational Representative Organization: Ecofleaith Alliance Department: Division: Street1: 460 W 34th St. Street2: 17th Floor City: New York County / Paris	Middle Name: Suffix:
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Ohmura Position/Title: Authorized Organizational Representative Organization: Ecofleaith Alliance Department: Division: Street1: 460 W 34th St. Street2: 17th Floor City: New York State: NY: New York	Middle Name: Suffix: Province:
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Ohmura Position/Title: Authorized Organizational Representative Organization: Ecofleaith Alliance Department: Division: Street1: 460 % 34th St. Street2: 17th Floor City: New York County / Paris State: NY: New York Country: USA: UNITED STATES	Middle Name: Suffix: Province: ZIP / Postal Code: [10001-2302]
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Ohmura Position/Title: Authorized Organizational Representative Organization: Ecofleaith Alliance Department: Division: Street1: 460 W 34th St. Street2: 17th Floor City: New York County / Pari State: NY: New York Country: USA: UNITED STATES Phone Number: 2123804460 Fax Number: 2	Middle Name: Suffix: Province:
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Ohmura Position/Title: Authorized Organizational Representative Organization: Ecofleaith Alliance Department: Division: Street1: 460 % 34th St. Street2: 17th Floor City: New York State: NY: New York Country: USA: UNITED STATES Phone Number: 2123804460 Email: Chmura@ecohoalthalliance.org	Middle Name: Suffix: Province: ZIP / Postal Code: 10001-2302
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Ohmora Position/Title: Authorized Organizational Representative Organization: Ecofleaith Alliance Department: Division: Street1: 460 W 34th St. Street2: 17th Floor City: New York County / Paril State: NY: New York Country: USA: UNIDED STATES Phone Number: 2123804460 Fax Number: 2	Middle Name: Suffix: Province: ZIP / Postal Code: [10001-2302]
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Chmura Position/Title: Authorized Organizational Representative Organization: Ecofleaith Alliance Department: Division: Street1: 460 W 34th St. Street2: 17th Floor City: New York County / Pari State: NY: New York Country: USA: UNITED STATES Phone Number: 2123804460 Fax Number: 2 Email: chmura@coheaithalliance.org Signature of Authorized Representative Aleksei Chmura	Add Attachment Middle Name: Suffix: Suffix: In the state of the st
18. SFLLL (Disclosure of Lobbying Activities) or other Explanatory 19. Authorized Representative Prefix: Dr. First Name: Aleksei Last Name: Chmura Position/Title: Authorized Organizational Representative Organization: Ecofleaith Alliance Department: Division: Street1: 460 % 34th St. Street2: 17th Floor City: New York County / Paril State: NY: New York Country: USA: UNITED STATES Phone Number: 2123804460 Fax Number: 2 Email: Chmura@ocehealthalliance.org Signature of Authorized Representative	Add Attachment Middle Name: Suffix: Province: ZIP / Postal Code: 10001-2302 123804465 Date Signed 03/19/2019 Add Attachment

RESEARCH & RELATED Other Project Information

OMB Number: 4040-0001 Expiration Date: 10/31/2019

1. Are Human Subjects Involved? Yes No
1.a. If YES to Human Subjects
Is the Project Exempt from Federal regulations? Yes No
If yes, check appropriate exemption number.
If no, is the IRB review Pending?
IRB Approval Date:
Human Subject Assurance Number:
2. Are Vertebrate Animals Used? Yes No
2.a. If YES to Vertebrate Animals
Is the IACUC review Pending? X Yes No
IACUC Approval Date:
Animal Welfare Assurance Number:
3. Is proprietary/privileged information included in the application?
4.a. Does this Project Have an Actual or Potential Impact - positive or negative - on the environment?
4.b. If yes, please explain:
4.c. If this project has an actual or potential impact on the environment, has an exemption been authorized or an environmental assessment (EA) or environmental impact statement (EIS) been performed?
4.d. If yes, please explain:
5. Is the research performance site designated, or eligible to be designated, as a historic place?
5.a. If yes, please explain:
6. Does this project involve activities outside of the United States or partnerships with international collaborators?
6.a. If yes, identify countries: Tanzania, United Kingdom
6.b. Optional Explanation:
7. Project Summary/Abstract [1235-CCHF Project Summary- Public Abs] Delete Attachment View Attachment
8. Project Narrative 1236-CCHF technical proposal 2019_Fin Delete Attachment View Attachment
9. Bibliography & References Cited 1237-REFERENCES.pdf Delete Attachment View Attachment
10. Facilities & Other Resources Add Attachment
11. Equipment Add Attachment
12. Other Attachments Add Attachments

OMB Number: 4040-0001 Expiration Date: 10/31/2019

		DDOE!! E. T					
[PROFILE - Project Di	rector/Principal		. [
Prefix: Dr.	* First Name	Melinda		Middle N			
* Last Name: Rost					Suffix:		
	cr Research Scie		Depart	ment:			
	EcoHealth Allia	nce			Division:		
* Street1: 460 W :	34th St						
Street2: 17th F1	loor						
* City: New Yo.	sk	County	y/ Parish:				
* State: NY: Ne	ew York			Province:			
* Country: USA: U	UNITED STATES			* Zip / Pos	tal Code: 10001-2302	2	
* Phone Number: 2:	123804460	Fax Number	2123804465				
* E-Mail: rostal@e	ecohealthalliance	.org					
Credential, e.g., ag	gency login:						
* Project Role:	D/PI	Othe	r Project Role Ca	itegory:			
Degree Type:	ԴD						
Degree Year:	expected 2019						
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		PROFILE -	Senior/Key Perse	n 1			
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* Last Name: Kare		- WIIII ENO			Suffix:		
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Street2: 17±h F1							
* City: New Yor		County	y/ Parish:				
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	ew York				tal Code: 10001-2302	<u> </u>	
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* Phone Number: 2:	123804483 ecohealthalliance		-[2123834465				
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Degree Year: 1	982						
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		PR	OFILE - Senior/Ke	y Person 2				
Prefix: 5r.	* First Nam				Middle Nar	ne:		
* Last Name: [0]					Sut	fix:		
Position/Title: Pro	ofessor			Department:				
Organization Nam	ne: University of C	lasgow			ſ	Division:	<u></u>	
* Street1: Glasg	ow G12 8QQ							
Street2:								
* City: Glasq	wo		County/ Parish: [
* State:					Province:			
* Country: GBR:	UNITED KINGDOM				* Zip / Postal	Code:		
* Phone Number:	+44 (0) 784 12483	74 Fax	: Number:					
* E-Mail: sarah.	cleaveland@glasgo	w.ac.uk						
Credential, e.g.,	agency login:]
* Project Role:	Co-PD/PI		Other Project	Role Category	y:			
Degree Type:	PhD							
Degree Year:	1996							
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Prefix: Dr. * Last Name: Mr.	* First Nam	e. riirana			Middle Nar Suf			
Position/Title: oh.			1	Department:	Gui	11X.		
	1 e: Tanzania Veteri	nary Laborato	ry Agency	Dopariment.		Division:		
* Street1: Mande		1	- , - 1.6,,					
Street2:								
	es Salaam		County/ Parish:					
* State:					Province:			
* Country: TZA:	TANZANIA, UNITED	REPUBLIC OF			* Zip / Postal	Code:		
* Phone Number:	+255 22 2861152	Fax	: Number:					
* E-Mail: furaha	58@yahoo.com]			
Credential, e.g.,	agency login:]
* Project Role:	Co PD/PI		Other Project	Role Category	y:			
Degree Type:	P1:D							
Degree Year:	2006							
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	PR	OFILE - Senior/Key Person 4	1			
Prefix: Dr.	* First Name: Blandina		Middle N	ame: Theophil		
* Last Name: Mmbaga			<u></u>	Suffix:		
Position/Title: Research	: Director	Departmen	nt:			
Organization Name: Kil	imanjaro Clinical Researc	d Institute		Division:		
* Street1: FO Box 223	6					
Street2:						
* City: Moshi		County/ Parish:				
* State:			Province:			
* Country: TZA: TANZ	ANIA, UNITED REPUBLIC OF		Zip / Post	al Code:		
* Phone Number: +255	27 2754201 Fax	Number:				
* E-Mail: b.mmbaga@kc	ri.ac.tz					
Credential, e.g., agency	y login:]
* Project Role: Co-Pt)/দা	Other Project Role Categ	ory:			
Degree Type: PhD						
Degree Year: 2013						
Attach Biographica	I Sketch 1249-Mmbaga_	Biosketch.pdf		Delete Attachment	View Attachment	
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	PR	OFILE - Senior/Key Person 5				
Prefix: Dr.	* First Name: Felix	er izz zomemicy i droom s	Middle N	ame:		
* Last Name: Dankeste				Suffix:		
Position/Title: Assista:		Departmer	_			
	hington State University			Division:		
* Street1: 1155 Colle	ge Ave					
Street2:						
* City: Pullman		County/ Parish:				
* State: WA: Washin	ngton		Province:			
* Country: USA: UNITE	ED STATES		* Zip / Post	al Code: 99164 0001		
* Phone Number: (509)	335-2489 Fax	Number:				
* E-Mail: felix.lanke	ster@wsu.edu					
Credential, e.g., agenc	y login:					
* Project Role: Co PI)/PI	Other Project Role Categ	jory:			
Degree Type: PhD						
Degree Year: 2018						
Attach Biographica	I Sketch 1251 Dankest	er_Biosketch.pdf		Delete Attachment	View Attachment	
Attach Current & Po	ending Support 1252 Dankest			Delete Attachment	View Attachment	

PROFILE - Senior/Key Person 6	
Prefix: Dr. First Name: Carles	Middle Name:
* Last Name: Zambrana-Torrelio	Suffix:
Position/Title: Associate VP for Conservation and Health Department:	
Organization Name: EcoRealth Alliance	Division:
*Street1: 460 W 34th St	
Street2: 17th Floor	
* City: New York County/ Parish:	
* State: NY: New York	Province:
* Country: USA: UNITED STATES	* Zip / Postal Code: 10001-2302
* Phone Number: 2123804466 Fax Number:	
* E-Mail: zambrana@ecoheathalliance.org	
Credential, e.g., agency login:	
* Project Role: Gather (Specify) Other Project Role Category	Y: Research Scientist, Ecclogist
Degree Type: PhD	
Degree Year: 2017	
Attach Biographical Sketch 1253-Zambrana_Biosketch.pdf	Delete Attachment View Attachment
Attach Current & Pending Support 1254-Zambrana-Torrelio_CNF.pd	Delete Attachment View Attachment
PD05U.5. 01-4/4 P 7	
PROFILE - Senior/Key Person 7	Middle News
Prefix: Dr. * First Name: Brian * Last Name: Willett	Middle Name: James Suffix:
Position/Title: Professor of Viral Immunology Department:	Julix.
Organization Name: University of Glasgow	Division:
* Street1: Glasgow G12 8QQ	
Street2:	
* City: Glasgow County/ Parish:	
	Province:
* Country: GBR: UNITED KINGDOM	* Zip / Postal Code:
* Phone Number: +44 (C) 784 1248374 Fax Number:	
* E-Mail: prian.willett@glasgow.ac.uk	
Credential, e.g., agency login:	
* Project Role: Other (Specify) Other Project Role Category	Research Scientist, Immunologist
Degree Type: FI:D	
Degree Year: 1989	
Attach Biographical Sketch 1255 Willett_Blosketch.pdf	Delete Attachment View Attachment
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		PRO	DFILE - Senior/K	ev Person 8				
Prefix: on.	* First Name		JI IEE - OCHIOIAC	cy i ci son o	Middle N	ame: Phillip		
* Last Name: Maro		-[venance				Suffix:		
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	, Paulty of Medi			Department:		Division		
	Kilimanjaro Chri	stiam Medical	l University (3011ege		Division:		
* Street1: F.O. Bo	5x 3010/2240							
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* State:					Province:	al Cada		
	ANZANIA, UNITED				* Zip / Post	al Code: [
* Phone Number: +2			Number:		7			
* E-Mail: venmaro3								
Credential, e.g., ag	gency login:							<u> </u>
* Project Role: G	ther (Specify)		Other Project	Role Catego	ry: Resear	ch Scientist		
Degree Type: MI	Med							
Degree Year: 20	002							
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		PRO	OFILE - Senior/K	ey Person <u>9</u>				
Prefix: Dr.	* First Name	:Justine			Middle N	ame: Alphonde		
* Last Name: กรรย	nga					Guffix:		
Position/Title: Anim	al Health Focal :	Person		Department:				
Organization Name:	GECD, Ministry o	of Livestock a	and Fisheries			Division:		
* Street1: PG Box	2870							
Street2:								
* City: Dodoma			County/ Parish:					
* State:					Province:			
* Country: TZA: T	ANZANTA, UNITED	REPUBLIC OF			* Zip / Post	al Code:		
* Phone Number: 21	123804460	Fax	Number:					
* E-Mail: assengak	tanda@yahoo.com							
Credential, e.g., ag	gency login:							
* Project Role:	ther (Specify)		Other Project	Role Catego	ry: Resear	ch Scientist, Vete	erinarian	
Degree Type: FI	l:D							
Degree Year:	016							
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PROFILE - Senior/Key Person 10	
Prefix: First Name: Jubilate	Middle Name:
* Last Name: Bernard Minja	Suffix:
Position/Title: Focal Person for Human Health Department:	
Organization Name: OECD, Ministry of Livestock and Fisheries	Division:
*Street1: FC Box 2870	
Street2:	
* City: Dodoma County/ Parish:	
* State:	Province:
* Country: TZA: TANZANIA, UNITED REPUBLIC OF	* Zip / Postal Code:
* Phone Number: 2123864466 Fax Number:	
* E-Mail: jubbybn@yahoo.com	
Credential, e.g., agency login:	
* Project Role: Other Project Role Catego	ry: Research Scientist, Public Health
Degree Type: MPH	
Degree Year: 2008	
Attach Biographical Sketch 1261-Bernard Minja_Biosketch	Delete Attachment View Attachment
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PROFILE - Senior/Key Person 11	
Prefix: Dr . * First Name: Roger	Middle Name:
* Last Name: Hewson	Suffix:
Position/Title: Scientific Leader Viral Hemorrhagic Fevers Department:	
Organization Name: Public Realth England	Division:
* Street1: SP4_0JG	
Street2:	
* City: Salisbury County/ Parish:	
* State:	Province:
* Country: GBR: UNITED KINGDOM	* Zip / Postal Code:
* Phone Number: +44 (0) 1980 612 390 Fax Number:	Zip : 1 ootal ooto.
* E-Mail: roger.hewson@phe.gov.uk	
Credential, e.g., agency login:	
* Project Role: Other Project Role Catego	Research Scientist, Virologist
Degree Type: DPI:i1	
Degree Year: 1992	
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	PRO	FILE - Senior/Ke	y Person 12				
Prefix:	* First Name: Julius			Middle Name	e: Dalla		
* Last Name: keyya				Suffi	x:		
Position/Title: Director	of Research Development a	ind Coord.	Department:				
Organization Name: Tanza	nnia Wildlife Research In	stitute		Di	ivision:		
*Street1: FO Box 661							
Street2:							
* City: Arusha		County/ Parish:					
* State:				Province:			
* Country: TZA: TANZAN	IA, UNITED REPUBLIC OF			* Zip / Postal C	Code:		
* Phone Number: +255 27	' 254 9571 Fax I	Number:					
* E-Mail: julius.keyyu@	tawiri.or.tz						
Credential, e.g., agency k	ogin:						
* Project Role: Gather	(Specify)	Other Project	Role Categor	y: Research	Scientist, Di	isease Ecologist	
Degree Type: PhD							
Degree Year: 2004							
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Melinda Rostal

EcoHealth Alliance, 460 W. 34th St, New York City, NY 10001, USA

PREDICT Latin American Regional Coordinator, EcoHealth Alliance

Adjunct Research Scientist, Columbia University

Associate Veterinarian, Tahoma Veterinary Hospital

E-mail: rostal@ecohealthalliance.org

Professional Preparation

Princeton University	Ecol. and Evol. Bio.	AB	2003
University of Minnesota	Public Health	MPH	2007
University of Minnesota	Veterinary Medicine	DVM	2008
University of Glasgow	Epidemiology	PhD	Expected 2019
Appointments			
Senior Research Scientist, EcoH	ealth Alliance		2012 - present
Rift Valley Fever Project Manag	er, EcoHealth Alliance		2014 - present
PREDICT 2 EHA Surveillance (Coordinator, EcoHealth Alliance		2014 - present

2010 - 2014

2008 - 2010

2010 - present

- Msimang V, Thompson PN, van Vuren JP, <u>Rostal MK</u>, Weyer J, Moolla N, Cordel C, Tempia S, *Karesh WB*, Paweska JP. (2017) Projected numbers of historical human Rift Valley fever and Crimean-Congo haemorrhagic fever cases in South Africa. **South African Society for Veterinary Epidemiology and Preventive Medicine Congress Proceedings** p322.
- <u>Rostal MK</u>, Ross N, Machalaba C, Cordel C, Paweska JT, *Karesh WB*. (2018) Benefits of a one health approach: An example using Rift Valley fever. **One Health** 5:34-36.
- Brand R, Rostal MK, Kemp A, Anyamba A, Zweigers H, van Huuysteen C, *Karesh WB*, Paweska JP. (2018) A phytosociological analysis and description of wetland vegetation and ecological factors associated with locations of high mortality for the 2010-11 Rift Valley fever outbreak in South Africa. **PLoS One** 13(2):e0191585.
- Islam A, Epstein JH, Rostal MK, Islam S, Rahman MZ, Hossain ME, Uzzaman MJ, Munster V, Peiris M, Flora MS, Rahman M, Daszak P. (2018) Middle East respiratory syndrome coronavirus antibodies in dromedary camels (*Camelus dromedarius*) Bangladesh, 2015. **Emerging Infectious Diseases** 24(5):926-928.
- Rostal MK, Liang JE, Zimmermann D, Bengis R, Paweska JP, *Karesh WB*. (2017) Rift Valley Fever: Does Wildlife Play a Role? **International Journal of Laboratory Animals** 1-12.
- Anthony SJ, Islam A, Johnson C, Navarrete-Macias I, Liang E, Jain K, Hitchens PL, Che X, Soloyvov A, Hicks AL, Ojeda-Flores R, *Zambrana-Torrelio C*, Ulrich W, <u>Rostal MK</u>, Petrosov A, Garcia J, Haider N, Wolfe N, Goldstein T, Morse SS, Rahman M, Epstein JH, Mazet JK, Daszak P & Lipkin WI. (2015) Non-random patterns in viral diversity. **Nature Communications** 6:8147.
- Rostal MK, Evans A, Akoolo L, Wakhule L, Macharia J, Breiman R, and Njenga K. (2010) Rift Valley fever virus activity during inter-epidemic periods: Identification of potential vectors and detection of antibodies in livestock. **American Journal of Veterinary Research** 71(5):522-526.
- Evans A, Gakuya F, Paweska JT, Rostal MK, Akoolo L, Van Vuren P, Manyibe T, Macharia J, Ksiazek T, Feikin D, Breiman R, Njenga K. (2008) Prevalence of antibodies against Rift Valley fever virus in Kenya wildlife during an inter-epidemic period. **Epidemiology & Infection** 136(9):1261-9.

Current and Pending Support (See GPG Section II.D.8 for guidance on information to include on this form.)

mation may delay consideration of this proposal.
Investigator: Melinda Rostal Other agencies (including NSF) to which this proposal has been submitted: N/A
Support:
Project/Proposal Title:
Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania (current proposal)
Source of Support: DTRA
Total Award Amount: \$4,848,483 Total Award Period Covered: 10/1/2019-07/31/2024
Location of Project: EcoHealth Alliance, Tanzania
Person-Months Per Year Committed to the Project. Cal: 5.0 Acad: Sumr:
Support:
Reducing the Threat of Rift Valley Fever through Ecology, Epidemiology and Socio-Economics
Troubling the final control and agree 20009, and 2000 20010 inde
Source of Support: DTRA
Total Award Amount: \$4,988,526.00 Total Award Period Covered: 6/1/19-5/31/24
Location of Project: EcoHealth Alliance, South Africa
Person-Months Per Year Committed to the Project: Cal: 6.0 Acad: Sumr:
Support:
Project/Proposal Title:
Understanding Rift Valley Fever in Republic of South Africa
Shadistang full validy for in Frequency of Saan 7 and a
Source of Support: DTRA
Total Award Amount: \$4,936,359.00 Total Award Period Covered: 5/28/14-5/27/19
Location of Project: EcoHealth Alliance, South Africa
Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Cal: 7.0 Acad: Sumr:
Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Support: Current Pending Submission Planned in Near Future *Transfer of Support*
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Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Support: Current Pending Submission Planned in Near Future *Transfer of Support*
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Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Support: Current Pending Submission Planned in Near Future *Transfer of Support* Project/Proposal Title: Rift Valley Fever Virus in a Hyperendemic Region
Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support Project/Proposal Title: Rift Valley Fever Virus in a Hyperendemic Region Source of Support: NIH
Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Support: Current Project/Proposal Title: Rift Valley Fever Virus in a Hyperendemic Region Source of Support: NIH Total Award Amount: \$338,570.00 Total Award Period Covered: 12/1/2019-11/30/21
Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Support: Current Pending Submission Planned in Near Future *Transfer of Support Project/Proposal Title: Rift Valley Fever Virus in a Hyperendemic Region Source of Support: NIH Total Award Amount: \$338,570.00 Total Award Period Covered: 12/1/2019-11/30/21 Location of Project: EcoHealth Alliance, South Africa
Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Support: Current Pending Submission Planned in Near Future *Transfer of Support Project/Proposal Title: Rift Valley Fever Virus in a Hyperendemic Region Source of Support: NIH Total Award Amount: \$338,570.00 Total Award Period Covered: 12/1/2019-11/30/21 Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Cal: 0.5 Acad: Sumr:
Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Cal: 7.0 Acad: Sumr: Support: □ Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support Project/Proposal Title: Rift Valley Fever Virus in a Hyperendemic Region Source of Support: NIH Total Award Amount: \$338,570.00 Total Award Period Covered: 12/1/2019-11/30/21 Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Cal: 0.5 Acad: Sumr: Support: □ Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support
Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support Project/Proposal Title: Rift Valley Fever Virus in a Hyperendemic Region Source of Support: NIH Total Award Amount: \$338,570.00 Total Award Period Covered: 12/1/2019-11/30/21 Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Cal: 0.5 Acad: Sumr: Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support Project/Proposal Title: Viral interactions within hosts influence transmission dynamics between hosts
Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Support:
Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Support: Current Pending Submission Planned in Near Future Transfer of Support Project/Proposal Title: Rift Valley Fever Virus in a Hyperendemic Region Source of Support: NIH Total Award Amount: \$338,570.00 Total Award Period Covered: 12/1/2019-11/30/21 Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Support: Current Pending Submission Planned in Near Future Transfer of Support Project/Proposal Title: Viral interactions within hosts influence transmission dynamics between hosts Source of Support: NSF Total Award Amount: \$2,510,757.40 Total Award Period Covered: 7/1/2019-6/30/2024
Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Support: Current Pending Submission Planned in Near Future Project/Proposal Title: Rift Valley Fever Virus in a Hyperendemic Region Source of Support: NIH Total Award Amount: \$338,570.00 Total Award Period Covered: 12/1/2019-11/30/21 Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Support: Cal: 0.5 Acad: Sumr: Support: Current Pending Submission Planned in Near Future Project/Proposal Title: Viral interactions within hosts influence transmission dynamics between hosts Source of Support: NSF Total Award Amount: \$2,510,757.40 Total Award Period Covered: 7/1/2019-6/30/2024 Location of Project: EcoHealth Alliance, Bangladesh
Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Support: Current Pending Submission Planned in Near Future Transfer of Support Project/Proposal Title: Rift Valley Fever Virus in a Hyperendemic Region Source of Support: NIH Total Award Amount: \$338,570.00 Total Award Period Covered: 12/1/2019-11/30/21 Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the Project. Support: Current Pending Submission Planned in Near Future Transfer of Support Project/Proposal Title: Viral interactions within hosts influence transmission dynamics between hosts Source of Support: NSF Total Award Amount: \$2,510,757.40 Total Award Period Covered: 7/1/2019-6/30/2024

NSF Form 1239 (10/99)



Roger Hewson

Virology & Pathogenesis Group, National Infection Service, Public Health England (PHE), UK E-mail: roger.hewson@phe.gov.uk

Professional Preparation

University of Exeter	Biochemistry	BSc	1987
University of Oxford	Biochemistry	DPhil	1992
Appointments			
Head of WHO Collaborating C	entre for Virus Research	& Reference, PHE	2010 - present
Scientific Leader - Viral Hemorrhagic Fevers & Arboviruses, PHE		2007 - present	
Virology & Pathogenesis Group Leader, PHE Porton Down		2004 - present	
Molecular Virologist, Centre for Emergency Preparedness & Response		2000 - 2004	

Fellow, Dept Molecular Pathology, University of Wisconsin, Madison, USA 1	999 - 2000
Virologist, Centre for Applied Microbiology, Porton Down 1	998 - 1999
Fellow, Karolinska Institute, Dept. Molecular Virology, Sweden 1	993 - 1998
Research Assistant, Queen Mary, University of London 1	992 - 1993
Research Assistant, Dept. Biochemistry, University Oxford 1	988 - 1992

- Bonney LC, Watson RJ, Afrough B, Mullojonova M, Dzhuraeva V, Tishkova F, <u>Hewson R.</u> (2017) A recombinase polymerase amplification assay for rapid detection of Crimean-Congo hemorrhagic fever virus infection. **PLoS Neglected Tropical Diseases** 11(10):e0006013.
- Muianga AF, Watson R, Varghese A, Chongo IS, Ali S, Monteiro V, Inalda F, Chelene I, António V, <u>Hewson R</u>, Gudo ES. (2017) First serological evidence of Crimean-Congo hemorrhagic fever in febrile patients in Mozambique. **International Journal of Infectious Diseases** 62:119-123.
- Nurmakhanov T, Sansyzbaev Y, Atshabar B, Deryabin P, Kazakov S, Zholshorinov A, Matzhanova A, Sadvakassova, Atkinson B, <u>Hewson R</u>. (2015) Crimean-Congo haemorrhagic fever virus in Kazakhstan (1948-2013). **International Journal of Infectious Diseases** 38:19-23.
- Chamberlain J, Cook N, Lloyd G, Mioulet V, Tolley H, <u>Hewson R</u>. (2005) Co-evolutionary patterns of variation in small and large RNA segments of Crimean-Congo hemorrhagic fever virus. **Journal of General Virology** 86(12):3337-3341.
- Hewson R, Gmyl A, Gmyl L, Smirnova SE, Karganova G, Jamil B, Hasan R, Chamberlain J, Clegg C. (2004) Evidence of segment reassortment in Crimean-Congo hemorrhagic fever virus. **Journal of General Virology** 85(10):3059-3070.
- Hewson R, Chamberlain J, Lloyd G, Jamil B, Gmyl A, Smirnova SE, Lukashev A, Karganova G, Clegg C. (2004) Crimean-Congo haemorrhagic fever virus: Sequence analysis of the small RNA segments from a collection of viruses world-wide. **Virus Research** 102(2):185-189.
- Atkinson B, <u>Hewson R</u>. (2018) Emerging arboviruses of clinical importance in Central Asia. **Journal of General Virology** 99(9):1172-1184.
- Fernandes J, Guterres A, de Oliveira RC, Chamberlain J, Lewandowski K, Teixeira BR, Coelho TA, Chrisostomos C, Bonvicino CR, D'Ándrea PS, <u>Hewson R</u>, Sampaio de Lemos ER. (2018) Xapuri virus a novel mammarenavirus from Amazon Region. **Emerging Microbes & Infections** 7(1):120.
- <u>Hewson R.</u> (2017) Lessons learnt from imported cases and onward transmission of Lassa fever in Europe support broader management of viral hemorrhagic fevers. **Eurosurveillance** 22(39).

Furaha Mramba

Tanzania Veterinary Laboratory Agency, P.O. Box 9254, Dar es Salaam, Tanzania

E-mail: furaha58@yahoo.com

Professional Preparation

University of Dar es Salaam	Zoology and Botany	BSc	1983
University of Florida	Medical Entomology	MSc	2002
Kansas State University	Medical Entomology	PhD	2006

Appointments

12pp 01111111111111111111111111111111111	
Chief Executive, Tanzania Veterinary Laboratory Agency	2016 - present
Acting Chief Executive, Tanzania Veterinary Laboratory Agency	2013 - 2016
Director, Tsetse and Trypanosomiasis Research Institute (TTRI)	2010 - 2013
Principal Livestock Research Officer, TTRI	2006 - 2010
Senior Livestock Research Officer, TTRI	2000 - 2006
Scientific Officer 1, Tanzania Livestock Research Organisation	1983 - 2000

Publications

- Lord J, Torr S, Auty H, Brock P, Byamungu M, Hargrove J, Morrison L, Mramba F, Vale G, Stanton M. (2018) Geostatistical models using remotely-sensed data predict savanna tsetse decline across the interface between protected and unprotected areas in Serengeti, Tanzania. **Journal of Applied Ecology** 55(4):1997-2007.
- Luziga C, Muya C, Mramba F, Byamungu M, Mbata G, Mtambuki A. (2017) A tsetse *Glossina pallidipes* harbors the pathogenic trypanosomes circulating in Liwale district, Tanzania. **Veterinary Parasitology: Regional Studies and Reports** 9:93-97.
- Manangwa O, Ouma JO, Malele I, <u>Mramba F</u>, Msangi A, Nkwengulila G. (2016) Trypanosome prevalence in *Glossina fuscipes fuscipes* (tsetse) and cattle along the shores of Lake Victoria in Tanzania. **Livestock Research for Rural Development** 28(8).
- Manangwa O, Ouma JO, Malele I, Msangi A, <u>Mramba F</u>, Nkwengulila G. (2015) Distribution and population size of *Glossina fuscipes fuscipes* (tsetse flies) along the Lake Victoria, for trypanosomiasis management in Tanzania. **Livestock Research for Rural Development** 27(2):121-125.
- International Glossina Genome Initiative. (2014) Genome sequence of the tsetse fly (*Glossina morsitans*): Vector of African trypanosomiasis. **Science** 344(6182):380-386.
- Vreysen M, Saleh K, <u>Mramba F</u>, Parker A, Feldmann U, Dyck V, Msangi A, Bouyer J. (2014) Sterile insects to enhance agricultural development: The case of sustainable tsetse eradication on Unguja Island, Zanzibar, using an area-wide integrated pest management approach. **PLoS Neglected Tropical Diseases** 8(5):e2857.
- Mramba F, Oloo F, Byamungu M, Krober T, McMullin A, Mihok S, Guerin P. (2013) Standardizing visual control devices for tsetse flies: East African species *Glossina* swynnertoni PLoS Neglected Tropical Diseases 7(2):e2063.
- Mramba F, Broce A, Zurek L. (2007) Vector competence of stable flies, *Stomoxys calcitrans* (Diptera: Muscidae) for *Enterobacter sakazakii*. **Journal of Vector Ecology** 32:135-139.

Julius Dotto Keyyu

Tanzania Wildlife Research Institute, Box 661, Arusha

Veterinary Clinician, Mwenge Veterinary Clinic

E-mail: julius.keyyu@tawiri.or.tz

Professional Preparation

Veterinary Medicine	BVM	1995
Veterinary Medicine	MVM	1998
Disease Ecology	PhD	2004
and Coordination,		2006 - present
Tanzania Wildlife Research Institute (TAWIRI)		
Acting Head, Research Development Section, TAWIRI		2005 - 2006
Assistant to Director of Research Development and Coordination, TAWIRI		
Senior Research Scientist I, TAWIRI		
Research Scientist, Livestock Helminths Research Project,		1998 - 1999
Sokoine University of Agriculture		
	Veterinary Medicine Disease Ecology and Coordination, te (TAWIRI) at Section, TAWIRI evelopment and Coordination	Veterinary Medicine MVM Disease Ecology PhD and Coordination, te (TAWIRI) at Section, TAWIRI evelopment and Coordination, TAWIRI

Selected Publications

Allan KJ, Halliday JE, Moseley M, Carter RW, Ahmed A, Goris MG, Hartskeerl RA, <u>Keyyu J</u>, Kibona T, *Maro VP*, Maze MJ. (2018) Assessment of animal hosts of pathogenic *Leptospira* in northern Tanzania. **PLoS Neglected Tropical Diseases** (12)6:e0006444.

1995 - 1995

- Logan N, Dundon WG, Diallo A, Baron MD, Nyarobi MJ, *Cleaveland S*, <u>Keyyu J</u>, Fyumagwa R, Hosie MJ, *Willett BJ*. (2016) Enhanced immunosurveillance for animal morbilliviruses using vesicular stomatitis virus (VSV) pseudotypes. **Vaccine** 34(47):5736-5743.
- Lankester F, Russell GC, Lugelo A, Ndabigaye A, Mnyambwa N, <u>Keyyu J</u>, Kazwala R, Grant D, Percival A, Deane D, Haig DM (2016) A field vaccine trial in Tanzania demonstrates partial protection against malignant catarrhal fever in cattle. **Vaccine** 34(6):831-838.
- Lankester F, Lugelo A, Werling D, Mnyambwa N, Keyyu J, Kazwala R, Grant D, Smith S, Parameswaran N, Cleaveland S, Russell G. (2016) The efficacy of alcelaphine herpesvirus-1 (AlHV-1) immunization with the adjuvants Emulsigen® and the monomeric TLR5 ligand FliC in zebu cattle against AlHV-1 malignant catarrhal fever induced by experimental virus challenge. Veterinary Microbiology 195:144-153.
- Lankester F, Lugelo A, Mnyambwa N, Ndabigaye A, Keyyu J, Kazwala R, Grant DM, Relf V, Haig DM, Cleaveland S, Russell GC. (2015). Alcelaphine herpesvirus-1 (malignant catarrhal fever virus) in wildebeest placenta: Genetic variation of ORF50 and A9.5 alleles. **PLoS One** 10(5)e0124121.
- Kamani TM, Kazwala R, Mfinanga S, Haydon D, <u>Keyyu J</u>, *Lankester F*, Buza J. (2015) One Health: A concept led by Africa, with global benefits. **The Veterinary Record.** 176(19):496.
- Lankester F, Lugelo A, Kazwala R, Keyyu J, Cleaveland S, Yoder J. (2015) The economic impact of malignant catarrhal fever on pastoralist livelihoods. **PLoS One** 10(1):e0116059.
- <u>Keyyu JD</u>, Kassuku AA, Willingham AL, Kyvsgaard NC. (2001) Peri-parturient helminthosis in strains of small East African goats in Tanzania. **Preventive Veterinary Medicine** 50(1-2):177-182.
- <u>Keyyu JD</u>, Kassuku AA, Kyvsgaard NC, Willingham AL. (1998) Development of resistance to gastrointestinal nematodes in small East African goats. **Parasitology International** (47):144.

Blandina Theophil Mmbaga

Kilimanjaro Clinical Research Institute, 2236 Moshi, Tanzania

E-mail: b.mmbaga@kcri.ac.tz

Professional Preparation

Nizhny Novgorod State Medical	Medicine	MD	2001
Academy			
Tumaini University	Pediatrics	MMED	2007
University of Bergen	Public Health and Epidemiology	PhD	2013
Appointments			
Director of Research and Consulta	ncies, Kilimanjaro Christian		2018 - present
Medical University College (KCM	IUCo)		
Research Director, Kilimanjaro Clinical Research Institute		2015 - present	
Senior Lecturer, KCMUCo		2015 - present	
Adjunct Assistant Professor, Duke Global Health Institute		2014 - present	
Principal Investigator, Kilimanjaro Christian Medical Centre (KCMC)			2014 - present
WESTAT/NICHD IMPAACT CR	S		
Site leader, Duke-KCMC Clinical	research		2013 - present
Lecturer, KCMUCo			2013 - 2015

Selected Publications

Pediatrician, Kilimanjaro Christian Medical Centre

Allan KJ, Halliday JEB, Moseley M, Carter RW, Ahmed A, Goris MGA, Hartskeerl RA, *Keyyu J*, Kibona T, *Maro VP*, Maze MJ, <u>Mmbaga BT</u>, Tarimo R, Crump JA, *Cleaveland S*. (2018) Assessment of animal hosts of pathogenic *Leptospira* in northern Tanzania. **PLoS Neglected Tropical Diseases** 12(6):e0006444.

2007 – present

- Maze MJ, Cash-Goldwasser S, Rubach MP, Biggs HM, Galloway RL, Sharples KJ, Allan KJ, Halliday JE, *Cleaveland S*, Shand MC, Muiruri C, Kazwala RR, Saganda W, Lwezaula BF, Mmbaga BT, Maro VP, Crump JA. (2018) Risk factors for human acute leptospirosis in northern Tanzania. **PLoS Neglected Tropical Diseases** 12(6):e0006372.
- Snavely ME, Maze MJ, Muiruri C, Ngowi L, Mboya F, Beamesderfer J, Makupa G, Mwingwa AG, Lwezaula BF, Mmbaga BT, Maro VP, Crump JA, Ostermann J, Rubach MP. (2018) Sociocultural and health system factors associated with mortality among febrile inpatients in Tanzania: A prospective social biopsy cohort study. **BMJ Global Health** 3(1):e000507.
- van Zwetselaar M, Nyombi B, Sonda T, Kumburu H, Chamba N, Dekker MCJ, Kilonzo KG, Urasa SJ, <u>Mmbaga BT</u> (2018) *Aeromonas caviae* mimicking *Vibrio cholerae* infectious enteropathy in a cholera-endemic region with possible public health consequences: Two case reports. **Journal of Medical Case Reports** 12(1):71.
- Cash-Goldwasser S, Maze MJ, Rubach MP, Biggs HM, Stoddard RA, Sharples KJ, Halliday JEB, *Cleaveland S*, Shand MC, <u>Mmbaga BT</u>, Muiruri C, Saganda W, Lwezaula BF, Kazwala RR, *Maro VP*, Crump JA. (2018) Risk factors for human brucellosis in northern Tanzania. **American Journal of Tropical Medicine and Hygiene** 98(2):598-606.

William B. Karesh

EcoHealth Alliance, 460 W. 34th St, New York City, NY 10001, USA

E-mail: karesh@ecohealthalliance.org

Professional Preparation

Clemson University	Biology	BS	1977
Univ. of Georgia	Veterinary Medicine	DVM	1982
Zool. Society of San Diego	Residency – Wildlife Health		1982-1984

Appointments

11	
Emerging Pandemic Threats Partner Liaison, USAID EPT PREDICT-2	2014-present
Advisor, WHO Expert Panel on MERS-CoV	2013-present
Expert, WHO International Health Regulation Roster of Experts	2013-present
Executive Vice President for Health & Policy, EcoHealth Alliance	2010-present
Chief Technical Officer, USAID EPT PREDICT	2009-2014
President, Working Group on Wildlife Diseases, OIE, France	2008-present
Chief of Party, USAID Global Avian Influenza Network for Surveillance	2006-2009
Co-Chair, Wildlife Health Specialist Group, IUCN, Switzerland	2001-present
Vice President & Director, Global Health Programs, Wildlife Cons. Society	2001-2010

Publications

- Brand RF, *Rostal MK*, Kemp A, Anyamba A, Zwiegers H, Van Huyssteen CW, <u>Karesh WB</u>, Paweska JT. (2018) A phytosociological analysis and description of wetland vegetation and ecological factors associated with locations of high mortality for the 2010-11 Rift Valley fever outbreak in South Africa. **PLoS One**. 13(2):e0191585.
- Rostal MK, Liang JE, Zimmerman D, Bengis R, Paweska J, <u>Karesh WB</u>. (2017) Rift Valley fever: Does wildlife play a role? **The International Journal of Laboratory Animals** 58(3):359-370.
- Morse SS, Mazet JAK, Woolhouse M, Parrish CR, Carroll D, <u>Karesh WB</u>, *Zambrana-Torrelio C*, Lipkin WI, Daszak P. (2012) Prediction and prevention of the next pandemic zoonosis. **The Lancet** 380:1956-1965.
- Karesh WB, Dobson A, Lloyd-Smith J, Lubroth J, Dixon MA, Bennett M, Aldrich S, Harrington T, Formenty P, Loh L, Machalaba CC, Thomas MJ, Heymann DL. (2012) The ecology of zoonoses: Their natural and unnatural histories. **The Lancet** 380:1936-1945.
- Karesh WB. (2008) Wildlife health as an indicator of climate change. Institute of Medicine,
 Global Climate Change and Extreme Weather Events: Understanding the Contributions to
 Infectious Disease Emergence: Workshop Summary. Washington, DC: The National
 Academies Press 2008:192-213.
- Nyamsuren D, Joly DO, Enkhtuvshin S, Odonkhuu D, Olson KA, Draisma M, <u>Karesh WB</u>. (2006) Exposure of Mongolian gazelles (*Procapra gutturosa*) to foot and mouth disease virus. **Journal of Wildlife Diseases** 42(1):154-158.
- <u>Karesh WB</u> and Cook RA. (2005) The human-animal link, One World-One Health. **Foreign Affairs** 84:38-50.
- Leroy EM, Rouquet P, Formenty P, Souquiere S, Kilbourn A, Froment JM, Bermejo M, Smit S, Karesh WB, Swanepoel R, Zaki SR, Rollin PE. (2004) Multiple Ebola virus transmission events and rapid decline of central African wildlife. **Science** 303:387-390.
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- Wolfe ND, Kilbourn AM, Rahman HA, Bosi EJ, Cropp BC, Andau M, <u>Karesh WB</u>, Spielman, A, Gubler, DJ. (2001) Sylvatic transmission of arboviruses among Bornean orangutans. **American Journal of Tropical Medicine and Hygiene** 64:310-316.

Sarah Cleaveland

College of Medical, Veterinary and Life Sciences, University of Glasgow, G12 8QQ, UK E-mail: sarah.cleaveland@glasgow.ac.uk

Professional Preparation

Southampton University	Zoology	BSc	1983
University of Cambridge	Veterinary Medicine	VetMB	1988
University of London	Epidemiology	PhD	1996

Appointments

Professor, Comparative Epidemiology, University of Glasgow	2008 - present
Lecturer, Tropical Veterinary Medicine, University of Edinburgh	1998 - 2008
Research Fellow, London School of Hygiene and Tropical Medicine	1996 - 1998
Veterinary Research Fellow, Institute of Zoology/LSHTM	1992 - 1996
Research Assistant, Institute of Zoology	1989 - 1992
Assistant Veterinary Surgeon, Southill Veterinary Group	1988 - 1989

- Casey-Bryars M, Reeve R, Bastola U, Knowles NJ, Auty H, Bachanek-Bankowska K, Fowler VL, Fyumagwa R, Kazwala R, Kibona T, King A, King DP, *Lankester F*, Ludi AB, Lugelo A, Maree FF, Mshanga D, Ndhlovu G, Parekh K, Paton DJ, Perry B, Wadsworth J, Parida S, Haydon DT, Marsh TL, <u>Cleaveland S</u>, Lembo T. (2018) Waves of endemic foot-and-mouth disease in eastern Africa suggest feasibility of proactive vaccination approaches. **Nature Ecology & Evolution** 2:1449-1457.
- <u>Cleaveland S</u>, Sharp J, Abela-Ridder B, Allan KJ, Buza J, Crump JA, Davis A, Del Rio Vilas VJ, de Glanville WA, Kazwala RR, Kibona T. (2017) One Health contributions towards more effective and equitable approaches to health in low- and middle-income countries.

 Philosophical Transactions of the Royal Society of London B: Biological Sciences 372(1725):20160168.
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- Lankester F, Hampson K, Lembo T, Palmer G, Taylor L, <u>Cleaveland S.</u> (2014) Implementing Pasteur's vision for rabies elimination: The evidence base and the needed policy actions. **Science** 345:1562-1564.

Brian James Willett

University of Glasgow Centre for Virus Research Garscube Estate, Glasgow G61 1QH, UK E-mail: brian.willett@glasgow.ac.uk

Professional Preparation

University of Strathclyde	Biochemistry/Pharmacology	BSc	1986
University of Strathclyde	Immunology	PhD	1989
Appointments			
Professor of Viral Immunolog	y, University of Glasgow		2008 - present
Head of Division, Veterinary Infection & Immunity, University of Glasgow		2003 - 2010	
Senior Lecturer in Veterinary Immunology, University of Glasgow		1999 - 2003	
Career Development Fellow, University of Glasgow		1995 - 1999	
Post-doc. Research Assistant, University of Glasgow		1989 - 1995	

- Abdullah N, Kelly JT, Graham SC, Birch J, Gonçalves-Carneiro D, Mitchell T, Thompson RN, Lythgoe KA, Logan N, Hosie MJ, Bavro VN, Willet BJ, Heaton MP, Bailey D. (2018) Structure-guided identification of a nonhuman morbillivirus with zoonotic potential. **Journal of Virology** 92(23):e01248-18.
- Baron MD, Diop B, Njeumi F, Willett BJ, Bailey D. (2017) Future research to underpin successful peste des petits ruminants virus (PPRV) eradication. **Journal of General Virology** 98(11):2635-2644.
- Logan N, Dundon WG, Diallo A, Baron MD, James Nyarobi M, *Cleaveland S, Keyyu J*, Fyumagwa R, Hosie MJ, <u>Willett BJ</u>. (2016) Enhanced immunosurveillance for animal morbilliviruses using vesicular stomatitis virus pseudotypes. **Vaccine** 34(47):5736–5743.
- Holzer B, Hodgson S, Logan N, Willett BJ, Baron MD. (2016) Protection of cattle against rinderpest by vaccination with wild-type but not attenuated strains of peste despetits ruminants virus. **Journal of Virology** 90(10):5152-5162.
- Logan N, McMonagle E, Drew AA, Takahashi E, McDonald M, Baron MD, Gilbert M, *Cleaveland S*, Haydon DT, Hosie MJ, Willett BJ. (2016) Efficient generation of vesicular stomatitis virus-pseudotypes bearing morbilliviral glycoproteins and their use in quantifying virus neutralising antibodies. Vaccine 34(6):814-822.
- Viana M, *Cleaveland S*, Matthiopoulos J, Halliday J, Packer C, Craft ME, Hampson K, Czupryna A, Dobson AP, Dubovi EJ, Ernest E, Fyumagwa R, Hoare R, Hopcraft JG, Horton DL, Kaare MT, Kanellos T, *Lankester F*, Mentzel C, Mlengeya T, Mzimbiri I, Takahashi E, Willett B, Haydon DT, Lembo T. (2015) Dynamics of a morbillivirus at the domestic-wildlife interface: Canine distemper virus in domestic dogs and lions. **Proceedings of the National Academy of Sciences** 112(5):1464-1469.

Venance Phillip Maro

Kilimanjaro Christian Medical University College (KCMUCo) Kilimanjaro Moshi P.O. Box 3010/2240 Moshi Tanzania

E-mail: venmaro@ymail.com

Associate Professor, Internal Medicine, KCMUCo

Chief and Consultant, KCMUCo

Professional	Preparation
r roressional	i i i evaration

University of Dar-es	Medicine	MD	1992
Salaam-Muhimbili			
Humboldt University	Public Health and Tropical	Diploma	2001
	Medicine		
Tumaini University Iringa	Medicine	MMed	2002
Duke University	Clinical Research	Certificate	2005
Appointments			
Dean, Faulty of Medicine, K	CMUCo		2015 - present

2015 - present

2004 - 2015

Publications

- Ramadhani HO, Muruiri C, <u>Maro VP</u>, Omondi M, Mushi JB, Lirhunde ES, Bartlett JA. (2017) Patient-initiated repackaging of antiretroviral therapy, viral suppression and drug resistance. **AIDS and Behavior** 22(5):1671-1678.
- Cash-Goldwasser S, Maze MJ, Rubach MP, Biggs HM, Stoddard RA, Sharples KJ, Halliday JE, *Cleaveland S*, Shand MC, *Mmbaga BT*, Muiruri C, Saganda W, Lwezaula BF, Kazwala RR, Maro VP, Crump JA. (2018) Risk factors for human brucellosis in northern Tanzania. **The American Journal of Tropical Medicine and Hygiene** 98(2):598-606.
- Stanifer JW, Karia F, Maro V, Kilonzo K, Qin X, Patel UD, Hauser ER. (2017) APOL1 risk alleles among individuals with CKD in northern Tanzania: A pilot study. **PloS One** 12(7):e0181811.
- Ladbury G, Allan KJ, *Cleaveland S*, Davis A, de Glanville WA, Forde TL, Halliday JE, Haydon DT, Kibiki G, Kiwelu I, Lembo T, <u>Maro VP</u>, *Mmbaga BT*, Ndyetabura T, Sharp J, Thomas K, Zadoks RN. (2017) One Health research in northern Tanzania—challenges and progress. **East African Health Research Journal** 1(1):8-18.
- Carugati M, Biggs HM, Maze MJ, Stoddard RA, Cash-Goldwasser S, Hertz JT, Halliday JE, Saganda W, Lwezaula BF, Kazwala RR, *Cleaveland S*, <u>Maro VP</u>, Rubach MP, Crump JA. (2018) Incidence of human brucellosis in the Kilimanjaro Region of Tanzania in the periods 2007–2008 and 2012–2014. **Transactions of The Royal Society of Tropical Medicine and Hygiene** 112(3):136-43.
- Allan KJ, Halliday JE, Moseley M, Carter RW, Ahmed A, Goris MG, Hartskeerl RA, *Keyyu J*, Kibona T, <u>Maro VP</u>, Maze MJ. (2018) Assessment of animal hosts of pathogenic *Leptospira* in northern Tanzania. **PLoS Neglected Tropical Diseases** 12(6):e0006444.
- Maze MJ, Cash-Goldwasser S, Rubach MP, Biggs HM, Galloway RL, Sharples KJ, Allan KJ, Halliday JE, Cleaveland S, Shand MC, Muiruri C, Kazwala RR, Saganda W, Lwezaula BF, *Mmbaga BT*, Maro VP, Crump JA. (2018) Risk factors for human acute leptospirosis in northern Tanzania. **PLoS Neglected Tropical Diseases** 12(6):e0006372.

Felix Lankester

School for Global Animal Health, Washington State University, Pullman, WA, 99164, USA Email: felix.lankester@wsu.edu

University of Liverpool Royal Veterinary College University of Glasgow	Veterinary Science	BVSc	1995
	Wild Animal Health	MSc	2003
	Veterinary Epidemiology	PhD	2016
Appointments			2010

Vice President, Global Animal Health Tanzania	2018 - present
Assistant Professor, Washington State University	2012 - present
Director, Serengeti Health Initiative	2012 - present
Country Director, Global Animal Health Tanzania	2014 - 2018
Director of Tanzanian Programs, Lincoln Park Zoo	2009 - 2012
Cameroon Country Director, Pandrillus Foundation	2006 - 2009
Director and Head Veterinarian of Limbe Wildlife Centre, Pandrillus Foundation	2004 - 2009
Consultant, Mediae Production Company	2003 - 2004
Volunteer Veterinary Officer, The Orang-utan Foundation	2002 - 2003
Assistant Producer, Granada Wild/Partridge Films	1997 - 2001
Veterinary Officer, Various Veterinary Institutions	1995 - 2001

- Casey-Bryars M, ... <u>Lankester F</u>, ... *Cleaveland S*, Lembo T. (2018) Waves of endemic foot-and-mouth disease in eastern Africa suggest feasibility of proactive vaccination approaches. **Nature Ecology & Evolution** 2(9):1449.
- Köndgen S, Calvignac-Spencer S, Grützmacher K, Keil V, Mätz-Rensing K, Nowak K, Metzger S, Kiyang J, Becker AL, Deschner T, Wittig RM, <u>Lankester F</u>, Leendertz FH. (2017) Evidence for human *Streptococcus pneumoniae* in wild and captive chimpanzees: A potential threat to wild populations. **Scientific Reports** 7(1):14581.
- Cleaveland S, Sharp J, Abela-Ridder B, Allan KJ, Buza J, Crump JA, Davis A, Del Rio Vilas VJ, de Glanville WA, Kazwala RR, Kibona T, <u>Lankester FJ</u>, Lugelo A, *Mmbaga BT*, Rubach MP, Swai ES, Waldman L, Haydon DT, Hampson K, Halliday JEB. (2017) One Health contributions towards more effective and equitable approaches to health in low- and middle-income countries. **Philosophical Transactions of the Royal Society B: Biological Sciences** 372(1725):20160168.
- <u>Lankester F</u>, Davis A. (2016) Pastoralism and wildlife: Historical and current perspectives in the East African rangelands of Kenya and Tanzania. **Revue Scientifique et Technique** (International Office of Epizootics) 35(2):473-484.
- Czupryna AM, Brown JS, Bigambo MA, Whelan CJ, Mehta SD, Santymire RM, <u>Lankester F</u>, Fasut L. (2016) Ecology and demography of free-roaming domestic dogs in rural villages near Serengeti National Park in Tanzania. **PLoS One** 11(11):e0167092.
- Lankester FJ, Wouters PA, Czupryna A, Palmer GH, Mzimbiri I, *Cleaveland S*, Francis MJ, Sutton DJ, Sonnemans DG. (2016) Thermotolerance of an inactivated rabies vaccine for dogs. **Vaccine** 34(46):5504–5511.
- Lankester F, Russell GC, Lugelo A, Ndabigaye A, Mnyambwa N, *Keyyu J*, Kazwala R, Grant D, Percival A, Deane D, Haig DM. (2016) A field vaccine trial in Tanzania demonstrates partial protection against malignant catarrhal fever in cattle. **Vaccine** 34(6):831-838.

Carlos Zambrana-Torrelio

EcoHealth Alliance, 460 W. 34th St, New York City, NY 10001, USA

E-mail: <u>zambrana@ecohealthalliance.org</u>

Professional Preparation

University Mayor de San Andres	Biology	BSc	2004
University of Puerto Rico	Ecology, Evolution and Systematics	MSc	2009
Sapienza University of Rome	Environmental and Evolutionary	PhD	2017
	Biology		

Appointments

# #	
Associate Vice President for Conservation and Health	2017 - present
Senior Research Scientist, EcoHealth Alliance	2014 - 2017
Research Scientist, EcoHealth Alliance	2010 - 2013
Research Associate, Institute of Molecular Biology and Biotechnology, Bolivia	2008 - present
Consultant, NatureServe	2006 - 2006
Researcher, Wildlife Conservation Society	2002 - 2003
Research Associate, Centro de Analisis Espacial – Bolivia	1999 - 2002

- Olival KJ, Hosseini PR, Zambrana-Torrelio C, Ross N, Bogich TL, Daszak P. (2017) Host and viral traits predict zoonotic spillover from mammals. **Nature** 546(7660):646–650.
- Allen T, Murray KA, <u>Zambrana-Torrelio C</u>, Morse SS, Rondinini C, Di Marco M, Olival KJ, Daszak P. (2017) Global correlates of emerging zoonoses: Anthropogenic, environmental, and biodiversity risk factors. **Nature Communications** 8:1124.
- Lim SS, ... Zambrana-Torrelio C, et al. (2016) Measuring the health-related Sustainable Development Goals in 188 countries: A baseline analysis from the Global Burden of Disease Study 2015. **The Lancet** 288:1813-1850.
- Murray KA, Preston N, Allen T, Zambrana-Torrelio C, Hosseini PR & P Daszak. (2015) Global biogeography of human infectious diseases. **Proceedings of the National Academy of Sciences** 12(41):12746-12751.
- Anthony SJ, Islam A, Johnson C, Navarrete-Macias I, Liang E, Jain K, Hitchens PL, Che X, Soloyvov A, Hicks AL, Ojeda-Flores R, Zambrana-Torrelio C, Ulrich W, Rostal MK, Petrosov A, Garcia J, Haider N, Wolfe N, Goldstein T, Morse SS, Rahman M, Epstein JH, Mazet JK, Daszak P & Lipkin WI. (2015) Non-random patterns in viral diversity. Nature Communications 6:8147.
- Loh EL, Zambrana-Torrelio C, Olival K, Bogich T, Johnson CK, Mazet J, *Karesh W*, Daszak P. (2015) Targeting transmission pathways for emerging zoonotic disease surveillance and control. **Vector-Borne and Zoonotic Diseases** 15:432-437.
- Daszak P, Zambrana-Torrelio C, Bogich TL, Fernández M, Epstein JH, Murray KA, Hamilton H. (2013) Interdisciplinary approaches to understanding disease emergence: The past, present, and future drivers of Nipah virus emergence. **Proceedings of the National Academy of Sciences** 110:3681-3688.
- Morse SS, Mazet JA, Woolhouse M, Parrish CR, Carroll D, *Karesh WB*, <u>Zambrana-Torrelio C</u>, Lipkin WI, Daszak P. (2012) Prediction and prevention of the next pandemic zoonosis. **The Lancet** 380:1956–1965.

Justine Alphonce Assenga

Ministry of Livestock and Fisheries, Box 2870, Dodoma, Tanzania

E-mail: assengakanda@yahoo.com

Professional Preparation

Sokoine Univ of Agric.	Veterinary Medicine	BVM	1996
Sokoine Univ of Agric.	Veterinary Medicine	MVM	2003
Sokoine Univ of Agric.	Molecular Epidemiology	PhD	2016

Appointments

Animal Health Focal Person - OHCD, Ministry of Livestock and Fisheries	2016 - present
Deputy Principal, Livestock Training Institute	2005 - 2014
Assistant Coordinator of Studies, Livestock Training Institute	2003 - 2005

- Pieracci EG, Scott TP, Coetzer A, Athman M, Mutembei A, Kidane AH, Bekele M, Ayalew G, Ntegeyibizaza S, <u>Assenga J</u>, Markalio G. (2017) The formation of the Eastern Africa Rabies Network: A sub-regional approach to rabies elimination. **Tropical Medicine and Infectious Disease** 2(3):29.
- Mwakapeje ER, <u>Assenga JA</u>, Kunda JS, Mjingo EE, Makondo ZE, Nonga HE, Mdegela RH, Skjerve E. (2017) Prevention, detection, and response to anthrax outbreak in Northern Tanzania using one health approach: A case study of Selela ward in Monduli district. **International Journal of One Health** 3:66-76.
- Assenga JA, Matemba LE, Malakalinga JJ, Muller SK, Kazwala RR. (2016) Quantitative analysis of risk factors associated with brucellosis in livestock in the Katavi-Rukwa ecosystem, Tanzania. **Tropical Animal Health and Production** 48(2):303-309.
- Muller SK, <u>Assenga JA</u>, Matemba LE, Misinzo G, Kazwala RR. (2016) Human leptospirosis in Tanzania: Sequencing and phylogenetic analysis confirm that pathogenic Leptospira species circulate among agro-pastoralists living in Katavi-Rukwa ecosystem. **BMC Infectious Diseases** (16)1:273.
- Assenga JA, Matemba LE, Muller SK, Mhamphi GG, Kazwala RR. (2015) Predominant Leptospiral serogroups circulating among humans, livestock and wildlife in Katavi-Rukwa ecosystem, Tanzania. **PLoS Neglected Tropical Diseases** 9(3): e0003607.
- Assenga JA, Matemba LE, Muller SK, Malakalinga JJ, Kazwala RR. (2015) Epidemiology of *Brucella* infection in the human, livestock and wildlife interface in the Katavi-Rukwa ecosystem, Tanzania. **BMC Veterinary Research** 11(1):189.
- Machang'u RS, Mgode GF, <u>Assenga J</u>, Mhamphi G, Weetjens B, Cox C, Verhagen R, Sondij S, Goris MG, Hartskeerl RA. (2004) Serological and molecular characterization of Leptospira serovar Kenya from captive African giant pouched rats (*Crycetomys gambianus*) from Morogoro, Tanzania. **FEMS Immunology and Medical Microbiology** 41(2):117-121.
- Machang'u R, Mgode G, <u>Assenga J</u>, Mhamphi G, Hartskeerl R, Goris M, Cox C, Weetjens B, Verhagen R, Singleton GR, Hinds LA. (2003) Characterization of Leptospira isolates from captive giant pouched rats, *Cricetomys gambianus*. Rats, Mice and People, Rodent Biology and Management.(Eds) Singleton GR, Hinds LA, Krebs CJ, and Spratt MD. Australian Centre for International Agricultural Research, Canberra. 2003:40-42.

Jubilate Bernard Minja

Ministry of Health, Community Development, Gender, Elderly and Children, University of Dodoma, Building No.11, P.O. Box 743, 40478 Dodoma Tanzania E-mail: jubbybm@yahoo.com

Professional Preparation

University of Dar es Salaam Tumaini University	Environmental Health Sciences Public Health	BSc MPH	2005 2008
Appointments			
Head, Vectors and Vector Born	ne Diseases Control, MOHCDGEC		2017 - present
Focal Person for Human Healt	h in One Health Coordination Desk		2016 - present
Focal Person for One Health, N	MOHCDGEC		2016 - present
National Coordinator, Tanzani	a-Cuba Larviciding Project		2011 - 2011
Malaria Vector Control Section	n (Head from 2009- 2011)		2006 - 2011

- Mghamba JM, Tasiluna AO, Suryantoro L, Saguti GE, Muita M, Bakari M, Rusibamayila N, Ally M, Bernard J, Banda R, Mapunda M, Eidex R, Sreedharan R, Sliter K, Nikkari S, Saikat S, Longo GPM, Verboom P, Yahaya AA, Chungong S, Rodier G, Fall IS. (2018) Developing a multisectoral National Action Plan for Health Security to implement IHR (2005) in Tanzania. BMJ Global Health 3(2):e000600.
- Kabula B, Tungu P, Malima R, Rowland M, Minja J, Wililo R, Ramsan M, McElroy PD, Kafuko J, Kulkarni M, Protopopoff N, Magesa S, Mosha F, Kisinza W. (2013) Distribution and Spread of pyrethroids and DDT resistance among the *Anopheles gambiae* complex in Tanzania. **Medical and Veterinary Entomology** 28(3):244-252.
- Kabula B, Tungu P, Matowo J, Kitau J, Mweya C, Emidi B, Masue D, Sindato C, Malima R, Minja J, Msangi S, Njau R, Mosha F, Magesa S, Kisinza W. (2012) Susceptibility status of malaria vectors to insecticides commonly used for malaria control **Tropical Medicine & International Health** 17(6):742-750.
- Bernard J, Mtove G, Mandike R, Mtei F, Maxwell C, Reyburn H. (2009) Equity and Coverage of insecticide treated bednets in an area of intense transmission of *Plasmodium falciparum* in Tanzania. Malaria Journal 8(1):65.

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.	
Other agencies (including NSF) to which this proposal has	_
Investigator: Sarah Cleaveland	
Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support	
Project/Proposal Title:	
Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania (current proposal)	
Source of Support: DTRA	
Total Award Amount: \$4,848,483 Total Award Period Covered: 10/1/2019-07/31/2024	
Location of Project: EcoHealth Alliance, Tanzania	
Person-Months Per Year Committed to the Cal: 1.2 Acad: Sumr:	
Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support	_
Project/Proposal Title: Eliminating human rabies: Impact of enhanced vaccination coverage	
, ,	
Source of Support: NIH	
Total Award Amount: \$2,340,659 Total Award Period Covered: 11/20/2018 – 9/30/2023	
Location of Project: Tanzania	
Person-Months Per Year Committed to the Cal: 0.6 Acad: Sumr:	
Support:	_
Project/Proposal Title:	
Source of Support:	
Total Award Amount: Total Award Period Covered:	
Location of Project:	
Person-Months Per Year Committed to the Cal: Acad: Sumr:	
Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support	_
Project/Proposal Title:	
Source of Support:	
Total Award Amount: Total Award Period Covered:	
Location of Project:	
Person-Months Per Year Committed to the Cal: Acad: Sumr:	
Support: Current Pending Submission Planned in Near Future *Transfer of Support	
Project/Proposal Title:	
Source of Support:	
Total Award Amount: Total Award Period Covered:	
Location of Project:	
Person-Months Per Year Committed to the Cal: Acad: Sumr:	
*If this project has previously been funded by another agency, please list and furnish information for immediately pre-	_
ceding funding period.	

NSF Form 1239 (10/99)



(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to information may delay consideration of this proposal.	provide this
Other agencies (including NSF) to which this propos	al has
Investigator: Furaha Mramba	
Support: Current Pending Submission Planned in Near Future *Transfer	of Support
Project/Proposal Title:	
Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania (current proposal)	
Source of Support: DTRA	
Total Award Amount: \$4,848,483 Total Award Period Covered: 10/1/2019-07/31/2024	
Location of Project: EcoHealth Alliance, Tanzania	
Person-Months Per Year Committed to the Cal: 0.6 Acad: Sumr:	
Support: Current Pending Submission Planned in Near Future *Transfer	of Support
Project/Proposal Title: Eliminating human rabies: impact of enhanced vaccination coverage	
Source of Support:	
Total Award Amount: Total Award Period Covered:	
Location of Project:	
Person-Months Per Year Committed to the Cal: Acad: Sumr:	
Support: Current Pending Submission Planned in Near Future *Transfer	of Support
Project/Proposal Title:	
Source of Support:	
Total Award Amount: Total Award Period Covered:	
Location of Project:	
Person-Months Per Year Committed to the Cal: Acad: Sumr:	
Support: Current Pending Submission Planned in Near Future *Transfer	of Support
Project/Proposal Title:	
Source of Support:	
Total Award Amount: Total Award Period Covered:	
Location of Project:	
Person-Months Per Year Committed to the Cal: Acad: Sumr:	
Support: Current Pending Submission Planned in Near Future *Transfer	of Support
Project/Proposal Title:	
Source of Support:	
Total Award Amount: Total Award Period Covered:	
Location of Project:	
Person-Months Per Year Committed to the Cal: Acad: Sumr:	
*If this project has previously been funded by another agency, please list and furnish information for imme	diately pre-
cedina fundina period.	

NSF Form 1239 (10/99)



(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.
Other agencies (including NSF) to which this proposal has
Investigator: William Karesh
Support: Current Pending Submission Planned in Near Future *Transfer of Support Support: Sup
Project/Proposal Title:
Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania (current proposal)
Source of Support: DTRA
Total Award Amount: \$4,848,483
Location of Project: EcoHealth Alliance, Tanzania
Person-Months Per Year Committed to the Cal: 1.0 Acad: Sumr:
Support: Support Suppo
Project/Proposal Title:
Understanding Rift Valley Fever in the Republic of South Africa
orderstanding fact valley rever in the republic or South Africa
Source of Support: DTRA
Total Award Amount: \$4,936,359.00 Total Award Period Covered: 5/17/2014-5/16/2019
Location of Project: EcoHealth Alliance, South Africa
Person-Months Per Year Committed to the Cal: 2.5 Acad: Sumr:
Support:
Project/Proposal Title:
Understanding the Risk of Bat-Bourne Zoonotic Disease Emergence in Western Asia
Source of Support: DTRA
Total Award Amount: \$4,391,443.65 Total Award Period Covered: 10/2/2017 – 10/1/2022
Location of Project: Global
Person-Months Per Year Committed to the Cal: 1.1 Acad: Sumr:
Support:
Project/Proposal Title:
Ground Truth Network
Source of Support: DTRA
Total Award Amount: \$2,231,114.13 Total Award Period Covered: 9/30/2016 – 9/29/2021
Location of Project: United States
·
Person-Months Per Year Committed to the Cal: 1.2 Acad: Sumr: Support: □ Pending □ Submission Planned in Near Future □ *Transfer of Support
Project/Proposal Title:
Emerging Pandemic Threats PREDICT-2
Emorging Fundamic Frieddo FREDIOT 2
Source of Support: USAID
Total Award Amount: \$100,000,000.00 Total Award Period Covered: 10/1/2014-9/30/2019
Location of Project: Global
Person-Months Per Year Committed to the Cal: 5.5 Acad: Sumr:
*If this project has previously been funded by another agency, please list and furnish information for immediately pre-
ceding funding period.

(See GPG Section II.D.8 for guidance on information to include on this form.)

	Jano.	seriioi personiii	el. Failure to provide this
information may delay consideration of this proposal. Investigator: William Karesh	Other agencies (includ	ing NSF) to wh	ich this proposal has
·	Submission Planned in	Near Future	☐ *Transfer of Support
READY: Augmenting Capacity for Humanitarian Emerg Potential	gencies of Infectious D	iseases with E _l	oidemic or Pandemic
Source of Support: USAID			
· · ·	ard Period Covered: 09	9/25/2018-09/30)-2021
Location of Project: Global Person-Months Per Year Committed to the	Cal: 0.72	Acad:	Sumr:
	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title: Center for Research in Diagnostics and Discovery			
Senier for Nesearch in Diagnostics and Discovery			
Source of Support: National Institutes of Health		710011 010011	
Total Award Amount: \$345,003 Total Awa Location of Project: New York, NY	ard Period Covered: 3/	7/2014 – 2/29/2	2020
Person-Months Per Year Committed to the	Cal:0.96	Acad:	Sumr:
	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title: Reducing the threat of Rift Valley Fever through Ecological Project Proposal Title:	ny Enidemiology and 9	Sacia-Economia	rs
	gy, Epidemiology and t	Boolo Edonomi	
Source of Support: DTRA Total Award Amount: \$4,988,526.00 Total Award	ard Period Covered: 6/	1/2010 5/21/20	24
· ·	aru Periou Covered. 6/	1/2019-5/31/20	24
Location of Project: EcoHealth Alliance, South Africa			
Location of Project: EcoHealth Alliance, South Africa Person-Months Per Year Committed to the	Cal: 2.0	Acad:	Sumr:
Person-Months Per Year Committed to the Support: ☐ Current ☐ Pending ☒ S	Cal: 2.0 Submission Planned in		Sumr: *Transfer of Support
Person-Months Per Year Committed to the Support:	Submission Planned in	Near Future	
Person-Months Per Year Committed to the Support:	Submission Planned in	Near Future	
Person-Months Per Year Committed to the Support:	Submission Planned in febrile illness in Liberi	Near Future a	☐ *Transfer of Support
Person-Months Per Year Committed to the Support:	Submission Planned in	Near Future a	☐ *Transfer of Support
Person-Months Per Year Committed to the Support:	Submission Planned in febrile illness in Liberi	Near Future a	☐ *Transfer of Support
Person-Months Per Year Committed to the Support:	Submission Planned in febrile illness in Liberia ard Period Covered: 1/	Near Future a 1/2020-12/31/2 Acad:	☐ *Transfer of Support
Person-Months Per Year Committed to the Support:	Submission Planned in febrile illness in Liberiand Period Covered: 1/ Cal: 0.6 Submission Planned in	Near Future a 1/2020-12/31/2 Acad: Near Future	□ *Transfer of Support 022 Sumr: □ *Transfer of Support
Person-Months Per Year Committed to the Support:	Submission Planned in febrile illness in Liberiand Period Covered: 1/ Cal: 0.6 Submission Planned in	Near Future a 1/2020-12/31/2 Acad: Near Future	□ *Transfer of Support 022 Sumr: □ *Transfer of Support
Person-Months Per Year Committed to the Support:	Submission Planned in febrile illness in Liberiand Period Covered: 1/ Cal: 0.6 Submission Planned in	Near Future a 1/2020-12/31/2 Acad: Near Future	□ *Transfer of Support 022 Sumr: □ *Transfer of Support
Person-Months Per Year Committed to the Support:	Submission Planned in febrile illness in Liberiand Period Covered: 1/ Cal: 0.6 Submission Planned in	Near Future a 1/2020-12/31/2 Acad: Near Future and other coro	□ *Transfer of Support 022 Sumr: □ *Transfer of Support naviruses in USCENTCOM
Person-Months Per Year Committed to the Support:	Submission Planned in febrile illness in Liberia and Period Covered: 1/ Cal: 0.6 Submission Planned in abilities for MERS-CoV	Near Future a 1/2020-12/31/2 Acad: Near Future and other coro	□ *Transfer of Support 022 Sumr: □ *Transfer of Support naviruses in USCENTCOM
Person-Months Per Year Committed to the Support:	Submission Planned in febrile illness in Liberia and Period Covered: 1/ Cal: 0.6 Submission Planned in abilities for MERS-CoV and Period Covered: 11 Cal: 0.5	Near Future a 1/2020-12/31/2 Acad: Near Future and other coro /01/2019-10/31 Acad:	□ *Transfer of Support 022 Sumr: □ *Transfer of Support naviruses in USCENTCOM
Person-Months Per Year Committed to the Support:	Submission Planned in febrile illness in Liberia and Period Covered: 1/ Cal: 0.6 Submission Planned in abilities for MERS-CoV and Period Covered: 11 Cal: 0.5	Near Future a 1/2020-12/31/2 Acad: Near Future and other coro /01/2019-10/31 Acad:	□ *Transfer of Support 022 Sumr: □ *Transfer of Support naviruses in USCENTCOM



(See GPG Section II.D.8 for guidance on information to include on this form.)

mation may delay consideration of this proposal.	tigator and other senior personnel. Fa	allure to provide this infor-		
mation may delay consideration of this proposal.	Other agencies (including NSF) to w	hich this proposal has been		
Investigator: Carlos Zambrana-Torrelio	submitted: N/A	men this proposal has been		
Support: Current Pending	Submission Planned in Near Future			
Project/Proposal Title:				
Crimean-Congo hemorrhagic fever: Reducing an emerging	health threat in Tanzania			
Source of Support: DTRA				
Total Award Amount: \$4,848,483 Total Award P	eriod Covered: 10/1/2019-07/31/2024			
Location of Project: EcoHealth Alliance, Tanzania				
Person-Months Per Year Committed to the Project.	Cal: 5.0 Acad:	Sumr:		
Support:	Submission Planned in Near Future			
Project/Proposal Title:				
PREDICT-2				
Source of Support: USAID				
	eriod Covered: 10/1/2014-9/30/19			
Location of Project: EcoHealth Alliance, Jordan, Egypt, Lib		alaysia Thailand		
Person-Months Per Year Committed to the Project.	Cal: 0.5 Acad:	Sumr:		
Support: Current Pending	Submission Planned in Near Future	*Transfer of Support		
Project/Proposal Title:	, castillociott i latitioa itt troat t diaro			
, rejective peculi ritio.				
Source of Support:				
Source of Support: Total Award Amount: Total Award B	eriod Covered:			
Total Award Amount: Total Award P	eriod Covered:			
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(See GPG Section II.D.8 for guidance on information to include on this form.)

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The following information should be provided for each information may delay consideration of this proposal.		senior personn	el. Failure to provide this
Investigator: Brian Willett	Other agencies (includ	ling NSF) to wh	ich this proposal has
	1		
Support: ☐ Current ☐ Pending ☐ Project/Proposal Title:	Submission Planned in	Near Future	
Crimean-Congo hemorrhagic fever: Reducing an em	erging health threat in T	anzania (curren	it proposal)
		`	, , ,
Source of Support: DTRA	15 : 10 . 14	2/4/00/40 07/04/	2004
l · · · · · ·	ward Period Covered: 10	J/1/2019-07/31/	2024
Location of Project: EcoHealth Alliance, Tanzania			
Person-Months Per Year Committed to the	Cal: 0.6	Acad:	Sumr:
Support:	Submission Planned in	Near Future	☐ *Transfer of Support
Project/Proposal Title: Eliminating human rabies: im	pact of enhanced vaccin	nation coverage	, ,
	F		
Source of Support:			
1	word Dariad Carrandi		
	ward Period Covered:		
Location of Project:			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
Support:	Submission Planned in	Near Future	*Transfer of Support
Project/Proposal Title:			
Source of Support:			
Total Award Amount: Total Av	ward Period Covered:		
Location of Project:			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
Support:	Submission Planned in		*Transfer of Support
Project/Proposal Title:			
Trojecur repodur ride.			
Source of Support:			
1	word Dariad Cowaradi		
	ward Period Covered:		
Location of Project:			_
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
Support: Current Pending	Submission Planned in	Near Future	*Transfer of Support
Project/Proposal Title:			
Source of Support:			
Total Award Amount: Total Av	ward Period Covered:		
Location of Project:			
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:
*If this project has previously been funded by anothe			
ceding funding period.	. 250,107, produce not dite		and the minimum of the

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(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.
Other agencies (including NSF) to which this proposal has
Investigator: Blandina Mmbaga
Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:
Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania (current proposal)
Source of Support: DTRA
Total Award Amount: \$4,848,483
Location of Project: EcoHealth Alliance, Tanzania
Person-Months Per Year Committed to the Cal: 0.6 Acad: Sumr:
Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Developing Capacity to Improve Care Transitions for Injury Patients in Tanzania
Source of Support: NIH
Total Award Amount: \$131,000 Total Award Period Covered: 2/1/2018-1/31/2020
Location of Project: Tanzania
Person-Months Per Year Committed to the Cal: .96 Acad: Sumr:
Support:
Project/Proposal Title: Diagnostics and Pharmacotherapy for Severe Forms of TB
Source of Support: NIH/NIAID
Total Award Amount: \$430,831 Total Award Period Covered: 08/01/2015-07/31/2019
Location of Project: Tanzania
Person-Months Per Year Committed to the Cal: 1.2 Acad: Sumr:
Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: A stigma reduction intervention at time of entry into antenatal care to improve PMTCT services
Source of Support: NIH
Total Award Amount: \$235,000 Total Award Period Covered: 07/01/2018-06/31/2020
Location of Project: Tanzania
Person-Months Per Year Committed to the Cal: 1.2 Acad: Sumr:
Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: International and Domestic Pediatric and Maternal HIV and Other High Priority Infectious Dis-
Source of Support: WESTAT/NICHD
Total Award Amount: \$1,023,00 Total Award Period Covered: 12/01/2017-11/31/2022
Location of Project:
Person-Months Per Year Committed to the Cal: 2.4 Acad: Sumr:
*If this project has previously been funded by another agency, please list and furnish information for immediately pre-
ceding funding period.

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(See GPG Section II.D.8 for guidance on information to include on this form.)

- January - Janu
The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.
Other agencies (including NSF) to which this proposal has
Investigator: Felix Lankester
Support: Current Project/Proposal Title: Support Su
Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania (current proposal)
Source of Support: DTRA
Total Award Amount: \$4,848,483 Total Award Period Covered: 10/1/2019-07/31/2024
Location of Project: EcoHealth Alliance, Tanzania
Person-Months Per Year Committed to the Cal: 2.75 Acad: Sumr:
Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Supporting Evidence-Based Interventions to Achieve Agricultural Development Goals (SEBI) –
Trojecti Troposti Titic. Supporting Evidence Based interventions to Hemove Agnetitatal Bevelopment Sould (SEBI)
Oncome of Occasions University of Edich with
Source of Support: University of Edinburgh
Total Award Amount: \$104,370 Total Award Period Covered: 03/01/2017-08/31/2019
Location of Project: Tanzania
Person-Months Per Year Committed to the Cal: 1.2 Acad: Sumr:
Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Eliminating human rabies – Enhanced Vaccination Strategies
Source of Support: National Institute of Health – R01
Total Award Amount: \$2,399,307 Total Award Period Covered: 11/01/2018-10/31/2023
Location of Project: Tanzania
Person-Months Per Year Committed to the Cal: 5.0 Acad: Sumr:
Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Assessment of incentive payments for increasing participation in mass dog rabies vaccination in
Source of Support: Washington State University
Total Award Amount: \$20,000 Total Award Period Covered: 10/01/2017-07/30/2019
Location of Project: Tanzania
Person-Months Per Year Committed to the Cal: 1.2 Acad: Sumr:
Support: Support Support Support Support Support
Project/Proposal Title: Thermotolerance: catalyzing widespread vaccination delivery and elimination of canine rabies?
Troject/Troposal Title. Thermotolerance, catalyzing widespread vaccination delivery and elimination of catilite rables:
Course of Coursests MOD Asimal Health
Source of Support: MSD Animal Health
Total Award Amount: \$245,137 Total Award Period Covered: 09/01/2017-08/31/2020
Location of Project:
Person-Months Per Year Committed to the Cal: 1.0 Acad: Sumr:
*If this project has previously been funded by another agency, please list and furnish information for immediately pre-
ceding funding period.

NSF Form 1239 (10/99)



Current and Pending Support (See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.					
Other agencies (including NSF) to which this proposal has					
Investigator: Jubilate Bernard Minja					
<u> </u>	omission Planned in Nea	r Future 🗌 *Transfer o	f Support		
Project/Proposal Title:					
Crimean-Congo hemorrhagic fever: Reducing an emergir	ig health threat in Tanza	nia (current proposal)			
Source of Support: DTRA					
Total Award Amount: \$4,847,271 Total Award	Period Covered: 10/1/2	019-07/31/2024			
Location of Project: EcoHealth Alliance, Tanzania					
Person-Months Per Year Committed to the	Cal: 0.6 Ac	ad: Sumr:			
Support: Current Pending Sub	mission Planned in Nea	r Future 🔲 *Transfer o	f Support		
Project/Proposal Title: Eliminating human rabies: impact	of enhanced vaccination	n coverage			
		-			
Source of Support:					
1	Period Covered:				
Location of Project:					
Person-Months Per Year Committed to the	Cal: Ac	ad: Sumr:			
Support:	mission Planned in Nea	r Future	f Support		
Project/Proposal Title:					
Source of Support:					
Total Award Amount: Total Award	Period Covered:				
Location of Project:					
Person-Months Per Year Committed to the	Cal: Ac	ad: Sumr:			
Support: Current Pending Suk	omission Planned in Nea	r Future 🔲 *Transfer o	f Support		
Project/Proposal Title:					
Source of Support:					
Total Award Amount: Total Award	Period Covered:				
Location of Project:					
Person-Months Per Year Committed to the	Cal: Ac	•			
Support:	omission Planned in Nea	r Future 🛮 🗎 *Transfer o	f Support		
Project/Proposal Title:					
Source of Support:					
	Period Covered:				
Location of Project:					
Person-Months Per Year Committed to the	Cal: Ac				
*If this project has previously been funded by another age ceding funding period.	ency, please list and furr	ish information for immedi	ately pre-		

NSF Form 1239 (10/99)



(See GPG Section II.D.8 for guidance on information to include on this form.)

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The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.					
, , ,	Other agencies (includ	ling NSF) to wh	ich this proposal has		
Investigator: Venance P. Maro	<u> </u>				
Support: \square Current \boxtimes Pending	Submission Planned in	Near Future	*Transfer of Support		
Project/Proposal Title:					
Crimean-Congo hemorrhagic fever: Reducing an e	merging health threat in T	anzania (curren	t proposal)		
Source of Support: DTRA					
• •	Award Period Covered: 10	0/1/2019-07/31/	2024		
Location of Project: Tanzania					
Person-Months Per Year Committed to the	Cal: 0.0	Acad:	Sumr:		
	Submission Planned in				
Support:	Submission Planned in	Near Future	☐ *Transfer of Support		
Investigating Febrile Deaths in Tanzania (INDITe)					
invocinguing rooms boarns in ranzama (inbiro)					
Source of Support: NIAID					
Total Award Amount: \$587,087 Total	Award Period Covered: 01	1/01/2016-12/3	1/2020		
Location of Project: Tanzania	, , , , , , , , , , , , , , , , , , , ,	.,,	., _ • - •		
Person-Months Per Year Committed to the	Cal: 1.2	Acad:	Sumr:		
Support: Current Pending	Submission Planned in		*Transfer of Support		
	Submission Flamed III	iveal i utule	☐ Transier of Support		
Project/Proposal Title:					
Source of Support:					
	Award Pariod Covered:				
	Award Period Covered:				
Location of Project:					
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:		
Support:	☐ Submission Planned in	Near Future	☐ *Transfer of Support		
Project/Proposal Title:					
Source of Support:					
• •	Award Period Covered:				
Location of Project:	, , , , , , , , , , , , , , , , , , , ,				
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:		
	Submission Planned in		*Transfer of Support		
— — 3	Submission Planned in	near Future	☐ Transier of Support		
Project/Proposal Title:					
Source of Support:					
Total Award Amount: Total	Award Period Covered:				
Location of Project:					
Person-Months Per Year Committed to the	Cal:	Acad:	Sumr:		
*If this project has previously been funded by anoth					
ceding funding period.	.3				

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(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.						
Other agencies (including NSF) to which this proposal has						
Investigator: Justine Assenga						
Support:	Submission Planned in Near Future	☐ *Transfer of Support				
Project/Proposal Title:						
Crimean-Congo hemorrhagic fever: Reducing an em	erging health threat in Tanzania (curr	ent proposal)				
Source of Support: DTRA						
Total Award Amount: \$4,848,483 Total Av	ward Period Covered: 10/1/2019-07/3	1/2024				
Location of Project: EcoHealth Alliance, Tanzania						
Person-Months Per Year Committed to the	Cal: 0.6 Acad:	Sumr:				
Support:	Submission Planned in Near Future					
Project/Proposal Title: Eliminating human rabies: im	pact of enhanced vaccination coverage	ge				
	`					
Source of Support:						
• •	ward Period Covered:					
Location of Project:						
Person-Months Per Year Committed to the	Cal: Acad:	Sumr:				
Support: Current Pending	Submission Planned in Near Future	☐ *Transfer of Support				
Project/Proposal Title:						
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Source of Support:						
Total Award Amount: Total Av	ward Period Covered:					
Location of Project:						
Person-Months Per Year Committed to the	Cal: Acad:	Sumr:				
Support: Current Pending	Submission Planned in Near Future	☐ *Transfer of Support				
Project/Proposal Title:		_				
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Source of Support:						
Total Award Amount: Total Av	ward Period Covered:					
Location of Project:						
Person-Months Per Year Committed to the	Cal: Acad:	Sumr:				
Support:	Submission Planned in Near Future					
Project/Proposal Title:						
Source of Support:						
	ward Period Covered:					
Location of Project:						
Person-Months Per Year Committed to the	Cal: Acad:	Sumr:				
*If this project has previously been funded by anothe	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·				
ceding funding period.						

NSF Form 1239 (10/99)



(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.					
Other agencies (including NSF) to which this proposal has					
Investigator: Roger Hewson					
Support:	Submission Planned in Near Future	*Transfer of Support			
Project/Proposal Title:					
Crimean-Congo hemorrhagic fever: reducing an eme	erging health threat in Tanzania (currer	nt proposal)			
Source of Support: DTRA					
· · · · · ·	ward Period Covered: 10/1/2019-07/31	1/2024			
Location of Project: Tanzania					
Person-Months Per Year Committed to the	Cal: Acad:	Sumr:			
Support: ☐ Current ☒ Pending ☐ Project/Proposal Title:	Submission Planned in Near Future	☐ *Transfer of Support			
Ecological and Epidemiological Investigation of Crim	ean-Congo hemorrhagic fever virus (C	CHFV) in Azerbaijan.			
	ean congo nomantaga totol mac (c	5, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,			
Source of Support: DTRA					
• •	ward Period Covered: 04/01/2019 – 03	3/31/2021			
Location of Project: Azerbaijan					
Person-Months Per Year Committed to the	Cal: Acad:	Sumr:			
Support: Current Pending	Submission Planned in Near Future	*Transfer of Support			
Project/Proposal Title:					
,					
Source of Support:					
Total Award Amount: Total A	ward Period Covered:				
Location of Project:					
Person-Months Per Year Committed to the	Cal: Acad:	Sumr:			
Support: Current Pending	Submission Planned in Near Future	☐ *Transfer of Support			
Project/Proposal Title:					
Source of Support:					
Total Award Amount: Total A	ward Period Covered:				
Location of Project:					
Person-Months Per Year Committed to the	Cal: Acad:	Sumr:			
Support: Current Pending C	Submission Planned in Near Future				
Project/Proposal Title:					
Source of Support:					
Total Award Amount: Total A	ward Period Covered:				
Location of Project:					
Person-Months Per Year Committed to the	Cal: Acad:	Sumr:			
*If this project has previously been funded by anothe	er agency, please list and furnish inform	nation for immediately pre-			
cedina fundina period.					

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(See GPG Section II.D.8 for guidance on information to include on this form.)

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The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.					
Other agencies (including NSF) to which this proposal has					
Investigator: Julius Keyyu					
Support: Current Pending Submission Planned in Near Future *Transfer of Support					
Project/Proposal Title:					
Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania (current proposal)					
Source of Support: DTRA					
Total Award Amount: \$4,848,483 Total Award Period Covered: 10/1/2019-07/31/2024					
Location of Project: EcoHealth Alliance, Tanzania					
Person-Months Per Year Committed to the Cal: 0.6 Acad: Sumr:					
Support: Current Pending Submission Planned in Near Future *Transfer of Support					
Project/Proposal Title: Eliminating human rabies: impact of enhanced vaccination coverage					
Source of Support:					
Total Award Amount: Total Award Period Covered:					
Location of Project:					
Person-Months Per Year Committed to the Cal: Acad: Sumr:					
Support: Current Pending Submission Planned in Near Future *Transfer of Support					
Project/Proposal Title:					
Source of Support:					
Total Award Amount: Total Award Period Covered:					
Location of Project:					
Person-Months Per Year Committed to the Cal: Acad: Sumr:					
Support: Current Pending Submission Planned in Near Future *Transfer of Support					
Project/Proposal Title:					
Source of Support:					
Total Award Amount: Total Award Period Covered:					
Location of Project:					
Person-Months Per Year Committed to the Cal: Acad: Sumr:					
Support:					
Project/Proposal Title:					
Source of Supports					
Source of Support:					
Total Award Amount: Total Award Period Covered:					
Location of Project:					
Person-Months Per Year Committed to the Cal: Acad: Sumr:					
*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.					

NSF Form 1239 (10/99)



Thrust Area 6 - Cooperative Counter Weapons of Mass Destruction Research with Global Partners FRCWMD

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Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania

PI: Melinda K. Rostal

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ATTACHMENTS FORM

Instructions: On this form, you will attach the various files that make up your grant application. Please consult with the appropriate Agency Guidelines for more information about each needed file. Please remember that any files you attach must be in the document format and named as specified in the Guidelines.

Important: Please attach your files in the proper sequence. See the appropriate Agency Guidelines for details.

1) Please attach Attachment 1	1238-Rostal Statement of Work		Delete Attachment	View Attachment
2) Please attach Attachment 2	1239 Rostal CCHF Quad Chart.		Delete Attachment	View Attachment
3) Please attach Attachment 3	1240-Attachment 3 - CCHF_Fina		Delete Attachment	View Attachment
4) Please attach Attachment 4		Add Attachment		
5) Please attach Attachment 5		Add Attachment		
6) Please attach Attachment 6		Add Attachment		
7) Please attach Attachment 7		Add Attachment		
8) Please attach Attachment 8		Add Attachment		
9) Please attach Attachment 9		Add Attachment		
10) Please attach Attachment 10		Add Attachment		
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12) Please attach Attachment 12		Add Attachment		
13) Please attach Attachment 13		Add Attachment		
14) Please attach Attachment 14		Add Attachment		
15) Please attach Attachment 15		Add Attachment		

ATTACHMENT 3 – SUPPORTING DOCUMENTATION

1) FOREIGN PRINCIPLE INVESTIGATORS AND OTHER MEMBERS OF FOREIGN RESEARCH TEAM.

Complete details and biosketches provided in the Research and Related Senior/Key Person Profile Form

Foreign PIs (alphabetical order):

Dr. Felix Lankester

Assistant Professor, Paul G Allen School for Global Animal Health

Washington State University, Pullman, WA, 99164, USA

Dr. Blandina Mmbaga

Research Director

Kilimanjaro Clinical Research Institute, KCRI 2236 Moshi, Tanzania

Dr. Furaha Mramba

Chief Executive Officer of Tanzania

Veterinary Laboratory Agency, P.O. Box 9254, Dar-es-salaam, Tanzania

Other members of Key Personnel (alphabetical order):

Dr. Justine Assenga

Animal Health Focal Person – One Health Coordination Desk,

Ministry of Livestock and Fisheries, Box 2870, Dodoma, Tanzania

Ms. Jubilate Bernard Minja

Focal Person for Human Health – One Health Coordination Desk

Ministry of Health, Community Development, Gender, Elderly and Children, University of Dodoma, Building No.11, P.O. Box 743, 40478 Dodoma, Tanzania

Dr. Roger Hewson

Scientific Leader - Viral Hemorrhagic Fevers & Arboviruses

Virology & Pathogenesis Group, National Infection Service, Public Health England, United Kingdom

Dr. Julius Dotto Kevvu

Director of Research Development and Coordination, Tanzania Wildlife Research Institute (TAWIRI), Box 661, Arusha Tanzania

Dr. Venance Maro

Chief, Department of Medicine, Kilimanjaro Christian Medical Centre

KCRI 2236 Moshi, Tanzania

Brian James Willett

Professor of Viral Immunology

University of Glasgow Centre for Virus Research Garscube Estate, Glasgow G61 1QH, United Kingdom

Carlos Zambrana-Torrelio

Associate Vice President for Conservation and Health

EcoHealth Alliance, 460 W. 34th St, New York City, NY 10001, USA

2) DESCRIPTION OF RELATIONSHIP BETWEEN PROJECT AND CURRENT RESEARCH EFFORTS OF FOREIGN RESEARCH TEAM

American co-PI Sarah Cleaveland is a Professor of Comparative Epidemiology at the University of Glasgow (UoG) and the leader of the foreign research team at UoG. Co-PI Cleaveland has been working on zoonotic diseases in northern Tanzania for more than 20 years. Co-PI Cleaveland has previously worked with PI Rostal on a related bunyavirales virus, Rift Valley fever virus, as well as co-PI Mmbaga, co-PI Lankester and KP Keyyu. Co-PI Cleaveland has focused her research on identifying animal reservoirs of infection, understanding risk factors for new and emerging infectious diseases, quantifying the burden of disease, understanding infection dynamics in linked human and animal populations, designing cost-effective disease control strategies that benefit public health, livestock economies and wildlife conservation, and exploring innovative strategies for surveillance of emerging and zoonotic diseases.

Foreign co-PI Blandina Mmbaga is the Research Director at the Kilimanjaro Clinical Research Institute (KCRI). Co-PI Mmbaga has been a practicing physician in northern Tanzania for over a decade and is interested in better understanding the burden of tick-borne diseases in the local patient population, specifically that of CCHF. Co-PI Mmbaga supported the creation of the Zoonoses Laboratory at KCRI, which can process both human and animal samples and supports using a One Health approach to determining zoonotic disease risk to populations in northern Tanzania. Co-PI Mmbaga has previously worked closely with co-PIs Cleaveland and Lankester.

Foreign co-PI Furaha Mramba is the Chief Executive Officer of the Tanzania Veterinary Laboratory Agency (TVLA). Co-PI Mramba has collaborated with co-PIs Cleaveland and Lankester previously. TVLA has a mandate to support research and animal diagnostic capabilities – both of which will be met through this proposed project. Co-PI Mramba is a trained entomologist and will support her staff in identifying *Hyalomma* spp. ticks collected by the proposed project. Finally, TVLA supports One Health communication and understands the important role that animals play in the maintenance of CCHFV despite the fact that it is only known to cause diseases in people.

Foreign co-PI Lankester is a professor at Washington State University (WSU) as well as the Vice President of WSU's non-profit subsidiary Global Animal Health Tanzania (GAHT). GAHT is legally registered in Tanzania to facilitate in-country research and support research capacity-building activities on zoonotic infectious diseases. Co-PI Lankester has worked at the intersection of human and domestic animal health for in Tanzania for a decade and has collaborated closely with co-PIs Cleaveland and Mmbaga, and he has previously worked with co-PI Mramba and KP Keyyu.

The Tanzania Wildlife Research Institute (TAWIRI) is the government agency mandated to conduct and coordinate research with wildlife in Tanzania. KP Keyyu has previously worked with co-PIs Cleaveland and Lankester. TAWIRI supports this CCHF project proposal as they understand the importance of investigating the ecology of zoonoses in wildlife, even if they do not affect the wildlife. This in turn supports the One Health collaboration among the Tanzanian partners. TAWIRI has begun collecting additional aliquots of samples for this proposed project to use in assessing the infection rates of CCHF in wildlife.

The Tanzanian One Health Coordination Desk-Prime Minister's Office (OHCD-PMO), has prioritized viral hemorrhagic fevers (which includes CCHF) as one of the six priority zoonoses.

Tanzania is focusing its efforts of threat reduction on these zoonoses and CCHF is counted among them. The OHCD-PMO is tasked with coordinating research efforts on these six zoonoses and their collaboration on this proposed project will support their aims of threat reduction.

Public Health England (PHE) – Porton Down has been conducting research on CCHFV since 1958, but have not yet studied the virus in Tanzania. PHE has a BSL-4 containment laboratory and the capacity to conduct viral neutralization testing for CCHFV. They have experience conducting many laboratory trainings for select agents, including those specifically on CCHFV. PHE has shared reagents and previously collaborated with KP Willett (UoG).

3) FACILITIES, EQUIPMENT, AND OTHER RESOURCES EcoHealth Alliance (EHA)

EcoHealth Alliance is a New York-based 501(c)(3) non-profit institution that conducts scientific research on emerging zoonoses and global health capacity building. EcoHealth Alliance New York headquarters has 10,000 square feet of office space including a meeting room. The scientific staff (34 core scientists, 100+ field staff) is supported by a core admin staff of 18 who are available for work on this project and funded through private donor and federal support. EcoHealth Alliance does not support diagnostic facilities at its core headquarters and works in partnership with a network of leading diagnostic labs both in the U.S.A. and around the world.

EcoHealth Alliance is equipped with fiber optic Internet access and video conferencing facilities to facilitate easy communication between collaborators. EcoHealth Alliance employees have around-the-clock access to servers, VPNs, encryption software, IT support, and all necessary software including Git and Github (Hosted software revision/audit service), Sublime and Vim text editors, Vagrant and Oracle Virtualbox virtual machines, Google Apps (Hosted email and collaboration web based software), Ansible (Server provisioning software framework), Python, NodeJS, and R programming languages, Meteor (Javascript framework), Bash shell scripts, Jenkins (Continuous Integration server), Microsoft Office and Adobe CS6 running on both Apple Mac OS X, Ubuntu linux, and Windows Operating Systems. EcoHealth Alliance has a dedicated quad-core Linux server and another dedicated dual quad-core Mac Pro Server - each with 4TB hard drives. Either server individually or in combination may be used for intensive computational modeling and/or database processing by all the grantees. Access to the cloud and supercomputing services (Amazon) is provided by core funding to EcoHealth Alliance.

EcoHealth Alliance is the headquarters of a global network of over 70 partners that provides exceptional leverage for the core scientists. This network includes staff from: academic institutions at leading national universities; intergovernmental agencies (WHO, OIE, FAO, DIVERSITAS, IUCN); infectious disease surveillance laboratories including BSL-3 and -4 laboratories; national government agency offices and labs; locally-based wildlife conservation organizations in Asia, Africa and Latin America. EcoHealth Alliance is the headquarters of: The Consortium for Conservation Medicine (CCM); the journal EcoHealth; an NSF Research Coordination Network (EcoHealthNET); the IUCN Wildlife Health Specialist Group; and the OIE Wildlife Health Network. EcoHealth Alliance is a voting member of the IUCN and a partner in Columbia University's Earth Institute Center for Environmental Sustainability (EICES) and all senior scientific staff members are Adjunct Faculty at Columbia University's Department of Ecology, Evolution, and Environmental Biology or at the Mailman School of Public Health.

University of Glasgow (UoG)

The Institute of Biodiversity, Animal Health and Comparative Medicine (IBAHCM) is one of seven Research Institutes in the College of Medical, Veterinary & Life Sciences (MVLS) created in 2010 in a major restructure that brings together three biomedical faculties with over 400 academic staff, involved over £100 million invested in research infrastructure and facilities and allows a high degree of integration across departments and disciplines. The Institute has been awarded The Queen's Anniversary Prize for innovative research in global health, an Athena SWAN Institutional Silver Award in recognition of commitment to gender equality for recruitment, career development and progression of our staff and students, the European Commission "Excellence in Research" award and the BBSRC award for Innovator of the Year (2017) in the category of international impact in recognition of its work in Tanzania. Facilities at IBAHCM include office space, computing resources, university library resources with facilities for the CCHF laboratory work provided through the MRC-University of Glasgow Centre for Virus Research (CVR). Academic facilities will also be available through interdisciplinary centers that involve researchers from across the University, including the Boyd Orr Centre for Population and Ecosystem Health, the Glasgow Centre for International Development and the One Health Research in Bacterial Infectious Diseases.

In Tanzania, the Institute has a strong research platform established in partnership with Tanzanian institutions, with facilities that include secure accommodation (a 2-bedroom research house) at the Kilimanjaro Christian Medical Centre, dedicated office space at the Kilimanjaro Clinical Research Institute (KCRI) with access to information and communications technology (ICT) and data management support, and two 4x4 field vehicles for use by project staff, in addition to field vehicles available for zoonoses research at partner institutions. The University of Glasgow research team provided support for establishment of the zoonoses laboratory at the KCRI biotechnology laboratory with capacity for processing and archiving animal samples (including -80°C freezers), microbiology, molecular diagnostics and serological analyses.

The MRC-UoG CVR occupies a state-of-the-art purpose-built facility within the Garscube campus of the University of Glasgow. The CVR provides a well-equipped and intellectually stimulating environment, and has all the features necessary to carry out the proposed project. Excellent infrastructures and equipment are available for molecular biology and virology. These include automatic robotic systems for high throughput assays, confocal microscopy (including live cell imaging), electron and cryo-electron microscopy (the CVR is home to the Scottish Macromolecular Imaging Centre), qPCR machines, phosphoimagers, luminometers, fluorimeters, a nanoparticle detection system and several FACS machines and cell sorters. The CVR's genomics and bioinformatics hub operates an Illumina MiSeq platform and provides dedicated sequencing and bioinformatics analysis support. In addition to extensive category 2 tissue culture facilities, the CVR also has a category 3 high containment suite and insectaries.

Tanzania Veterinary Laboratory Agency (TVLA)

Tanzania Veterinary Laboratory Agency (TVLA) is a government agency focused on promoting animal health welfare through animal disease and vector research, surveillance and diagnostic services to livestock stakeholders in order to enhance food safety, food security and the national economy. TVLA was established under the Executive Agency Act Cap 245 (Revised Edition; R.E 2009) and became operational in July, 2012.

TVLA has 11 laboratory centers that are strategically located to provide services to livestock farmers across the country. Nine of them conduct diagnosis services. In each center there is

diagnostic equipment such as ELISA machines, PCR machines, microscopes, computers, and laboratory buildings. There are 190 working staff. The agency is equipped with 11 networking computers which are linked by SiLabs, a web-based laboratory information management system.

Kilimanjaro Clinical Research Institute (KCRI)

The Kilimanjaro Christian Medical Centre (KCMC) is located in Moshi, Tanzania at the base of Mount Kilimanjaro. KCMC is one of four referral hospitals in Tanzania, and it serves a catchment area of 15,000,000 persons. Research is central to the mission of KCMC, and a robust research infrastructure has been developed under the Kilimanjaro Clinical Research Institute (KCRI). The three Good Samaritan Foundation (GSF) entities have complementary roles in achieving their mission; healing (KCMC), training (KCMU College), and research (KCRI). The vision of KCRI is to be an internationally recognized center of excellence in health research, embedded in the academic medical setting of KCMC, the Tanzanian health care system and connected to international research networks. KCRI provides research training and necessary research infrastructure and logistics for KCMC/KCMU College investigators, and their collaborating partners. KCRI hosts both investigator-initiated single site studies in addition to being a member of multiple consortia such as East African Consortium for Clinical Research (EACCR), Esophageal Squamous Cell Carcinoma African PrEvention research (ESCCAPE), Ministry of Foreign Affairs Denmark (DANIDA), European and Developing Countries Clinical Trials Partnership (EDCTP), PhArmaco VIgilance Africa (PAVIA), and the TB Alliance. KCRI has collaborations with other international universities including Duke University and University of Virginia in the U.S., the University of Glasgow, the London School of Tropical Medicine and Hygiene and St Andrew's in the UK, and St. Radboud University in the Netherlands.

KCRI has been participating in infectious disease studies and clinical trials including those on febrile illness, bacterial zoonosis and antimicrobial resistance. The research institution has the capacity to do blood culture and sensitivity equipped by the BacT/ALERT, recently received a BioFire from the U.S. Department of Defense to conduct a validation analysis on the identification of infectious agents. Through the University of Virginia and CDC, KCRI has analyzed national outbreak samples using the TaqMan array cards using real--time PCR Vii7. The laboratory is also equipped with a whole genome sequencing (WGS) machine (Illumina MiSeq) for performing molecular identification of antimicrobial resistant genes. The laboratory technicians are experienced in conducting febrile illness studies as well as the isolation of bacterial and other organisms. KCRI has a BSL-2 zoonoses laboratory that analyzes human and animal samples for zoonoses including, brucellosis, leptospirosis, and testing for residual antibiotics in poultry products. Additional equipment includes a BSC-II, centrifuge, autoclave, pipettors and other standard laboratory equipment.

KCMC/KCRI have been performing clinical trials on HIV/AIDS drugs as part of the AIDS Clinical Trial Group (ACTG) and the International Maternal Pediatric Adolescent AIDS Clinical Trial (IMPAACT) under NIAID-NIH since 2007. Since 2013, the site has been working under the National Institute of Child Health and Human Development (NICHD) WESTAT for IMPAACT clinical trials studies for maternal, adolescent and pediatric HIV and TB clinical trials. KCRI is interested in extending its activities to include other infectious diseases of public health importance such as malaria, HIV and tuberculosis, emerging and reemerging diseases such as dengue and Chikungunya.

Washington State University (WSU)

The proposed research will leverage existing Washington State University (WSU), research facilities, capacity, and scientific personnel in the U.S. and in Tanzania. The Paul G. Allen School for Global Animal Health is administratively located within the College of Veterinary Medicine on the WSU campus in Pullman, WA. Its facilities include the Allen Center, a 62,000 sq. ft. state-of-the-art biomedical research facility fully equipped for research in molecular biology and infectious diseases, including 5,000 square feet of certified BSL-3 space, two floors of BSL-2 laboratories, private offices for 16 investigators adjacent to the laboratories and open plan work space for graduate students and postdoctoral associates. The Allen Center also provides common areas on each floor, a classroom and conference rooms with capacity for global connection, and a full suite of administrative staff and services. The Allen School administrative team works closely with WSU's central services for all grant administration, including the Office for Research Support and Operations and the Sponsored Programs Services unit.

WSU is legally registered to conduct research in Tanzania and the co-PI, Felix Lankester, and all scientific personnel conducting research in Tanzania have legal approval through Tanzania's Commission for Science and Technology (COSTECH). WSU maintains an office in Arusha to support the co-PIs and other WSU investigators with local procurement, accounting, research permitting, and logistics. The office is equipped with internet-connected and networked computers and uses accounting software fully compliant with WSU standards. Specific to disease surveillance field work, there is a team of trained field staff, led by a veterinarian trained and registered in Tanzania, that is highly experienced in all aspects of field work and data collection.

Field research is supported by five facilities including the WSU office in Arusha for administration, accounting, and logistics; a field center in Seronera (Serengeti National Park), which is close to all of the study sites of the proposed study, and provides telephone communication and living quarters for field teams and visiting project scientists, storage of field equipment, short-term biological sample storage, post-mortem kits, and personal protective equipment; a cold room facility based at the Tanzanian Veterinary Laboratory Agency in Mwanza with the capacity to store vaccines and other temperature sensitive material under monitored conditions; and modern research laboratories at the Nelson Mandela African Institution of Science and Technology (NM-AIST) funded by the Paul G. Allen School for Global Animal Health that provide molecular and serological diagnostic instrumentation and freezers for long-term sample storage. Additionally, WSU provides and supports vehicles required for field research in Tanzania through funding provided to Global Animal Health Tanzania.

Global Animal Health Tanzania (GAHT)

The co-PI Dr. Felix Lankester is based in Arusha, Tanzania where he is a Director of Global Animal Health Tanzania (GAHT), a not for profit non-governmental organization registered in Tanzania to facilitate infectious disease surveillance and research. GAHT occupies a small office space in Arusha from which the project's activities are coordinated. The office is equipped with internet connected computers, printers and other essential office furniture.

GAHT works in close association with the Nelson Mandela African Institute for Science and Technology (NMAIST) whose campus and extensive laboratory facilities are 5 km from the GAHT office. The laboratory facilities, which GAHT has access to, contain molecular and serological diagnostic equipment and sample storage facilities. GAHT owns a field-ready 4-wheel drive vehicle, which is based at the office in Arusha, and three Land Rover Discovery vehicles, which are based at the project house. The team consists of 4 field staff and a Project Manager who is a Tanzanian trained veterinary doctor. Four have been working for GAHT for between five and ten years and all are extremely experienced at carrying out infectious disease field program activities, including data collection using handheld digital devices. In addition, the Project Manager is extremely well connected within the Tanzanian veterinary community and works closely with all of the District Veterinary Officers based in the proposed study site.

GAHT owns a large liquid nitrogen canister, used for storing biological samples prior to virological analyses. There are several nearby facilities (Arusha and Mwanza) with functioning liquid nitrogen compressors that GAHT staff visit regularly to top up the canister. Additionally, they own two - 20°C deep freezers, used for preserving biological samples, which are stored in the dedicated GAHT lab space at the NMAIST lab along with three 12-volt mobile fridge / freezers, used for the transportation and temporary storage of vaccines and other temperature sensitive items. GAHT has contributed to the construction of a cold room facility based at the Tanzanian Veterinary Laboratory Agency lab in Mwanza, western Tanzania. This facility is used by GAHT to store temperature sensitive materials prior to shipment to the field.

One Health Coordination Desk, Dodoma, Tanzania

The One Health Coordination Desk is part of the Office of the Prime Minister (OHCD-PMO) in Dodoma, Tanzania with a mission to reinforce Tanzania's ability to detect, prevent, and respond to emerging pandemics, support Tanzania's commitment to implementing Global Health Security Agenda regulations, and create a solid foundation for effective preparedness and response activities. The OHCD-PMO has office space for the four staff members and is equipped with telephones, internet and computers with Microsoft Office programs for staff.

Public Health England-Porton Down, Wiltshire U.K.

The Public Health England (PHE) is an executive agency, sponsored by the Department of Health and Social Care. It is a distinct organization with operational autonomy that provides government, local government, the NHS, Parliament, industry and the public with evidence-based professional, scientific expertise. PHE employs over 5,000 staff which are mostly scientists, researchers and public health professionals at 8 centers.

The PHE facility at Porton Down focuses on a range of hazardous pathogens including those in hazard groups 3 and 4 which mandate specialist laboratory infrastructure such as Containment Level 3 (CL3) or maximum containment at CL4 for work with infectious agents. PHE-Porton is located 7 miles northeast of Salisbury, Wiltshire, UK. The facility is situated in a rural setting, remote from main population areas. Physical security is assured by a security fence, which completely surrounds the complex. Video cameras are used to monitor sensitive areas of the facility. Two gates provide access for vehicles and security staff man the guardhouses adjoining these gates, 24 hours a day, 7 days a week. Access to the site requires staff members to display a personal security pass. Staff presence on site is monitored through a 'Swipe' record system.

PHE-Porton is recognized as an international leader in work on high containment pathogens. It performs research into microbiological hazards for the UK's Department of Health as well as providing diagnosis & reference facilities for the NHS and emergency response capabilities for the UK collaborating EU laboratories and the World Health Organization (WHO). It has proven research experience in the study of hazard group 3 and 4 viruses, bacteria, Ricketsiae and toxins.

BSL-4 Laboratories: The UK operates a system of linked microbiological safety cabinets. This system was designed for research and diagnostic work involving a range of organisms now categorized as Hazard Group 4 organisms. The established BSL-4 laboratory envelope at PHE-Porton is integrated with an autoclave for solid and liquid waste, designated high containment liquid effluent waste disposal and HEPA filtered supply and extract ventilation systems. There are two BSL-4 suites within PHE-Porton a linked cabinet laboratory line for in vitro virology and a flexible-film containment animal facility. These laboratory suites are located within restricted containment facilities designed to comply with national and international BSL-4 requirements.

The cabinet line system of linked Microbiological Safety Cabinet (MSC) Class III, is designed to separate operators from infectious material handled within them, and prevent the leakage of biological particles. The linked cabinets form a solid shell with gloves fitted along one or two sides to enable material to be handled within them. The gloves are securely fitted over ports so as to provide an effective seal.

The institute is a WHO collaborating center for virus research and reference for a range of BSL4 pathogens. It often accepts international samples couriered in a regulated fashion via packaging and transport requirements set out by UN2814 Category A (infectious substance infecting humans) for diagnostics testing at PHE-Porton (e.g. samples from Spanish CCHF cases in 2018).

Tanzania Wildlife Research Institute (TAWIRI)

The Tanzania Wildlife Institute (TAWIRI) was established by Act of Parliament No. 4 of 1980 (CAP 260 R.E. 2002) with the mandate to conduct, coordinate and oversee wildlife research in Tanzania. The overall purpose of TAWIRI is to advise the Government, Management Authorities and the general public on sustainable conservation and utilization of wildlife resources. The Head Office of TAWIRI is in Arusha Municipality in Northern Tanzania, and TAWIRI has five centers strategically distributed in various zones of Tanzania to cater to specific ecosystems (Serengeti, Kingupira, Njiro, Gombe and Mahale). TAWIRI currently has a total of 104 employees with 37 research staff, of which 21 are PhD holders. The research staff is supported by human resource and administration unit, accounts unit, procurement management unit, internal audit unit, and information and education unit.

Among other functions of TAWIRI as stipulated in the Act, function number four entails TAWIRI to carry out research and investigations on wildlife diseases including zoonoses in order to know their causes and suggest rational methods for preventing and controlling their occurrence. In order to achieve this function, TAWIRI has a veterinary section in the organization structure, which currently has six wildlife veterinarians, two laboratory technicians, and two laboratory attendants. TAWIRI has two veterinary laboratories, one being a field veterinary laboratory that is located in Serengeti national park, and secondly a molecular biology laboratory that is located at the Head Office at Njiro in Arusha. TAWIRI veterinary laboratories are equipped with an ELISA machine, tissue section machine, conventional PCR, a -80°C freezer, four -20°C freezers, 3 liquid nitrogen containers (40-45lt capacity each), a dry shipper, 3

dart guns (pneu darts), 2 wildlife capture nets, mist nets, 4 refrigerators, solar panels, two 40KV generators, 1 autoclave and 4 cool boxes, post mortem kits, and water purification system. The laboratories also have all basic laboratory consumables including pipettes, pipette tips, cryovials, latex gloves, alcohol, flasks, tubes, and ethanol. Most importantly, TAWIRI maintains a wildlife biological specimen bank of tissues, whole blood, EDTA blood, heparinized blood, FTA cards, serum, feces, ticks, worms; the specimens date back two decades. These valuable specimens will be readily available for this important project's retrospective CCHFV analysis in wildlife. TAWIRI also hosts a wildlife population database, which is among the largest wildlife population database in Africa. Also, TAWIRI has a GIS unit with four senior experts in all aspects of spatial data analysis and remote sensing. The unit will be very useful in spatial analysis and interpretation of CCHF ecology.

TAWIRI has 52 computers for research and support staff, internet connection and Wi-Fi facilities, and has 17 field vehicles. All these facilities will be availed for use during project activities, as well as office space for project researchers.

4) SYLLABI FOR WORKSHOPS LISTED IN TECHNICAL PROPOSAL

Proposed One Health Field Team in situ Training Agenda

*Note all participants attending the training who will work with human subjects will have already completed on-line CITI training.

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13:00-14:00	Introduction to CCHF and the CCHF Project
14:00-14:45	Overview of project protocols
14:45-15:00	Break
15:00-16:00	How communities were selected to be
	invited to participate?
16:00-17:00	Specific protocol on arrival at a community

Day 2:

9:00-10:00	Obtaining consent for animal and human work and the ethics of working with human participants
10:00-11:00	Practice obtaining valid informed consent
11:00-12:00	Lunch
12:00-13:00	Overview of project protocols
13:00-14:00	CCHF Project questionnaires
14:00-14:15	Break
14:15-16:00	Practice giving questionnaires

Day 3:

9:00-9:30	The ethics of working with animals
9:30-10:00	Team member safety in the field
10:00-10:30	Animal safety and handling
10:30-10:45	Break
10:45-11:15	Biohazardous waste management in the field
11:15-12:00	Personal Protective Equipment
12:00-12:30	Sample management and handling

Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania/Rostal BTRP –Thrust Area 6, CC WMD

Proposed CCHF Laboratory Diagnostics Workshop Syllabus for TVLA

	Day 1	Day 2	Day 3	Day 4	Day 5
9:00-10:00	Introduction to CCHF the syndrome	CCHFV ecology/epidemiology	CCHFV positive diagnostic test - what do we do now?	One Health in a laboratory setting	Producing recombinant antigen for human
10-10:30	Coat ELISA plates for Dowall - human	I. Considerations for potentially working with select agents (CCHFV)	PCR Standard Curve development	Group Photo	ELISA
10:30-11:00	8REAK	BREAK	BREAK	BREAK	BREAK
11:00-12:00	CCHFV - the etiological	LAB PRAC: CCHFV ELISA training - washing, blocking	LAB PRAC: CCHFV PCR screening known control samples	Preventing 200noses in the laboratory	FXAM: Written to test
12:00-13:00	agent and biosecurity	12:00-12:30 II. Considerations for potentially working with select agents (CCHFV)	CCHF is a human disease, why is animal health involved? One Health	LAB PRAC: CCHFV ELISA training - run ELISA	knowledge of the relevance of CCHFV and its diagnostics
13:00-14:00	LUNCH	12:30-13:30 LUNCH	LUNCH	13:00-13:45 LUNCH	
14:00-15:00	Safe handling of biohazardous samples	13:00 -14:00 LAB PRAC: CCHFV ELISA training Sample dilution 14:00 -15:15	PCR result interpretation	13:45-15:00 LAB PRAC: CCHFV ELISA training - run ELISA	LUNCH 13:30-14:30
15:00-15:15	BREAK	15:15-15:30 BREAK	BREAK	BREAK	
15:15-16:00	Overview of diagnostic tests available for CCHFV	15:30-16:00 LAB PRAC: CCHFV ELISA training - Add Conjugate	LAB PRAC: CCHFV PCR testing of blind	LAB PRAC: CCHFV ELISA training - run ELISA	Closing Remarks and Discussion 15:45-16:00 BREAK
16:00-16:30	LAB PRAC: CCHFV PCR training - Extraction of RNA	III. Considerations for potentially working with select agents (CCHFV)	samples	CCHF - communicating	Awarding of
16:30-17:00	from vectors	LAB PRAC: CCHFV ELISA training - Stopping and reading plates	LAB PRAC: CCHEV Multispecies ELISA - Coat ELISA Plates	CCHF results to the right stakeholders	certificates.

Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania/Rostal BTRP –Thrust Area 6, CC WMD

Proposed CCHF Laboratory Diagnostics Workshop Syllabus for KCRI

	Day 1	Day 2	Day 3	Day 4	Day 5
9:00-10:00	Introduction to CCHF the syndrome	CCHFV ecology/epidemiology	CCHFV positive diagnostic test - what do we do now?	Communication of CCHF results	Producing recombinant
10-10:30	Coat ELISA plates for Dowall - human	I. Considerations when potentially working with select agents (CCHFV)	III. Considerations when potentially working with select agents (CCHFV)	PCR Standard Curve development	antigen for human ELISA
10:30-11:00	BREAK	BREAK	BREAK	BREAK	BREAK
11:00-12:00	CCHFV - the etiological	LAB PRAC: CCHFV ELISA training - washing, blocking	LAB PRAC 2: CCHFV ELISA training - washing, blocking	LAB PRAC: CCHFV PCR screening known control samples	EXAM: Written to test
12:00-13:00	agent and biosecurity	12:00-12:30 II. Considerations when potentially working with select agents (CCHFV)	12-12:30 When to test for CCHF?	Protocols for isolation of CCHF patients	knowledge of the relevance of CCHFV and its diagnostics
13:00-14:00	LUNCH	12:30-13:30 LUNCH	12:30-13:30 LUNCH	LUNCH	
14:00-15:00	Safe handling of biohazardous samples	13:00 -14:00 LAB PRAC: CCHFV ELISA training Sample dilution	13:00 -14:00 LAB PRAC 2: CCHFV ELISA training Sample dilution	PCR result interpretation	LUNCH 13:30-14:30
15:00-15:15	BREAK	15:15-15:30 BREAK	BREAK	BREAK	
15:15-16:00	Overview of diagnostic tests available for CCHFV	15:30-16:00 LAB PRAC: CCHFV ELISA training - Add Conjugate	15:30-16:00 LAB PRAC 2: CCHFV ELISA training - Add Conjugate		Closing Remarks and Discussion 15:45-16:00 BREAK
16:00-16:30	LAB PRAC: CCHFV PCR	LAB PRAC 2: Coat ELISA plates for Dowall - human; Repeat testing	Group Photo	LAB PRAC: CCHFV PCR testing of blind samples	Awarding of
16:30-17:00	training - Extraction of RNA from vectors	LAB PRAC: CCHFV ELISA training - Stopping and reading plates	LAB PRAC 2: CCHFV ELISA training - Stopping and reading plates		certificates.

Proposed CCHF Policy Workshop Syllabus for OHCD-PMO

	Day 1	Day 2	Day 3
8:30-9:00	Introduction to CCHFV and a synopsis of its history	CCHF in East Africa	
9:00-9:15	Official opening		Crown Morle
9:15-9:30	Workshop objective, outputs and outcomes	Group Work: What does	Group Work: Developing concrete multisectoral
9:30-10:15	On Health aspects of infectious diseases in Tanzania	success look like? (metrics)	plan/priorities to control threat of CCHF in Tanzania
10:15-11:00	Introduction to CCHFV	Group Work: A systematic approach to address CCHF I	. Com in runzuma
11:30-11:15	BREAK	BREAK	BREAK
11:00-12:00	CCHF Project in a nutshell I	Group Work: A systematic approach to	Consensus of Policy recommendations
12:00-13:00	CCHF Project in a nutshell II	address CCHF II	by the group
13:00-14:00	LUNCH	LUNCH	LUNCH
14:00-14:15	Group Photo		Consensus of Policy
14:15-14:45	CCHF Syndrome and impacts	Group Work: How can CCHF threat reduction	recommendations by the group
14:45-15:15	Tanzania's priority pathogens and relevance of CCHF	promote progress on other priorities?	14:45-15:00 BREAK
15:15-15:30	BREAK	BREAK	15:00-16:30 Closing
15:30-16:30	Group Work: Identify the Ministries that play a key role in controlling CCHF and Defining policy questions to reduce CCHF impacts		remarks, discussion, awarding of certificates.

Post-Doctoral Fellow Mentoring Plan

Summary: The one-year fellow from Tanzanian will be based in New York City at EcoHealth Alliance's (EHA) office. Mentorship will be provided by PI-Rostal and Senior Personnel-Zambrana-Torrelio. EcoHealth Alliance comprises a multi-disciplinary group of 34 scientists, including theoretical ecologists, veterinarians, economists, public health specialists and social-scientists, which will provide exposure to a myriad of different techniques for statistical analysis.

Candidate search: We will recruit a Tanzanian that has completed a Ph.D. or equivalent doctoral degree. We will include specific language in our job postings expressing a preference for candidates with experience in conducting ecology or epidemiology in Tanzania. The candidate will be recruited via a recommendation from partner institutions and/or through posted advertisements for the position in Tanzania and at specific Institutions such as Nelson Mandela University or Sokoine University of Agriculture. Final acceptance will be based on assurances of the candidate's commitment to work in Tanzania at the completion of the fellowship.

Orientation: Orientation will include in-depth conversations between PIs Rostal and Karesh, KP Zambrana-Torrelio and the post-doctoral fellow. Mutual expectations will be discussed and agreed upon in advance. Orientation will include discussion of productivity, including the importance of scientific publications, ethics in research, conflict of interest and work with international collaborators.

Development of Core Competencies: We have developed a one-year multi-disciplinary fellowship that incorporates training in geographic information systems, remote sensing, and spatial ecological analyses. The fellow will become proficient in the following competencies: key concepts in spatial analysis (e.g. vector vs raster), principles in remote sensing, key concepts in infectious diseases, spatial autocorrelation, integrating space and infectious diseases, reproducible research, and open source tools (e.g. R, QGIS, which will allow the fellow to continue his/her work in the future without requiring expensive analytical software).

Supplementary training: At EHA, the fellow will also be trained on the preparation of manuscripts for scientific journals, grant writing and presentation skills. He/she will participate in weekly a journal club/lab meeting to aid scientific development, and will be expected to present his/her research at EHA office, at that year's stakeholder meeting in Tanzania and at least one local or regional conference. The fellow will have to the opportunity to attend seminars hosted by EHA's partners in New York City including Mailman School of Public Health and the Department of Ecology, Evolution and Environmental Biology at Columbia University, and the American Natural History Museum (AMNH). These institutions hold seminars in different topics through the year. The post-doctoral fellow will also have the opportunity to meet with senior researchers working in the field of infectious diseases and One Health.

Experience with Preparation of Grant Proposals: In collaboration with EHA's staff, the post-doctoral fellow will be involved in writing proposals. The researcher will have an opportunity to learn best practices including identification of key research questions, definition of objectives, description of approach and rationale, and construction of a work plan, timeline, and budget.

Publications and Presentations: The fellow will be expected to present and submit publications related to the grant. These will be prepared under the direction of PIs Rostal and Karesh and KP Zambrana-Torrelio and in close collaboration with Co-PIs. The fellow will receive guidance and

Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania/Rostal BTRP –Thrust Area 6, CC WMD

training in the preparation of manuscripts for scientific journals and funding to present results at a conference.

Success of the Mentoring Plan: Performance of the fellow will be assessed by monitoring by tracking his/her progress toward his/her career goals through semi-annual performance reviews

5) FOREIGN PI AND KEY PERSONNEL LETTERS OF COLLABORATION

TANZANIA VETERINARY LABORATORY AGENCY

Tel:+255 22 2861152

Fax:+255 22 2864369 Email: ce@tvla.go.tz



Mandela Road, Temeke Veterinari, Po. Box 9254, Dar es Salaam, TANZANIA.

TVLA

18th January 2019

Dr. Melinda K. Rostal Eco Health Alliance 460 W 34th St FL 17 New York, NY 10001

Dear Dr. Rostal,

I am writing this letter in support of the "Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania" proposal. As co-PI of the proposed project, I agree to undertake the tasks assigned to me or my organizations, as described in the project narrative of the proposal, and I commit to provide or make available the resources specified therein. As a co-PI, I feel that it is very important for animal health experts work directly with human health professionals toward understanding of the public health impact of CCHF in Tanzania. This project will strengthen the One Health communication between these two sectors.

This project aligns with the work that TVLA is mandated to conduct research in animal diseases and also laboratory analyses on animal diagnostic samples. This project will support our Arusha Centre laboratory and will strengthen its capacity through personnel training and equipment installation. The key factor among these is the installation of a generator at the laboratory that will permit work to be ongoing during electrical outages and maintain the integrity of our sample bank. Additionally, TVLA will host the animal laboratory workshop on CCHF in the third year of the project, which will enhance our relationship with other laboratories. Our Arusha Centre will support the diagnostic and entomological work that is being conducted through this project. I look forward to working closely with you and EcoHealth Alliance and strengthening my relationship with co-PIs Mbaga, Cleaveland and Lankester – whom I have worked with for several years and on several projects. I am confident enough that the team assembled by PI Rostal will successfully execute the project portrayed in the proposal should it be selected for funding.

Thank you

Sincerely yours,

Dr Furaha Mramba MEDICAL ENTOMOLOGIST TANZANIA VETERINARY LABORATORY AGENCY P.O.BOX 2236 Moshi, Tanzania Telephone: 255-27-2754201

Fax: 255-27-2753368

Academic Centre for Evidence Based Health Interventions An institution of the Good Samaritan Foundation Email: kcriadmin@kcri.ac.tz Website: http://www.kcmc.ac.tz Website: http://www.kcri.ac.tz

Date: March 5, 2018

Dr. Melinda K. Rostal

EcoHealth Alliance

460 W 34th St

FL 17

New York, NY 10001

Dear Dr. Rostal,

I am writing this letter in support of the "Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania" proposal. As co-PI of the proposed project, I agree to undertake the tasks assigned to my organizations and myself, as described in the project narrative of the proposal, and I commit to provide or make available the resources specified therein. I have been working in clinical medicine for the past 15 years and Research for the past 10 years. At KCRI we have made significant strides in understanding the burden of zoonotic diseases in Tanzania, but have not yet initiated research on the neglected field of tick borne zoonoses, such as CCHF. I believe this research is critical to improving public health and has merit in improving our understanding of CCHF epidemiology in the region.

CCHF has the potential to occur in Tanzania, especially as we know it occurs with relative frequency in Uganda, and gaining a baseline understanding of the exposure level and exposure risks in people is necessary. This work will support our new Zoonoses Laboratory and it will provide opportunity to improve Tanzania's public health system by training laboratory technicians and providing the assay reagents to their laboratory. I think it is important that this project be initiated and maintained to ensure training is provided year after year to the technicians in our institutions and in the public health laboratories around the northern zone. KCRI with experience of training will host several proposed training to the public health institutions and KCRI staff, trainees and facilitators as needed will utilize infrastructure available. The facility will also be available for sample analysis and storage of collected materials.

The project will strengthen the One Health relationships among the PI and Key Personnel institutions, particularly in animal and public health and in wildlife. I foresee significant mutual benefits as our zoonoses program will benefit and we will provide our expertise to guide the work with human subjects. I look forward to working closely with you and EcoHealth Alliance and strengthening my relationship with co-PIs Cleaveland and Lankester – whom I have worked with for several years and on several projects. I am confident that the team assembled by PI Rostal will successfully execute the project portrayed in the proposal should it be selected for funding.

Sincerely,

Blandina T. Mmbaga MD, Mmed, PhD

Co-investigator

Director KCRI

March 14th 2019

To Whom It May Concern

RE: Letter of support for Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania

I am writing this letter in support of the proposal entitled "Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania". As co-PI of the proposed project, I agree to undertake the tasks assigned to me or my organization, as described in the project narrative of the proposal, and I commit to provide or make available the resources specified therein.

I have been conducting research on infectious diseases in Tanzania for more than 20 years with an increasing emphasis and focus on One Health approaches to reduce the threat of zoonotic diseases. As such, this proposal on CCHF aligns very closely with the research interests of our Institute as well as Tanzanian partner institutions, and I am very excited by the potential of the project to generate valuable, timely and informative insights on this emerging disease threat.

CCHF is among the viral haemorrhagic fevers that have been identified as a high priority in Tanzania, but very little is known about the disease in Tanzania. As far as I am aware, this will be the first comprehensive investigation in Tanzania of CCHF infection patterns in multiple host species, and associated risk factors in people. In addition, the project is pursuing an interesting hypothesis as to how environmental changes impact the prevalence of the virus and the tick vector. The project will provide training and support for local laboratories to implement CCHF diagnostics and will also help strengthen capacity for tackling tick-borne diseases, which comprise a very important group of emerging diseases. I have a long-standing relationship with our collaborators at TVLA, KCRI and TAWIRI and, through our zoonoses research programme, work closely with the One Health Coordination Desk in Tanzania.

I am confident that the collaboration established within this proposal will strengthen ties both among Tanzanian institutions and between the US and UK institutions. I have worked closely with Dr. Rostal during the past three years as her advisor and will continue to do so while she completes her PhD in epidemiology in the summer of 2019. During this time, she has simultaneously and successfully managed the "Understanding Rift Valley Fever in Republic of South Africa" project as a co-PI (funded by DTRA BTRP/CBEP), and she has my full confidence and support as the PI for this CCHF project.

This project will include key stakeholders in the Tanzanian government at both the national and regional level and provide fundamental data required to support the government in understanding and responding to the threat of a high-priority zoonotic disease.

Yours sincerely,

Prof. Sarah Cleaveland

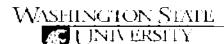
Professor, Comparative Epidemiology Graham Kerr Building

University of Glasgow Glasgow G12 8QQ

U.K.

Email: sarah.cleaveland@glasgow.ac.uk

Tel: +44 (0) 784 1248374



March 14, 2019

Dr. Melinda K. Rostal EcoHealth Alliance 460 W 34^a St FL 17 New York, NY 10001

Dear Dr. Rostal,

I am writing this letter in support of the "Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania" proposal. As co-PI of the proposed project, I agree to undertake the tasks assigned to me or my organizations, as described in the project narrative of the proposal, and I commit to provide or make available the resources specified therein. Based in East Africa, I have been conducting research on zoonotic diseases in Tanzania for the past 10 years. As a representative of Washington State University and Global Animal Health-Tanzania, I have developed a relationship with the One Health Coordination Desk. I believe this project will strengthen that relationship by supporting the One Health Coordination Desk and providing critical data on a priority zoonotic disease. I have worked previously with co-PIs Mbaga and Cleaveland, and Key Personnel Keyvu and Mramba, and I believe that this team has the skills to successfully complete the project objects. Given the lack of research on tick borne zoonoses in Tanzania, specifically for CCHF, this project will be key to providing critically needed data on the epidemiology and ecology of CCHF. Additionally, over the past ten years I have worked closely with the regional veterinary and medical laboratories in northern Tanzania, which, although staffed with enthusiastic personnel, have suffered from a chronic lack of investment and provision of staff training. As such I am very excited that the project will improve capacity of these regional laboratories to conduct molecular and serological testing for CCHF. This capacity development will have a lasting impact on health surveillance in the region.

Yours sincerely,

Felix Lankester

Clinical Assistant Professor

Paul G. Allen School for Global Animal Health

Global Animal Health Tanzania

P.O.Box 1642, Arusha Tanzania

The Paul G. Allen School for Global Animal Health: Improving Public Health and Catalyzing Human Opportunity PO Box 647090, Pullman, WA 99164-7090 Fax: 509-335-6328 www.globalhealth.wsu.edu

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Mandela Road, Temeke Veterinary, P. O. Box 9254 DAR ES SALAAM.

TVLA

⁷ March, 2019

Melinda Rostal Senior Research Scientist EcoHealth Alliance New York, NY 10001

Dear Dr. Melinda,

Re: LETTER OF SUPPORT FOR THE UPCOMING PROJECT ENTITLED "A ONE HEALTH APPROACH TO UNDERSTANDING THE EPIDEMIOLOGY OF CRIMEAN-CONGO HEMORRHAGIC FEVER VIRUS IN TANZANIA"

On behalf of the Ministry of Livestock and Fisheries, I write to express my support of the proposed project "Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania" with Dr Melinda Rostal as the Principal Investigator. This interdisciplinary Tanzania to develop evidence-based strategies for identifying Crimean Congo virus which is an emerging priority heamorrhagic fever that can be spread from animals, especially livestock, to humans.

In my capacity as a Chief Executive of Tanzania Veterinary Laboratory Agency of which TVLA Centre in Arusha where the project will be conducted, I will therefore give all the support which will give us the results that will lead into disease interventions, I am therefore extending my personal support and cooperation to the project.

Yours sincerely,

Dr Joseph Masambu

For Chief Executive
Tanzania Veterinary Laboratory Agency

UNITED REPUBLIC OF TANZANIA MINISTRY OF LIVESTOCK AND FISHERIES

Telegram: Mifugo Tel: +255 26 2322611 Fax: +255 22 2861908

Email: ps@mifugo.go.tz

In reply please quote



Nyerere Road NBC Building P.O. Box 2870, 40487 DODOMA 11th February 2019

Dr. Melinda K. Rostal EcoHealth Alliance 460 W 34th St FL 17 New York, NY 10001

Dear Dr. Rostal,

RE: ONE HEALTH COORDINATION DESK TO SUPPORT CRIMEAN-CONGO HAEMORRHAGIC FEVER PROJECT

I am writing in my capacity as Animal Health Focal person at the One Health Coordination Desk, Tanzania in support of the "*Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania*" proposal. This proposal is focused on obtaining fundamental baseline data on a priority zoonotic disease for Tanzania (viral hemorrhagic fevers) as identified by the One Health Coordination Desk and collaborators. We support this proposal and will be engaged in the project, which will ensure that the Government of Tanzania will be kept appraised of the project's work, results and recommendations. We will co-lead the policy workshop, which will bring together relevant stakeholders to develop policy recommendations based on the outcomes of the field study. We support the involvement of public health, veterinary health and wildlife and environmental health experts in this project and believe that this will strengthen One Health communication amongst these sectors. It will also provide valuable training opportunities for students and young scientists in Tanzania. The One Health Coordination Desk agrees to support the project as described in the proposal. We believe the proposed scientific investigation will provide valuable information on the epidemiology and ecology of CCHFV and importantly conduct the first serosurvey of CCHFV in people in Tanzania.

Sincerely,

.

Dr. Justine Alphonce Assenga For Director of Veterinary Services



Tanzania Wildlife Research Institute

Head Office P.O. Box 661, Arusha, Tanzania

Tel.: +255 (0) 27 254 9571 / 254 8240; Fax + 255 (0) 27 254 8240

E-mail: info@tawiri.or.tz Website: www.tawiri.or.tz

Our Ref: TWRI/RG/22/VOL.63/88/12

Your Ref:

Date: 10th January, 2019

Dr. Melinda K. Rostal EcoHealth Alliance 460 W 34th St FL 17 New York, NY 10001

Dear Dr. Rostal.

RE: LETTER OF SUPPORT FOR A PROPOJECT PROPOSAL

Please refer to the above subject.

The Tanzania Wildlife Research Institute (TAWIRI) is a Parastatal organization under the Ministry of Natural Resources and Tourism (MNRT) with the mandate to conduct, coordinate and oversee wildlife research in Tanzania.

This letter is to support the project proposal titled "Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania". I hereby agree to undertake the tasks assigned to me or my organization, as described in the project narrative of the proposal, and I commit to provide or make available the resources specified therein. Crimean Congo hemorrhagic fever (CCHF) illustrates the importance of using a One Health approach to investigate zoonotic pathogens – particularly as animals are the reservoir for CCHF, yet are unaffected themselves by the virus. Therefore it is important to engage veterinary and conservation scientists to understand the ecology and epidemiology of an important public health threat. I believe this project will strengthen the One Health ties between TAWIRI, Tanzania Veterinary Laboratory Agency (TVLA) and Kilimanjaro Clinical research Institute (KCRI), and support the aims of the One Health Coordination Desk at the Prime Minister's Office in Tanzania.

I am looking forward to a fruitful collaboration and implementation of the project.

Yours sincerely,

Dr. Julius D. Keyyu

- MIL - Carpy

DIRECTOR OF RESEARCH-TAWIRI Email: julius.keyyu@tawiri.or.tz

Cell: +255 754 892020

March 1, 2019

Dr. Melinda K. Rostal EcoHealth Alliance 460 W 34th St FL 17 New York, NY 10001

Dear Dr. Rostal,

I am writing this letter in support of the "Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania" proposal. As co-PI of the proposed project, I agree to undertake the tasks assigned to me or my organizations, as described in the project narrative of the proposal, and I commit to provide or make available the resources specified therein. Global Animal Health Tanzania (GAHT) was established to facilitate zoonotic disease research, such as the proposed project. GAHT has experience in coordinating project activities and logistics, has worked with many other Tanzanian institutions and has an office conveniently located in Arusha. I support the scientific, capacity building and relationship-building aspects of the proposed project and believe that it will contribute to reducing the risk of Crimean-Congo hemorrhagic fever in Tanzania.

Sincerely,

Dr. Felix Lankester

Global Animal Health Tanzania E: lankesterf@vetmed.wsu.edu



National Infection Service /

Research: Virology & Pathogenesis Group

WHO CC Porton Down, Salisbury, SP4 0JG, UK T +44 (0)1980 612 390

www.gov.uk/phe



Dr. Melinda K. Rostal EcoHealth Alliance 460 W 34th St FL 17

New York, NY 10001

March 14, 2019

Dear Dr. Rostal,

I am writing this letter in support of the "Crimean-Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania" proposal. I agree to undertake the tasks assigned to our group in the project narrative of the proposal, and I commit to provide or make available the resources specified therein. I have a keen interest in CCHF and support the transfer of any low containment diagnostic assays that may be used in Tanzania. While the main focus of our work in this project will be at BSL4 and therefore not easily transferable, other aspects of our work can be carried out at low containment and may be reproduced in BSL-2 laboratories. I look forward to expanding collaboration to our Tanzanian colleagues. I believe this project will not only provide critical laboratory capacity in Tanzania, but it will also answer critical epidemiological questions regarding the epidemiology of CCHF in a region where it has not previously been studied.

Professor Roger Hewson

Scientific Leader: Arboviruses & Viral Haemorrhagic Fevers

Head: WHO Collaborating Centre for Virus Reference and Research (Special Pathogens)

UNITED REPUBLIC OF TANZANIA PRESIDENT OFFICE REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

Telegrams: "REGCOM"

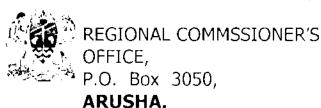
Telephone: 2545608/2502289/2545870

Fax No. **2545239**

E-Mail: <u>rasarusha@yahoo.com</u> E-Mail: <u>ras.arusha@pmoralq.go.tz</u>

Website: www.arusha.go.tz

In reply please quote:



Ref. No. RMO/DC.18/110/01A/136

25/01/2019

Dr. Melinda K. Rostal EcoHealth Alliance 460 W 34th St FL 17

New York, NY 10001

Dear Dr. Rostal,

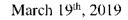
I am writing this letter in support of the "Crimean Congo hemorrhagic fever: Reducing an emerging health threat in Tanzania" proposal. Given that there have been several cases of CCHF in Uganda recently and that the tick vector is present here in Tanzania, I believe it is very important to conduct the fundamental research proposed in this study. These baseline data, in addition to the laboratory diagnostic training and the transfer of the CCHFV serological reagents to the regional health laboratory, will strengthen our ability to diagnose CCHF. The potential for human-to-human transmission in health care facilities highlights the importance of accurately identifying the virus in infected patients to ensure sufficient protective measures are taken by our staff.

Sincerely,

Dr. Wedson A. Sichalwe

Do James

For. REGIONAL ADMINISTRATIVE SECRETARY ARUSHA





Title: Crimean-Congo Hemorrhagic Fever: Reducing an Emerging Health Threat in Tanzania

Funding Opportunity: HDTRA1-14-24-FRCWMD-BAA

To whom it may concern:

We request that this phase II application be assigned to be reviewed by the following:

Defense Threat Reduction Agency, Biological Threat Reduction Program Thrust Area
6—Cooperative Counter WMD Research with Global Partners

This program has established a One Health team of Tanzanian and international partners and proposes to determine and assess the risk of Crimean-Congo hemorrhagic fever virus (CCHFV) infection to people across different levels of environmental disturbance. The program also proposes to determine the CCHFV seroprevalence in people, cattle and wildlife as well as investigate the abundance of the vector ticks and environmental correlates associated with higher abundance and seropositivity. This program also proposes to establish CCHFV diagnostics at regional public and animal health laboratories, develop policy recommendations and establish relationships among East African scientists working on CCHF and with international experts on CCHF, thereby reducing the risk of a CCHF outbreak in Tanzania.

We thank you for your consideration of our request.

Sincerely,

Melinda Rostal DVM, MPH

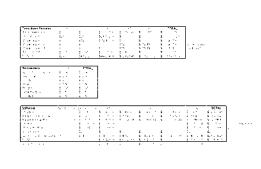
Senior Research Scientist

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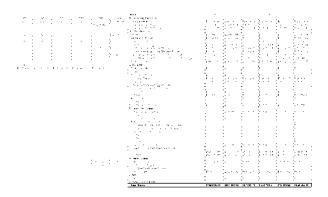


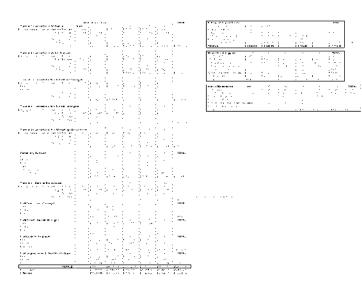
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ioTotal				\$ 86,580.70	\$ 54,713,88	5 4,701 89	5 22,208 54	\$ 8,252.53	<u> </u>			
ab supplies for workshop				Υı	Y2	Y3	OYI	OY2	TOTAL			
opendo4 lubes	5 93.9C	3				\$ 279.00			\$ 279.0G			
LISA plates	5 138 4C	2				\$ 276.80			\$ 276.80			
iter sipette Ls 200L	5 191.70	1				\$ 191.70			\$ 191.7G			
iter sipette Ls 1000uL	\$ 227.00	1 il	•			\$ 227.00	I		\$ 227.0G			
pette lips 1000uL	5 129.10	1 il				\$ 129.10	I		\$ 129.10			
Settle ligs 200uL	5 79.50	2				\$ 158.00	I					
sette lips 1000uL	\$ 76.50	1 2				\$ 152.00	I		\$ 152.00			
nipping and handing	- 75.20	1				5 05.59	<u> </u>	<u> </u>				
usTotel	<u> </u>	_	-	5 .	s .		S -	S -	\$ 1519			
DE SCAL				· ·		9 ,C 9	a -	4 -	φ 1318	1		
				374	1/2	I 93	0.74	0.24	1			
reakdown for Justification				Y1	Y2	Y.3	OV1	OY2	ł			
rld supp ins					\$ 35,116.77	5	\$ 10,973 92		l			
n peng					\$ 15,483.99	5	\$ 5,475.65		Į.			
Computers				\$ 8,047.34		5	\$ 2,480.79	5 4,876.00	Į.			
ab infrastructure/large items					\$	\$	\$	\$!			
				S 1.500.00	\$ 1,545.00	6 2 142 70	C 3 374 18	\$ 9,976.53	1			
upplies for Grad students otal					5 54,713.8B				ł			

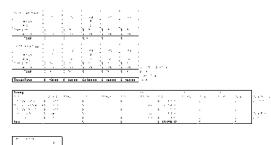
	5	86,880.70	5	54,713.8B	5	4,701.89	5	22.208 54	5 8	8,252.53
Feld supply										
breakdown	٧;		Y2		Y3		0	Y1	OYZ	?
samping										
supplies	5	8,217.89	5	7.682.96	5		5	5,276 37	\$	-
PPE	5	15,558.46	5	15,737,84	5		5	1,755 42	\$	-
ncentive	\$	5.500.00	ŝ	5.150.00	ŝ		9	1,745.36	\$	-
Tablets	\$	1.531.84	5	1.356.80	5		9	505.43	\$	-
Traccing and	\$	5.709.87	ŝ	4.659.13	ŝ		5	693.34	\$	-
Total	5	39,328.06	4	35,116.77	9		ş	16,973.92	s	





Visa and Permit	Y1	Y2	Y3	Y	4	Y5			
COSTech application fee		50	50	50	50	50			
COSTech clearance fee	3	00	300	300	300	300			
Research fees (non-Tanzanian)	18	800	1800	1800	1800	1800	9000		
TAWIRI Protected Area Permit	20	000	2000				4000		
Shipping samples				300	300	300	900		
KCMC ethics approval	9	00					500		
NIMR - submit protocol	5	00					500		
NIMR - application fee	1	.00					100		
NIMR - Expedited Review	10	000					1000		
NIMR - Renewal			100	100	100	100	400		
NIMR - amendment	6	00	300		300		1200		
Hummingbird IRB	20	000	2000	2000	2000	2000	10000	27600	
Cost per Person	Y1	Y2	Y3	Y	4	Y5			
Rostal EHA	41	50	4150	2150	2150	2150	14750		
Field Coordinator EHA	41	.50	4150	2150	2150	2150	14750		
Cleaveland UoG		0	2150	2150	2150	2150	8600	\$	89,750.00
Technician UoG	21	.50	2150	2150	2150		8600		
Lankester SU	41	50	4150	2150	2150	2150	14750		
Veterinarian WSU		50	50	0	0	0	100		
Field Assistant WSU		50	50	0	50	0	150		
PhD Student WSU		50	50	0	0	0	100		
Masters¹ students EHA		0	50	100	100	50	300		
Post-doctoral fellow		0	0	0	0	50	50	62150	

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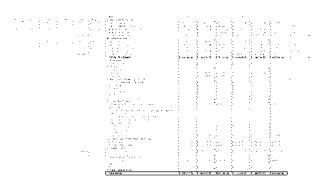
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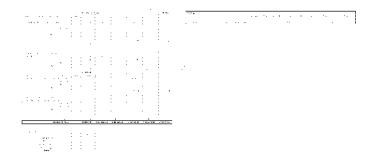
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