Southeast Asia

Spread filoviruses from flying foxes in reliable surveillance strategy in non-viruses in Southeast Asia

Modeling Epidemic Spillover and Persistence of fecal shedding of paramyxoviruses and Receptor analysis of bat coronavirus using pseudovirus

Project Title
Modelling Disease Consequences of Agricultural Intensification in Africa

Host Organization
EcoHealth Alliance

Graduate Level
Undergraduate / Graduate

Openings
1

Project Description
EcoHealth Alliance (EHA) requests an EcoHealth Net researcher to participate in work modeling the emergence of diseases in Africa as a consequence of agricultural intensification. The researcher will work with EHA scientists on a collaborative project with the Food and Agricultural Organization (FAO) to model health effects of future scenarios of livestock production, focusing on MERS, avian influenza, and emergence of new unknown diseases. The researcher will participate in this work through data analysis, simulation modeling, literature reviews, and writing policy recommendations. The researcher will be mentored in advanced skills in epidemiological modeling and data science. The researcher will be embedded in a team in a dynamic and multidisciplinary research environment, and be expected to participate in meetings and research discussions. The candidate should have strong data interpretation and writing skills, have completed graduate-level coursework in statistics and/or epidemiological or ecological modeling, and have experience using the R programming knowledge. The candidate should have interest and some knowledge of infectious diseases.

Ideal dates of assignment
April-August 2017

Location (City,Country)
New York, NY

Paramyxoviridae evolution

Wuhan Institute of Virology, Chinese Academy of Sciences

Study of paramyxoviruses and filoviruses from flying foxes in Southeast Asia

Faculty of Medicine, Chulalongkorn University

Regional surveillance of fruit bat viruses in Southeast Asia

Wuhan Institute of Virology, Chinese Academy of Sciences

Receptor analysis of bat coronavirus using pseudovirus

Wuhan Institute of Virology, Chinese Academy of Sciences

Project Description

Persistence of focal shedding of Pseudogymnoascus destructans and evaluation of pooled guano as a reliable surveillance strategy in non-torporid bats

USGS National Wildlife Health Center

Undergraduate / Graduate

1

Ideal dates of assignment
April-August 2017

Location (City,Country)
Madison, WI

Modeling Epidemic Spillover and Spread

University of California, Davis

Undergraduate / Graduate

1

Ideal dates of assignment
April-August 2017

Location (City,Country)
Davis, California

Project Title

Academy of Sciences USGS National Wildlife Health Center

Study of paramyxoviruses and filoviruses from flying foxes in Southeast Asia

Faculty of Medicine, Chulalongkorn University

Receptor analysis of bat coronavirus using pseudovirus

Wuhan Institute of Virology, Chinese Academy of Sciences

Regional surveillance of fruit bat viruses in Southeast Asia

Wuhan Institute of Virology, Chinese Academy of Sciences

Paramyxoviridae evolution

EcoHealth Alliance

Graduate Level
Undergraduate / Graduate

Openings
1

Project Description

The Researcher will work on a project to better understand the macro-evolutionary mechanisms that drive Paramyxoviridae diversification and transmission among mammals (with a focus on bats and rodents) at a global scale using molecular sequences. The Researcher is expected to perform phylogenetic reconstructions, co-phylogenetic analysis and evolutionary rate/divergence time estimation to test evolutionary hypothesis. The Researcher will support the work through data collection, data analyses, and synthesis of information including the relevant literature. Requirements: Strong data interpretation and writing skills, knowledge of phylogenetics and phylogeography required, and basic experience with analyses and tools (e.g. programs for phylogenetic tree generation, BEAST, and/or phylogenetic analyses in R is a plus). The Candidate should also have an interest in infectious diseases, genetics, and/or spatial analysis.

Ideal dates of assignment
April-August 2017

Location (City,Country)
New York, NY

Project Title

Regional surveillance of fruit bat viruses in Southeast Asia

Wuhan Institute of Virology, Chinese Academy of Sciences

Graduate Level

Openings
1

Project Description

Receptor analysis is the first step to understand the virus entry in host cells. A large number of novel coronaviruses have been discovered in bats since the last decades. However, the information of receptor usage by these viruses is very limited due to the difficulty of virus culture in vitro. This project will focus on coronavirus receptor analysis using lentivirus based pseudovirus. The graduate students with Virology or Molecular Biology are encouraged to apply.

Ideal dates of assignment
June-August 2017

Location (City,Country)
Wuhan, China

Project Title

Paramyxoviridae evolution

EcoHealth Alliance

Graduate Level
Undergraduate / Graduate

Openings
1

Project Description

This project is based on the long term surveillance of bat-borne viruses in the host laboratory. It will focus on a regional surveillance of viruses in fruit bats in China, Thailand, Vietnam, Laos and Myanmar as well as the potential infection in humans through nucelic acid and serological methods. The aim is to understand the prevalence, diversity and evolution of fruit bats in the region. The graduate students with Molecular Biology or bioinformatics background are encouraged to apply.

Ideal dates of assignment
June-August 2017

Location (City,Country)
Wuhan, China

Project Title

Modeling Disease Consequences of Agricultural Intensification in Africa

EcoHealth Alliance

Ideal dates of assignment
April-August 2017

Location (City,Country)
New York, NY

Project Title

Modelling Epidemic Spillover and Spread

University of California, Davis

Graduate Level
Undergraduate / Graduate

Openings
1

Project Description

Student will join the Epicenter for Disease Dynamics team to identify key characteristics of past outbreaks, including initial conditions and metrics associated with spillover and spread for select pathogens, to assist in development of models that can anticipate vulnerabilities in disease recognition and control. Previous knowledge of animal health, wildlife ecology, and infectious disease is desired and students should have a strong interest in epidemiology and analytical modeling. The project is for 8-10 weeks and will take place at the One Health Institute, in the School of Veterinary Medicine, University of California, Davis, California.

Ideal dates of assignment
April-August 2017

Location (City,Country)
Davis, California

Project Title

Modeling Epidemic Spillover and Spread

University of California, Davis

Graduate Level
Undergraduate / Graduate

Openings
1

Project Description

In the absence of direct sampling bats, pooled guano has been proposed as a possible alternative sampling strategy for surveillance of P. destructans (Pd), the causative agent of white-nose syndrome (WNS). Advantages of pooled guano sampling are that no direct handling of bats is required thus minimizing the risk of injury and disturbance. This sampling methodology has been applied successfully with pooled guano samples collected under a bridge near the area in King County, WA where a little brown bat collected in March 2016 was confirmed positive for WNS. What remains unclear is the length of time following emergence from an environmental reservoir that bats will continue to shed Pd in their guano. There is also uncertainty associated with the probability of false negatives for Pd detection using guano compared to skin swabs and how long Pd can be detected in guano exposed to above ground climate conditions. This proposed study will compare the probability of Pd detection between guano and skin swabs among individual bats under natural conditions and investigate whether pooled guano collected at summer roosts will be a reliable sampling methodology for Pd surveillance. Our primary objectives are to:

1. Evaluate the sensitivity and specificity of Pd detection in guano compared to skin swab by real-time PCR among individual bats collected on the outside landscape from WNS-affected regions and the recently identified cluster in King County, WA to assess the suitability of guano for reliable Pd surveillance.
2. Determine the duration of Pd detectability in guano compared to skin swabs from individual bats as well as from pooled guano collected on the outside landscape during spring and summer months.
3. Identify the most appropriate sampling strategy for Pd surveillance using pooled guano.

Ideal dates of assignment
April-August 2017

Location (City,Country)
Madison, WI

Project Title

Peristence of focal shedding of Pseudogymnoascus destructans and evaluation of pooled guano as a reliable surveillance strategy in non-torporid bats

USGS National Wildlife Health Center

Undergraduate / Graduate

Openings
1

Project Description

In the absence of direct sampling bats, pooled guano has been proposed as a possible alternative sampling strategy for surveillance of P. destructans (Pd), the causative agent of white-nose syndrome (WNS). Advantages of pooled guano sampling are that no direct handling of bats is required thus minimizing the risk of injury and disturbance. This sampling methodology has been applied successfully with pooled guano samples collected under a bridge near the area in King County, WA where a little brown bat collected in March 2016 was confirmed positive for WNS. What remains unclear is the length of time following emergence from an environmental reservoir that bats will continue to shed Pd in their guano. There is also uncertainty associated with the probability of false negatives for Pd detection using guano compared to skin swabs and how long Pd can be detected in guano exposed to above ground climate conditions. This proposed study will compare the probability of Pd detection between guano and skin swabs among individual bats under natural conditions and investigate whether pooled guano collected at summer roosts will be a reliable sampling methodology for Pd surveillance. Our primary objectives are to:

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Ideal dates of assignment
April-August 2017

Location (City,Country)
Madison, WI

Project Title

Project Title

Modelling Disease Consequences of Agricultural Intensification in Africa

EcoHealth Alliance

Ideal dates of assignment
April-August 2017

Location (City,Country)
New York, NY

Project Title

Regional surveillance of fruit bat viruses in Southeast Asia

Wuhan Institute of Virology, Chinese Academy of Sciences

Graduate Level

Openings
1

Project Description

Receptor analysis is the first step to understand the virus entry in host cells. A large number of novel coronaviruses have been discovered in bats since the last decades. However, the information of receptor usage by these viruses is very limited due to the difficulty of virus culture in vitro. This project will focus on coronavirus receptor analysis using lentivirus based pseudovirus. The graduate students with Virology or Molecular Biology are encouraged to apply.

Ideal dates of assignment
June-August 2017

Location (City,Country)
Wuhan, China

Project Title

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<th>Position</th>
<th>Organization</th>
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<td>Tufts University</td>
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<td>March-August 2017, New York, NY</td>
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<td>Modelling the impacts of invasive species and pathogen emergence</td>
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<td>Field Studies of common loon health</td>
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<td>Morbidity and mortality of common loons</td>
<td>Cummings School of Veterinary Medicine at Tufts University</td>
<td>Undergraduate / Graduate</td>
<td>May-July 2017, Portland, Maine</td>
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The student will join a team of molecular virologists at the Center for Infection and Immunity (Tufts University) specializing in viral and pathogen discovery. Depending on the interests and expertise of the student, they will have the opportunity to work on a range of projects in the lab, including: i) the ecological drivers of viral diversity, ii) viral discovery at the marine-terrestrial interface, or iii) discovery and characterization of viruses from primates, rodents and/or bats from global hotspots of emerging infectious disease (part of the USAID PREDICT project). Training will be focused on i) how to use viral discovery as a tool to address questions of disease emergence and ii) how to incorporate theory and ideas from diverse disciplines (such as ecology) into the study of viral diversity. The project will last for 8 weeks and the applicants are expected to have strong laboratory skills already, though training will be given as necessary.

EcoHealth Alliance (EHA) requests an EcoHealth Net researcher to participate in modelling the impacts of invasive species and pathogen emergence based on long-run economic growth models. The overall goal is to understand the mechanisms behind disease emergence using the concept of "creative - destruction" paradox caused by invasive species. The researcher will work with EHA scientists on a collaborative project with Mexican scientists. The researcher will participate in this work through data analyses, simulation modeling, literature reviews, and writing policy recommendations. The researcher will be mentored in advanced skills in epidemiological modeling and data science. The researcher will be embedded in a team in a dynamic and multidisciplinary research environment, including ecologists, economists and veterinarians, and be expected to participate in meetings and research discussions. The candidate should have strong data interpretation and writing skills, have completed graduate-level coursework in statistics and/or epidemiological or ecological modeling, and have experience using the R programming knowledge. The candidate should have interest and some knowledge of infectious diseases or invasive species.

Physiological stress, especially chronic stress, can cause increased susceptibility to disease in free-ranging wildlife. Hormones (e.g. cortisot) are classically used as indicators of stress in wildlife. However, recent technological advances in analysis of biofluids in domestic animals are providing novel insights into physiology and disease pathogenesis in animals. Shed into biofluids are extracellular vesicles (EV), nanoscale membrane-bound structures loaded with biologically active substances (proteins, RNA, lipids) involved in cell-cell communication and pathology. As such, EV serve as a potentially novel source of biomarkers that could advance our understanding of the relationship between chronic stress and disease in wildlife. We will conduct a study to explore the feasibility and potential biological relevance of EVs as markers of chronic stress in wild birds. Specifically, we will compare circulating known derived miRNA in blood samples of wild birds that have acute injuries (e.g. broken wing), but are otherwise healthy, to birds that have undergone a long-term disease process and are in poor body condition (i.e. chronic stress). The funded student will manage a biorepository of blood samples from birds that are admitted to the Tufts Wildlife Clinic. As part of the biorepository project, the student will also collect tissue and blood samples from numerous species of birds. The collection and analysis of tissues in the future may inform the interpretation of the biomarker data.

Tufts Wildlife Clinic has been studying common loons (_Gavia immer_) since 1987, identifying and quantifying natural and anthropogenic threats to loon health, trying to target specific conservation concerns, and collaborating with groups all around North America to educate the public about this iconic species and its role in the ecosystem. Seeking a student who would like to be involved in field studies of common loons in New Hampshire. Involvement will include related research projects such as hematology, threats from emerging parasitic and fungal disease, toxicology, etc. This person will be based primarily at the Loon Preservation Committee headquarters in Moultonboro, NH (<http://www.loon.org/}), but will interact with Tufts Wildlife Clinic and other organizations. Project is 8-10 weeks.

Tufts Wildlife Clinic has been studying common loons (_Gavia immer_) since 1987, identifying and quantifying natural and anthropogenic threats to loon health, trying to target specific conservation concerns, and collaborating with groups all around North America to educate the public about this iconic species and its role in the ecosystem. Duties will focus on working to perform gross necropsies and diagnostic imaging on cadavers of animals at Biodiversity Research in Portland, Maine as part of regional loon studies. This will include preserving specimens for additional studies (histopathology, toxicology, etc.). The student will also have an opportunity to carry out a specific research project. This project will be for 6-8 weeks.

Candidates should have a sincere interest in pathology, anatomy and/or toxicology and good familiarity with Excel and data analysis, interest and skills in photography and digital photo processing would be a big advantage.