

**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Latinne, Alice

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Research Scientist

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Namur, Belgium	B.S.	2004	Biology
University of Liege, Belgium	M.S.	2006	Animal Biology
University of Liege, Belgium	DEA	2008	Biology of Organisms
University of Liege, Belgium	Ph.D.	2012	Biology

**A. Personal Statement**

My research focuses on understanding the dynamics of pathogens within and among wildlife populations, livestock, and humans. I have conducted fieldwork in Asia for the past 10 years, focused on the evolutionary dynamics and co-evolution of host-pathogen (rodent-virus; bat-virus) interactions using phylogenetic and phylogeographic tools. My main interest is to analyze the risk of zoonotic pathogen emergence at high-risk human-wildlife interfaces. My published work analyzes patterns and likelihood of pathogen sharing among species, and to determine how the host phylogenetic and phylogeographic structure affects pathogen distribution and cross-species transmission. Prior to my current position at EcoHealth Alliance, I was a Marie Curie COFUND fellow conducting postdoctoral research at the Institut des Sciences de l'Evolution in Montpellier (ISEM, France) and at the Kasetsart University in Thailand.

1. **Latinne A**, Bezé F, Delhaes L, Pottier M, Gantois N, Nguyen J, Blasdell K, Dei-Cas E, Morand S, Chabé M (2018). Genetic diversity and evolution of *Pneumocystis* fungi infecting wild Southeast Asian murid rodents. **Parasitology** 145(7): 885-900.
2. Olival KJ, **Latinne A**, Islam A, Engstrand R, Hersch R, Amato G, Epstein JH, Daszak P (2016). Using bat population genetics to understand Nipah virus dynamics and cross-species transmission in south and southeast Asia. **International Bat Research Conference**, Durban.
3. Morand S, Bordes F, Chen H, Claude J, Cosson J, Galan M, Czirjak GA, Greenwood A D, **Latinne A**, Michaux J, Ribas A (2015). Global parasite and *Rattus* rodent invasions: the consequences for rodent-borne diseases. **Integrative Zoology** 10(5), 409-423.
4. **Latinne A**, Meynard CN, Herbreteau V, Waengsothorn S, Morand S, Michaux J (2015). Influence of past and future climate changes on the distribution of three Southeast Asian murine rodents. **Journal of Biogeography** 42(9), 1714-1726.

**B. Positions and Honors****Employment and Positions**

2012 -13 Research Associate, University of Liege, Belgium

2013 -14 Postdoctoral Researcher, Kasetsart University, Thailand

- 2013 -14 Postdoctoral Researcher, University Montpellier 2, France
- 2014 - Research Associate, University of Liege, Belgium
- 2015 - Research Scientist, EcoHealth Alliance

### **Honors**

- 2007 Belgian Government graduate scholarship, Belgian Fund for Research in Industry and Agriculture, Belgium
- 2008 Belgian Government graduate scholarship, Belgian Fund for Scientific Research, Belgium
- 2013 Award "VOCATIO" (Vocation grant) from the Belgian Foundation of Vocation (VOCATIO)
- 2013 Marie Curie COFUND fellowship from European Union

### **C. Contributions to Science**

- 1. Understanding the origin and cross-species transmission of bat coronaviruses.** Bats harbor a large diversity of coronaviruses (CoVs) and have been identified as the natural reservoirs and evolutionary sources of several emerging human coronaviruses, including Severe Acute Respiratory Syndrome (SARS-CoV) that emerged in China in 2002. However, CoV evolution and diversification in their bat hosts remain poorly understood. In this study, I used a Bayesian statistical framework to study the macroevolution of bat CoVs and their cross-species transmission dynamics and dispersal in China. This work reveals that alpha-CoVs were able to switch hosts more frequently and between more distantly related taxa than beta-CoVs during their evolution and suggest that phylogenetic distance among hosts represents higher constraint on host switches for beta- than alpha-CoVs. We identify the host taxa and geographic regions that together define hotspots of CoV phylo-diversity in China, allowing for more targeted surveillance of bat-borne CoVs and early detection to mitigate disease emergence and outbreaks in the future.
  - a. **Latinne A**, Hu B, Zhu G, Zhang L, Zambrana-Torrel C, Olival KJ, Li B, Zhang W, Shi Z, Daszak P (**November 2018**). Diversity and origin of bat coronaviruses in China. Presentation at **The 3rd Symposium of Biodiversity and Health in Southeast Asia**, Chiayi, Taiwan.
  - b. **Latinne A**, Hu B, Zhu G, Zhang L, Zambrana-Torrel C, Olival KJ, Li B, Zhang W, Shi Z, Daszak P (**October 2018**). Origin and cross-species transmission of bat coronaviruses in China. Presentation at **The 8th International Symposium on Emerging Viral Diseases**, Wuhan, China.
- 2. Phylogeography of Nipah virus and its bat host in Bangladesh.** The structure and connectivity of wildlife host populations may strongly influence zoonotic disease dynamics, evolution, and therefore spillover risk to people. In Bangladesh, *Pteropus medius* is the putative reservoir for Nipah virus. In this study, I use mitochondrial DNA and nuclear microsatellite markers to measure the population structure, demographic history, and phylogeography of *P. medius* in Bangladesh to better inform the dynamics, distribution, and evolutionary history of Nipah virus. We combine this with a phylogeographic analysis of all known Nipah virus sequences and strains currently available.
  - a. Olival KJ, **Latinne A**, Islam A, Engstrand R, Hersch R, Amato G, Epstein JH, Daszak P (2016). Using bat population genetics to understand Nipah virus dynamics and cross-species transmission in south and southeast Asia. **International Bat Research Conference**, Durban.
- 3. Research on rodent pathogens diversity and co-evolution.** Rodents are recognized as hosts of at least 60 zoonotic diseases that represent a serious threat to human health. Rodents have also been involved in the emergence and spread of infectious diseases of human health importance such as plague, murine typhus, scrub typhus, leptospirosis and hantavirus hemorrhagic fever. My postdoctoral work aimed at better understanding the co-evolution of rodent pathogens and their hosts in Southeast Asia.

- a. **Latinne A**, Bezé F, Delhaes L, Pottier M, Gantois N, Nguyen J, Blasdell K, Dei-Cas E, Morand S, Chabé M (2017). Genetic diversity and evolution of *Pneumocystis* fungi infecting wild Southeast Asian murid rodents. **Parasitology** 145(7): 885-900.
- b. Morand S, Bordes F, Chen H, Claude J, Cosson J, Galan M, Czirjak GA, Greenwood A D, **Latinne A**, Michaux J, Ribas A (2015) Global parasite and *Rattus* rodent invasions: the consequences for rodent-borne diseases. **Integrative Zoology** 10(5), 409-423.

**4. Research on rodent evolution and phylogeography in Southeast Asia.** Southeast Asia is a diversification center of murine rodents but this important rodent diversity remains poorly known. My PhD work aimed at better understanding the evolution and ecology of rodents in Southeast Asia.

- a. **Latinne A**, Meynard CN, Herbreteau V, Waengsothorn S, Morand S, Michaux J (2015). Influence of past and future climate changes on the distribution of three Southeast Asian murine rodents. **Journal of Biogeography** 42(9), 1714-1726.
- b. **Latinne A**, Galan M, Waengsothorn S, Rojanadilok P, Eiamampai K, Sribuarod K, Michaux J (2014). Diet analysis of *Leopoldamys neilli*, a cave-dwelling rodent in Southeast Asia, using Next-Generation Sequencing from feces. **Journal of Cave and Karst Studies**, 76(2): 139-145.
- c. **Latinne A**, Waengsothorn S, Rojanadilok P, Eiamampai K, Sribuarod K, Michaux J (2013). Diversity and endemism of Murinae rodents in Thai limestone karsts. **Systematics and Biodiversity** 11(3): 323-344.
- d. **Latinne A**, Waengsothorn S, Rojanadilok P, Eiamampai K, Sribuarod K, Michaux J (2012). Combined Mitochondrial and Nuclear Markers Revealed a Deep Vicariant History for *Leopoldamys neilli*, a Cave-Dwelling Rodent of Thailand. **PLOS One** 7(10), e47670.

**D. Additional Information: Research Support and/or Scholastic Performance**

**Ongoing Research Support**

USAID Emerging Pandemic Threats	Mazet (PI)	10/01/14 - 09/30/19
PREDICT-2		

The goal is to conduct surveillance for novel pathogens in wildlife, livestock and people; characterize human risk behavior; analyze EID risk; and design interventions in >20 countries

Role: Research Scientist

**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors.  
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NAME: Phelps, Kendra

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Field Scientist

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Auburn University, USA	B.S.	05/2003	Zoology
Oklahoma State University	M.Sc.	12/2006	Zoology
Texas Tech University	Ph.D.	08/2016	Zoology
Texas Tech University	Post Doc	12/2017	Zoology – Bat Ecology

**A. Personal Statement**

Human-environment-wildlife interactions are the driving interest behind my research pursuits. Specifically, my research aims to identify the consequences of land-use change and increased human-wildlife interactions on the persistence of wildlife populations as well as the implications for zoonotic disease spillover to exposed human populations. My research takes a multidisciplinary approach, incorporating applied ecology, wildlife epidemiology, and disease surveillance, to understand the role of human disturbance in shaping wildlife communities, ranging from assemblage composition and population demographics to individual health and infection dynamics. I have 17 years of experience conducting field-based research on the ecology and health of wildlife, with a focus on bats and rodents, and 3 years of international experience in bat disease surveillance in often resource-limited and remote sites. Moreover, I integrate principles of ecophysiology and disease ecology to identify specific environmental and ecological drivers that enhance pathogen persistence and transmission between bat hosts and to proactively prevent spillover events and safeguard human and animal health. My research has led to a better understanding of the consequences of environmental manipulation on bat health and disease dynamics at the human-wildlife interface, and development of a cave prioritization index to promote bat conservation.

1. **Phelps KL**, Jose R, Labonite M, Kingston T (2016). Correlates of cave-roosting bat diversity as an effective tool to identify priority caves. **Biological Conservation** 201: 201-209.
2. **Phelps KL**, Kingston T (2018). Environmental and biological context modulates the physiological stress response of bats to human disturbance. **Oecologia** 188: 41-52.
3. Willoughby AR, **Phelps K**, PREDICT Consortium, Olival KJ (2017). A comparative analysis of viral richness and viral sharing in cave-roosting bats. **Diversity** 9: 35.
4. Olival KJ, **Phelps K**, Alhmoud N, Sidamonidze K, Urushadze L, Ali S, Bilgin R, Hamel L, Karesh W (2018). Bats and viruses in Western Asia: a model for One Health surveillance using research networks. A poster presented at the 48<sup>th</sup> North American Symposium on Bat Research



## **B. Positions and Honors**

### **Positions and Employment**

- 2001 -03 Laboratory technician, College of Veterinary Medicine – Auburn University (USA)
- 2003 -06 Graduate teaching assistant, Department of Zoology – Oklahoma State University (USA)
- 2003 -06 Field technician, Oklahoma Cooperative Fish & Wildlife Research Unit (USA)
- 2006 -08 Research associate, Sternberg Museum of Natural History (USA)
- 2008 -14 Graduate teaching assistant, Department of Biological Sciences – Texas Tech University (USA)
- 2014 -15 Research technician, Department of Biological Sciences – Texas Tech University (USA)
- 2016 -17 Postdoctoral research associate, Department of Biological Sciences – Texas Tech University (USA)
- 2017 - Biostatistics consultant, Texas Integrated Diving and Ecological Studies Laboratory (USA)
- 2018 - Field scientist, EcoHealth Alliance (USA)

### **Other Experience and Professional Memberships**

- 2009 - Member, North American Society for Bat Research
  - 2011 - Member, Society of Conservation Biology
  - 2011 - Steering committee member, Southeast Asian Bat Conservation Research Unit (SEABCRU)
  - 2011 - Member, Cave Bat Working Group – SEABCRU
  - 2015 - Member, Bat-Human Interactions Working Group – SEABRU
  - 2016 - Red List Authority (Bats), International Union for the Conservation of Nature (IUCN)
  - 2018 - Implementing member, Western Asia Bat Research Network
- Reviewer: *Frontiers in Ecology & Evolution, Integrative and Comparative Biology, PeerJ, Journal of Applied Ecology, Acta Chiropterologica, Diversity, EcoHealth, Environmental Monitoring and Assessment, Ecological Research, American Midland Naturalist, Environmental Science and Pollution Research, Western North American Naturalist, The Prairie Naturalist, The Southwestern Naturalist*

### **Honors**

- 2008 -13 AT&T Foundation Chancellor Fellow, Texas Tech University
- 2009 Luis F. Bacardi Fruit Bat Conservation and Research Scholar
- 2010 Bat Conservation International Student Scholar
- 2011 Fulbright Fellow - Malaysia, U.S. Department of State
- 2011 Student Explorer, The Explorers Club Exploration Fund
- 2011 Lewis and Clark Fund for Exploration and Field Research Scholar
- 2012 Fulbright Fellow - Philippines, U.S. Department of State
- 2012 Ralph Stone Fellow, National Speleological Society
- 2012 Bat Conservation International Student Scholar
- 2012 James D. and Marry Hazlewood Graduate Fellow, Texas Tech University
- 2012 Graduate Research Scholar, Cave Research Foundation
- 2013 Student of Integrated Scholarship, Texas Tech University
- 2014 -16 Helen DeVitt Jones Graduate Scholar, Texas Tech University
- 2015 -16 Doctoral Dissertation Fellow, Texas Tech University

## **C. Contributions to Science**

1. **Wildlife ecology & conservation.** Human-bat interfaces, such as bat-occupied caves visited for tourism or guano harvesting or bushmeat markets, must be considered when monitoring public health while promoting wildlife conservation, and demands a multidisciplinary approach. Bats and rodents are the two largest

mammalian orders, yet many populations are declining globally. Working with collaborators in the Philippines, I identified anthropogenic and environmental drivers of assemblage composition, population abundance, and individual health in cave-roosting bats of the Philippines. This research led to the identification of environmental and human disturbance factors that are most influential in structuring bat assemblages, thus allowing for prioritization of caves to conserve cave bats. Moreover, my findings highlight that human disturbance at roosting and foraging sites contributes to reduced diversity and simplified composition in cave bat assemblages. Minimizing disease risks to public health requires integrating tools from applied ecology and analytical modelling to identify ecological drivers that promote virus persistence and spread in bat assemblages. We found that transmission rates of viruses between bat species is strongly associated with roosting ecology, with species that roost in caves having the highest rate of virus sharing with co-roosting species. Caves often house a diversity of bat species, some of which form large aggregations, so assemblage composition and population structure likely contributes to infection dynamics in cave-roosting bats.

- a. **Phelps KL**, Jose R, Labonite M, Kingston T (2018). Assemblage and species threshold responses to environmental and disturbance gradients shape bat diversity in disturbed cave landscapes. **Diversity** 10: 55.
- b. **Phelps KL**, Jose R, Labonite M, Kingston T (2016). Correlates of cave-roosting bat diversity as an effective tool to identify priority caves. **Biological Conservation** 201: 201-209.
- c. Willoughby AR, **Phelps K**, PREDICT Consortium, Olival KJ (2017). A comparative analysis of viral richness and viral sharing in cave-roosting bats. **Diversity** 9: 35.
- d. **Phelps KL** McBee K. (2009). Ecological characteristics of small mammal communities at a Superfund Site. **American Midland Naturalist** 161: 57-68.

2. **Bat health & disease surveillance.** Bats are reservoir hosts for numerous zoonotic diseases, including fatal diseases such as rabies, Hendra, and Marburg. Despite the potentially devastating consequences of zoonotic disease spillover on public health, few studies have examined the ecological mechanisms that promote zoonotic disease persistence in diverse bat assemblages. To understand the underlying individual-level mechanisms that drive compositional turnover and species loss in bat communities, I assessed physiological health of 725 individual bats (i.e., neutrophil-to-lymphocyte ratios, leukocyte counts, body condition, and ectoparasite counts) exposed to gradients of cave disturbance. I also included measures of cave quality (i.e., size and complexity), social context (i.e., species richness, conspecific and heterospecific abundance), and intrinsic traits (i.e., sex, reproductive state) to understand how context-specific factors may modulate individual health when exposed to disturbance. My findings reveal the importance of assemblage and population dynamics and ecological traits (e.g., sex, reproductive state) on the health of cave-roosting bats, which may influence an individual's susceptibility to infection. Working with regional collaborators from Turkey, Armenia, Georgia, Pakistan, and Jordan, I am characterizing the diversity and composition of bat species and associated coronaviruses across Western Asia in conjunction profiling bat-human interfaces at sampled sites to assess the risk of zoonotic disease emergence in the region.

- a. **Phelps KL**, Kingston T (2018). Environmental and biological context modulates the physiological stress response of bats to human disturbance. **Oecologia** 188: 41-52.
- b. Olival KJ, **Phelps K**, Alhmoud N, Sidamonidze K, Urushadze L, Ali S, Bilgin R, Hamel L, Karesh W (2018). Bats and viruses in Western Asia: a model for One Health surveillance using research networks. A poster presented at the 48<sup>th</sup> North American Symposium on Bat Research.
- c. Willoughby AR, **Phelps K**, PREDICT Consortium, Olival KJ (2017). A comparative analysis of viral richness and viral sharing in cave-roosting bats. **Diversity** 9: 35.



d. **Phelps KL**, Olival KL, Kingston T (2010). Influence of anthropogenic disturbance on cave-roosting bats and the potential emergence of associated zoonotic diseases. A poster presented at the 15<sup>th</sup> International Bat Research Conference.

**3. Network coordination & capacity building.** Zoonotic threats to public health are typically shared across a region due to shared host species distributions, consequently our ability to take proactive actions against such threats requires coordinated initiatives to build the capacity of multidisciplinary partners to study host ecology and disease surveillance across the region. I serve on the steering committee of the NSF-funded Southeast Asian Bat Research Unit (2011 – present), and work collaboratively with a large multidisciplinary network of 30+ international bat researchers to promote capacity building and research activities of local bat biologists in Southeast Asian countries. Specifically, I conduct workshops on how to design and implement research studies in bat ecology, including publishing results in peer-reviewed journals. I provide hands-on training on proper techniques for capturing, handling, and identifying bat species; collecting morphological measurements and ecological and acoustic data; taking diagnostic samples to assess measures of stress physiology; surveying and mapping cave systems, and site characterization to assess human disturbance levels and types of bat-human interactions) in Vietnam, Malaysia, Indonesia, Philippines, and Thailand. Furthermore, I serve as the Field Scientist for the DTRA-funded Western Asia Bat Research Network (WAB-Net, 2018 – present) with the primary responsibility to establish and build capacity in zoonotic disease field surveillance with local multidisciplinary partners across Western Asia. Working with 10+ WAB-Net partners, I developed standardized field protocols for collecting non-lethal samples from bats and characterization of study sites to identify potential routes of interactions between bats and humans and/or domestic animals as well as developed standardized laboratory protocols for detecting and characterizing coronavirus diversity. I coordinate (e.g., procure research permits, necessary supplies and equipment, export and import permits, etc.) and oversee all sampling events across the region to ensure standardization of data collection and sample testing as well as biosafety (PPE) guidelines.

- a. Al-Mateen, XA, Alias N, Furey NR, Ingle N, **Phelps K**, Sedlock JL, Waldien D (2011). Participants weigh in on the status of cave bats in Southeast Asia. Report to the 2<sup>nd</sup> International Southeast Asian Bat Conference. <http://www.seabcru.org/index.php/cave-bats/72-conference-participants-weigh-in-on-the-status-of-cave-bats-in-southeast-asia>
- b. **Phelps KL**, Hamel L, Alhmoud N, Ali S, Bilgin R, Sidamondize K, Urushadze L, Karesh W, and Olival KJ (2019). Bat research networks and viral surveillance: gaps and opportunities in Western Asia. **Viruses** 11: 240.
- c. Standard Operating Protocols – Sampling for Bat-Associated Viruses & Site Characterization of Bat-Human Interactions, Western Asia Bat Research Network. (2018). **Phelps KL** developed and integrated feedback from network partners at Boğaziçi University (Turkey), R. Lugar Center (Georgia), and the Royal Scientific Society (Jordan), University of Veterinary and Animal Sciences (Pakistan), the WAB-Net Scientific Advisory Board.
- d. Laboratory Protocols for the Detection & Characterization of Bat-Associated Coronaviruses, Western Asia Bat Research Network. (2018). **Phelps KL** developed and integrated feedback from laboratory partners at the R. Lugar Center (Georgia) and the Royal Scientific Society (Jordan) and the WAB-Net Scientific Advisory Board.

#### **D. Additional Information: Research Support and/or Scholastic Performance**

##### **Ongoing Research Support**

HDTRA11710064

Olival (PI)

10/02/17-10/01/22

"Understanding the Risk of Bat-Borne Zoonotic Disease Emergence in Western Asia"

The goal of this project is to characterize pathogen diversity, strengthen zoonotic disease surveillance capacity, and test key hypotheses about the risk of bat-borne zoonotic disease emergence in Western Asia.

Role: Field Scientist

Combating Wildlife Trafficking Program, U.S. Fish & Wildlife Service van Weerd (PI) 08/01/17 – 07/31/19  
“Identifying and addressing factors contributing to flying fox trafficking in Southeast Asia”

The goal of this project is to identify the actors and drivers in the illegal hunting, selling, buying, and consumption of flying foxes in the Philippines, Malaysia, and Indonesia, and to use results to develop national and multinational programs to reduce flying fox hunting.

Role: Co-PI



**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Mendelsohn, Emma

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Research Scientist

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Wesleyan University, Middletown, CT	B.A.	05/2010	Earth and environmental sciences
Duke University, Durham, NC	M.E.M.	05/2015	Ecotoxicology and environmental health

**A. Personal Statement**

I am an environmental researcher and data scientist specializing in dynamic systems modeling, machine learning and biostatistics, web application development, and data engineering. With a background in environmental health and risk assessment, I provide data science and subject-matter expertise to projects related to global emerging infectious diseases, non-communicable diseases, environmental exposures, antimicrobial resistance, and behavioral health. My leadership and research experience includes oversight of a longitudinal study to characterize human exposure to potential toxicants in consumer products. I have been project lead on multiple human and ecological risk assessments for state, federal, and international agencies. Currently, I co-lead data management, analysis, and workflow design and automation for the USAID-funded PREDICT project. I have consulted in both the community and private sectors, using data to understand risk, support decision making, and inform actionable goals and policies.

1. **Mendelsohn E**, Hagopian A, Hoffman K, Butt CM, Lorenzo A, Congleton J, Webster TF Stapleton HM (2016). Nail polish as a source of exposure to triphenyl phosphate. **Environ. Int.** 86:45–51.
2. Hoffman K, Butt CM, Webster TF, Preston EV, Hammel SC, Makey C, Lorenzo A, Cooper EM, Carignan C, Meeker JD, Hauser R, Soubry A, Murphy SK, Price TM, Hoyo C, **Mendelsohn E**, Congleton J, Daniels JL, Stapleton HM (2017). Temporal trends in exposure to organophosphate flame retardants in the United States. **Environ. Sci. Technol. Lett.** 4(3):112-118.
3. Kopelovich, L, Perez AL, Jacobs N, **Mendelsohn E**, Keenan JJ (2015). Screening level human health risk assessment of toluene and dibutyl phthalate in nail lacquers. **Food Chem. Toxicol.** 81:46–53.

**B. Positions and Honors****Positions and Employment**

2014 Environmental Health Science Intern, Cardo ChemRisk, California  
 2014 Applied Data Analysis Teaching Assistant, Duke University, North Carolina  
 2015 -18 Project Scientist, Integral Consulting, New York  
 2018 - Research Scientist, EcoHealth Alliance New York

**Other Experience and Professional Memberships**

- 2015 -18 Member Society of Environmental Toxicology and Chemistry  
 2019 - Member RLadies  
 2019 - Member ROpenSci

**Honors**

- 2013 Merit Award Scholarship, Duke University Nicholas School of the Environment  
 2015 American Water Resources Association Richard A. Herbert Memorial Scholarship

**C. Contributions to Science**

1. **Research on associations between human-animal interactions and zoonotic disease risk.** I am a lead author on a study that analyzes paired human survey and serological data to characterize associations between human-animal interaction and zoonotic spillover risk in Southern China (recently submitted for publication). The study provides the first serological evidence of bat-born SARS-related coronavirus and HKU10 coronavirus spillover and shows that domestic animals, in addition to wildlife, are an important link in understanding transmission from bat to human populations. As the lead data analyst on the study, I oversaw the statistical design, execution, and reporting. In addition to this study, I am a lead on analysis and reporting of human survey data collected in over 20 countries under the PREDICT project. In this role, I have developed an automatic report generator that provides data summaries, maps and graphics, and results of statistical analyses to global partners. This tool allows researchers and policy makers to understand and interpret links between animal contact and self-reported illness drawn from a complex data set.
2. **Toxicological and exposure modeling in environmental risk assessment.** I have formal training in human health and ecological risk assessment and three years of experience consulting in risk assessment under state environmental departments, the United States Environmental Protection Agency (USEPA) and the European Food Safety Authority (EFSA). In this time, I worked to advance risk assessment techniques to make better use of available toxicological and exposure data through statistical modeling. I frequently presented on the topic and contributed to novel risk assessments that incorporated mechanistic, probabilistic and Bayesian modeling techniques to improve risk characterization and communication.
  - a. **Mendelsohn E, Goodrum P, Summers H (2017).** More than just point estimates: Probabilistic methods for toxicology. Invited webinar. Sediment Management Work Group. December 15.
  - b. **Mendelsohn E, Summers H, Goodrum PE (2016).** Rethinking the use of uncertainty factors for the derivation of toxicity reference values. Platform presentation. **Society of Environmental Toxicology and Chemistry North America 37th Annual Meeting**, Orlando, FL. November 7–10.
  - c. Iwai, H, Hoberman AM, Goodrum PE, **Mendelsohn E**, Anderson JK (2019). Addendum to Iwai and Hoberman (2014)—Reassessment of Developmental Toxicity of PFHxA in Mice. **Int. J. Toxicol.**
  - d. **Mendelsohn E, Summers H, Goodrum PE, Durda J (2017).** Development of tissue-based PCB toxicity reference values and exposure-response curves for fish. Platform presentation. Sediment Management Workgroup Fall Sponsor Symposium, Charleston, SC. September 27–28.
3. **Software development and information technology operations (DevOps) to support scientific research.** I develop tools that support researchers. For USAID-funded PREDICT, I develop and maintain R packages and pipelines for data querying, cleaning, quality assurance, visualization, and synthesis. I have developed dashboards and web-based apps on multiple projects to facilitate analysis and interaction with data. I also train and support researchers across fields in programming, analysis, and quality control methods.
  - a. EIDITH R package <https://ecohealthalliance.github.io/eidith/>

## **D. Additional Information: Research Support and/or Scholastic Performance**

### **Ongoing Research Support**

USAID Emerging Pandemic Threats  
PREDICT-2

Mazet (PI)

10/01/14 – 09/30/19

The goal is to conduct surveillance for novel pathogens in wildlife, livestock and people; characterize human risk behavior; analyze EID risk; and design interventions in >20 countries

Role: Research Scientist



**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors.

Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Dawson, Patrick

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Research Scientist

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Northwestern University, Evanston, IL	B.A.	06/2010	Biological Sciences
Columbia University, New York, NY	M.P.H.	05/2012	Epidemiology
Columbia University, New York, NY	Ph.D.	05/2019	Epidemiology

**A. Personal Statement**

I am well prepared to use my research, leadership, project management, and communication skills to assist the PIs as a co-investigator in successfully carrying out the proposed research project. My academic and practical training in epidemiology have equipped me with advanced knowledge of and experience with epidemiologic analysis, study design, biostatistical modeling, public health surveillance, and causal inference. My research on Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in Egypt and Jordan for the USAID PREDICT-2 project and for the CDC Global Disease Detection Program have provided me with more than six years of experience in Egypt and Jordan working with communities along the camel value chain to identify MERS-CoV spillover from dromedary camels and behavioral risks for human MERS infection. Additionally, I have worked with an infectious disease surveillance system operating in 8 countries in the Middle East and North Africa region for influenza and other respiratory viruses to characterize seasonal transmission patterns and to monitor activity against alert thresholds in real time. I have also investigated tuberculosis transmission among New York City public housing residents using molecular, geospatial, and sociodemographic techniques. As the PREDICT-2 country liaison for Egypt and Jordan, I have cultivated critical management abilities that will prove beneficial in the proposed research project, including time management, budgeting, research planning, liaising with community leaders, cross-cultural communication, stakeholder engagement, and results communication.

1. Abdallat M, **Dawson P**, Haddadin AJ, El-Shoubary W, Dueger E, Sanouri T, Said MM, Talaat M (2016). Influenza Hospitalization Epidemiology from a Severe Acute Respiratory Infection Surveillance System in Jordan, January 2008–February 2014. **Influenza and Other Respiratory Viruses** 10(2): 91-7.
2. **Dawson P**, Perri BR, Ahuja SD (2016). High Tuberculosis Strain Diversity among New York City Public Housing Residents. **American Journal of Public Health** 106(3): 563-8.

**B. Positions and Honors****Positions and Employment**

2010 -12	Research Assistant, Columbia University Mailman School of Public Health, New York, NY
2011 -12	Epi Scholar, New York City Department of Health and Mental Hygiene, New York, NY
2012 -14	Regional Epidemiologist, U.S. Centers for Disease Control and Prevention, Cairo, Egypt

2014 -18 Teaching Assistant, Columbia University Mailman School of Public Health, New York, NY  
 2016 - Research Scientist, EcoHealth Alliance, New York, NY

### **Other Experience and Professional Memberships**

2007 Intern, Bayshore Hospital, Holmdel, NJ  
 2009 Intern, EdgeAlliance AIDScare Progressive Services, Chicago, IL  
 2014 Consultant, NYCRx, Inc, New York, NY  
 2015 Consultant, EcoHealth Alliance, New York, NY

### **Honors**

2006 New Jersey Bloustein Distinguished Scholar  
 2006 CollegeBoard AP Scholar Award  
 2010 DERU Honors Society (top 1% of class for scholarship, leadership, and character), Northwestern University  
 2011 Best Epidemiology Practicum Abstract (1<sup>st</sup> Prize), Columbia University Mailman School of Public Health  
 2012 William Farr Award in Epidemiology, Columbia University Mailman School of Public Health  
 2014 -16 PhD Merit Award Scholarship, Columbia University Mailman School of Public Health  
 2016 Wellcome Trust / DBT India Alliance Poster Award Finalist, 17<sup>th</sup> International Congress on Infectious Diseases  
 2019 Sydney Kark Global Health Award in Epidemiology, Columbia University Mailman School of Public Health

## **C. Contributions to Science**

**1. Using molecular and geospatial data to conduct epidemiological investigations.** My early research as an epidemiologist focused on the transmission of tuberculosis (TB) among New York City (NYC) public housing residents. TB incidence in NYC had reached a peak in the 1990s and has significantly declined due to advances in case detection and treatment protocols. By the early 2010s, a majority of TB cases in NYC were among foreign-born individuals who became infected in TB-endemic countries before arriving to the United States. However, in early 2011, a number of TB cases among U.S.-born NYC public housing residents raised concern that TB may be spreading within public housing facilities or directly between public housing residents. If true, this TB transmission occurring within NYC posed an opportunity for public health intervention aimed at interrupting further TB transmission. Working with the NYC Department of Health and Mental Hygiene Bureau of Tuberculosis Control, I reviewed all confirmed TB cases in NYC between 2001 and 2009, and geocoded all patient addresses to obtain their residence's building identification numbers (BINs) and ran them against the New York City Housing Authority (NYCHA) registered BINs to classify cases as public housing residents (NYCHA) or non-public housing residents. Overall, I found U.S.-born NYCHA residents had twice the TB incidence of all other U.S.-born NYC residents. However, comparing the molecular TB strain data among NYCHA residents, I found they had high strain diversity. Further, there was no molecular evidence of TB strain clustering within NYCHA buildings, NYCHA complexes, or between NYCHA residents. Therefore, I concluded the increased burden of TB among NYCHA residents is due to public housing's role as a social safety net (which concentrates a population having many independent TB risk factors: history of homelessness, poverty, etc.) rather than due to spread within buildings or between residents. Due to these findings, the Bureau partnered with NYCHA to raise awareness of TB among residents and to provide information on getting free testing and treatment.

- a. **Dawson P**, Perri BR, Ahuja SD (2016). High Tuberculosis Strain Diversity among New York City Public Housing Residents. **American Journal of Public Health** 106(3): 563-8.

- 2. Turning epidemiological surveillance data into evidence-based policy positions.** While working for the CDC Global Disease Detection Regional Center in Cairo, Egypt, I served as team lead for the Eastern Mediterranean Acute Respiratory Infection Surveillance (EMARIS) Network which operated in Egypt, Iraq, Iraq-Kurdistan, Jordan, Oman, Pakistan, Qatar, and Yemen. The prevailing thought on influenza seasonality was that many countries or regions with arid/desert-like or tropical climates do not experience pronounced seasonal activity as do other countries with temperate climates (which experience Northern Hemisphere or Southern Hemisphere seasonal patterns). Understanding seasonal influenza patterns is an important public health priority because it may impact seasonal influenza vaccination policy and timing the allocation of hospital and clinic resources. I analyzed influenza patterns across seven years of patient data from the EMARIS Network in Egypt and Jordan, and found that both countries clearly exhibit Northern Hemisphere influenza seasonal patterns, with increased activity between November and May typically reaching peak activity between January and March. We communicated this information to our hospital partners in the EMARIS Network and with the Ministries of Health in order to support redistribution of relevant hospital and clinic resources during times of peak influenza activity as well as to add on to the evidence base supporting the adoption of Northern Hemisphere seasonal influenza vaccination in both countries.
- a. Abdallat M, **Dawson P**, Haddadin AJ, El-Shoubary W, Dueger E, Sanouri T, Said MM, Talaat M (2016). Influenza Hospitalization Epidemiology from a Severe Acute Respiratory Infection Surveillance System in Jordan, January 2008–February 2014. **Influenza and Other Respiratory Viruses** 10(2): 91-7.
  - b. Kandeel A, **Dawson P**, Labib M, Said M, Refaey S, Naguib A, Talaat M (2016). Morbidity, Mortality, and Seasonality of Influenza Hospitalizations in Egypt, November 2007-November 2014. **PLOS ONE** 11(9): e0161301.
- 3. Examining causal pathways of zoonotic disease transmission for intervention development.** In addition to the contributions described above, I have been working with the PREDICT-2 team to describe viral spillover, including MERS, in Egypt and Jordan and to characterize behavioral risks for MERS. We conduct triangulated viral surveillance among people, wildlife, and livestock along animal-human interfaces in both countries to detect known and novel viruses from the viral families of Coronaviruses, Influenza viruses, Filoviruses, and Paramyxoviruses as well as to detect antibodies to MERS-CoV. All enrolled participants are asked to have nasopharyngeal and oropharyngeal swabs and sera collected and to complete a standardized questionnaire assessing social and demographic characteristics and behavioral practices. In Jordan, I developed additional questionnaire modules specifically addressing exposures and behavioral practices pertaining to dromedary camels which are being used to characterize specific risk behaviors for MERS spillover from camels to humans. Analyses are currently underway and will be completed in the first half of 2019.
- a. Kandeil A, Gomaa MR, Shehata MM, El Taweel AN, Mahmoud SH, Bagato O, Moatasim Y, Kutkat O, Kayed AS, **Dawson P**, Qui X, Bahl J, Webby RJ, Karesh WB, Kayali G, Ali MA (2018). Isolation and characterization of a distinct influenza A virus from Egyptian bats. **Journal of Virology** JVI.01059-18.
  - b. **Dawson P**, Abu-Basha E, Amarnah B, Fahmawi A, Alshammari A, Alzaqa E, Hijazeen Z, Talafha H, Omari B, Al-Zghoul B, Ababneh M, Ismail ZB, Karesh WB (2018). Knowledge, Attitudes, Beliefs, and Practices Pertaining to Camel-to-Human Disease Risks in Jordan. **International Meeting on Emerging Diseases and Surveillance** (IMED), November 2018, Vienna, Austria (poster).
  - c. **Dawson P**, Karesh WB, Kandeil A, Sayed A, Ali MA, Kayali G (2018). Identifying Behavioral Risk Intervention Points to Prevent Zoonotic Spillover at Animal Markets, Farms, and Abattoirs in Egypt. **18th International Congress on Infectious Diseases**, March 2018, Buenos Aires, Argentina (oral presentation, Zoonoses & One Health).



**Complete List of Published Work in MyBibliography:**

[https://www.ncbi.nlm.nih.gov/sites/myncbi/1f1\\_DuePhbbQmO/bibliography/57398700/public/?sort=date&direction=ascending](https://www.ncbi.nlm.nih.gov/sites/myncbi/1f1_DuePhbbQmO/bibliography/57398700/public/?sort=date&direction=ascending)

**D. Additional Information: Research Support and/or Scholastic Performance**

**Ongoing Research Support**

USAID Emerging Pandemic Threats

Mazet (PI)

10/01/14 – 09/30/19

PREDICT-2

The goal is to conduct surveillance for novel pathogens in wildlife, livestock and people; characterize human risk behavior; analyze EID risk; and design interventions in >20 countries

Role: Research Scientist

**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Martinez, Stephanie

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Behavioral Risk Surveillance Program Coordinator

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of California, Los Angeles, USA	B.A.	06/2011	International Development
University of California, Los Angeles, USA	B.A.	06/2011	Spanish
Columbia University Mailman School of Public Health, USA	M.P.H.	05/2017	Population and Family Health
Columbia University School of International and Public Affairs USA	M.I.A.	05/2017	Economic and Political Development

**A. Personal Statement**

I have five years of research training and experience in transforming extensive sets of in-depth interviews and focus group discussions into insightful analyses for critical global health issues. My research with these ethnographic datasets has included working with transcripts from Indonesia, Bangladesh, the Democratic Republic of the Congo, the Republic of the Congo, Cote d'Ivoire, and Zambia, investigating sensitive health-seeking and risky behaviors that are often at odds with local norms and regulations. I am the Program Coordinator for Behavioral Risk Surveillance at EcoHealth Alliance, a US-based 501(c)3 institution that conducts research on emerging zoonoses. Under USAID's PREDICT-2, I am leading several qualitative analyses of behaviors at critical environmental and occupational interfaces known to put vulnerable human populations in close contact with taxa that are often linked to significant emerging infectious disease risk. Under a framework of analyzing knowledge, attitudes, skills, and behaviors, I am leading international teams in generating country-specific insights that will play a critical role in creating evidence-based intervention recommendations designed to protect local populations from the next pandemic. I leverage my public health research training and experience to guide analyses that are sensitive to local gender and socioeconomic norms. I also build capacity by training multidisciplinary scientific partners in coding and analyzing qualitative datasets.

1. Casey SE, Steven VJ, Deitch J, Dumas EF, Gallagher MC, **Martinez S**, Morris CN, Rafanoharana RV, and Wheeler E (2019). "You must first save her life": community perceptions towards induced abortion and post-abortion care in North and South Kivu, Democratic Republic of the Congo. **Sexual and Reproductive Health Matters** 27(1): 1571309.
2. Schlegelmilch J, Petkova EP, **Martinez S**, and Redlener I. Acts of terrorism and mass violence targeting schools: analysis and implications for preparedness in the USA (2017). **Journal of Business Continuity & Emergency Planning** 10(3): 280-289.

3. Petkova, EP, **Martinez S**, Schlegelmilch J, and Redlener I (2017). Schools and Terrorism: Global Trends, Impacts, and Lessons for Resilience. **Studies in Conflict & Terrorism** 40(8): 701-711.

## B. Positions and Honors

### Positions and Employment

- 2011-13 United States Peace Corps, Community Health Educator, Cameroon
- 2014-16 Office Assistant and Graduate Research Assistant, National Center for Disaster Preparedness
- 2017 RAISE Initiative Research Assistant, Columbia University
- 2017 - Research Consultant, Population Council, New York
- 2017 Behavioral Risk Surveillance Program Assistant, EcoHealth Alliance, New York
- 2018 Behavioral Risk Surveillance Program Assistant and Researcher, EcoHealth Alliance, New York
- 2018 - Behavioral Risk Surveillance Program Coordinator, EcoHealth Alliance, New York

### Other Experience and Professional Memberships

- 2016- American Public Health Association (International Health Section, Environment Section)
- 2016- Association for Women's Rights in Development
- 2016- WE ACT for Environmental Justice

### Honors

- 2015 Mailman School of Public Health Heilbrunn Scholarship
- 2014 International House Women's International Leadership Scholarship
- 2014 Columbia School of International and Public Affairs Scholarship
- 2014 International House New York City's Paul A. Volcker Scholarship
- 2011 UCLA Chancellor's Service Award
- 2011 UCLA Carroll B. Johnson Distinguished Senior Award
- 2007 UCLA Alumni Scholarship

## C. Contributions to Science

1. **Qualitative analyses of global datasets attuned to socially-sensitive topics.** Nuanced attitudes and beliefs are difficult to surface through quantitative human research tools alone, and qualitative explorations are a boon for researchers investigating populations living in environments with rigid social traditions. Through my qualitative work with Columbia University's RAISE Initiative, I collaboratively leveraged the focus group dataset to understand the complex ways in which focus groups initially expressed locally conforming beliefs about highly sensitive reproductive health issues, before offering more nuanced beliefs and attitudes related to gender, age, and circumstance. My other work, including those currently in progress at EcoHealth Alliance, has benefitted from this approach in framing the observations not only against the social environment, but against the progression of ideas within a given transcript.
  - a. Casey SE, Steven VJ, Deitch J, Dumas EF, Gallagher MC, **Martinez S**, Morris CN, Rafanoharana RV, and Wheeler E (2019). "You must first save her life": community perceptions towards induced abortion and post-abortion care in North and South Kivu, Democratic Republic of the Congo. **Sexual and Reproductive Health Matters** 27(1): 1571309.

## D. Additional Information: Research Support and/or Scholastic Performance

### Ongoing Research Support

- |                                 |            |                     |
|---------------------------------|------------|---------------------|
| USAID Emerging Pandemic Threats | Mazet (PI) | 10/01/14 - 09/30/19 |
| PREDICT-2                       |            |                     |



The goal is to conduct surveillance for novel pathogens in wildlife, livestock and people; characterize human risk behavior; analyze EID risk; and design interventions in >20 countries

Role: Staff

**Completed Research Support**

Not Applicable

**BIOGRAPHICAL SKETCH**

NAME: Chmura, Aleksei

eRA COMMONS USER NAME: (b) (6)

POSITION TITLE: Research Scientist

**EDUCATION/TRAINING:**

INSTITUTION AND LOCATION	DEGREE	COMPLETION DATE	FIELD OF STUDY
Columbia University, New York	B.S.	06/2004	Biology
Kingston University, UK	Ph.D.	08/2018	Biology

**A. Personal Statement**

Aleksei Chmura comes from an interdisciplinary background of ecology, conservation medicine, and tropical field ecology, as well as extensive on-the-ground experience working with field sampling and laboratory work in China, Brazil, and Malaysia. His expertise adds to this project for a better understanding of the animal-human interactions and the consequential health effects at both individual and community levels. Coordinating with both the laboratory and field teams internationally, Dr. Chmura has been working on SARS-Coronavirus, Paramyxovirus, Astrovirus, and other emerging infectious diseases of bats and rodents in southern China under the USAID EPT-2, NSF, and NIH projects research since 2005. He works closely with EcoHealth Alliance's field teams and lead field coordinators. As part of his doctoral work, he spent over a year in the Wuhan Institute of Virology laboratory in China.

**B. Positions and Honors****Positions and Employment**

2001 -04 Volunteer Curator, Dept. of Mammalogy, American Museum of Natural History, USA  
 2001 -05 Program Assistant Center for Env'tl Research and Conservation, Columbia University, USA  
 2002 -05 Instructor, Columbia University Tropical Field Ecology Programs, USA/Dominican Republic/Brazil  
 2005- Research Scientist, EcoHealth Alliance, USA  
 2006 - Managing Editor, *EcoHealth*, New York, USA

**Other Experience and Professional Membership**

2000 -05 The Explorers Club  
 2002 - American Museum of Natural History  
 2005 - International Association for Ecology and Health  
 2009 - Society for Applied Microbiology

**C. Contribution to Science**

**1. Research on the origins of emerging viruses.** Numerous high impact emerging viruses appear to have bat reservoirs (e.g. SARS-CoV, EBOV, NiV, HeV, MERS-CoV, SADS-CoV). As research assistant and program coordinator on four prior R01s, my work has helped demonstrate their bat origin (SARS-CoV, SADS-CoV), analyze the drivers of their emergence and risk factors for spillover. Collaborating with virologists in China, I have identified SARS-like CoVs and other viruses in bats and other mammals. This work provides critical reagents and resources that have helped advance understanding of virus-host binding and may contribute to vaccine development.

- a. Wu ZQ; Lu L, Du J, Yang L, Ren XW, Liu B, Jiang JY, Yang J, Dong J, Sun LL, Zhu YF, Li YH, Zheng DD, Zhang C, Su HX, Zheng YT, Zhou HN, Zhu GJ, Li HY, **Chmura AA**, Yang F, Daszak P, Wang JW, Liu QY, Jin Q (2018). Comparative analysis of rodent and small mammal viromes to better understand the wildlife origin of emerging infectious diseases. **Microbiome** 6(178). 10.1186/s40168-018-0554-9.
- b. Zeng LP, Ge XY, Peng C, Yang XL, Tan B, Gao YT, Chen J, **Chmura AA**, Daszak P, Shi ZL (2016) Bat Severe Acute Respiratory Syndrome-Like Coronavirus WIV1 Encodes an Extra Accessory Protein, ORFX, Involved in Modulation of the Host Immune Response. **Journal of Virology** 90(14): 6573-6582.
- c. Hu B, **Chmura AA**, Li JL, Zhu GJ, Desmond JS, 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(11): 2442-2449.
- d. Ge X-Y, Li J-L, Yang X-L, **Chmura AA**, Zhu G, Epstein JH, Mazet JK, Hu B, Zhang W, Peng C, Zhang Y-J, Luo C-M, Tan B, Wang N, Zhu Y, Cramer G, Zhang S-Y, Wang L-F, Daszak P, Shi Z-L (2013). Isolation and characterization of a bat SARS-like Coronavirus that uses the ACE2 receptor. **Nature** 503: 535-538.

**2. Analyzing the Process of Disease Emergence.** Emerging infectious diseases are a significant threat to global health and their emergence is sporadic, complex, and seemingly unpredictable. I collaborated on efforts to employ analytical approaches to identify predictable patterns in the process of disease emergence.

- a. Bogich TL, Funk S, Malcolm TR, Chhun N, Epstein JH, **Chmura AA**, Kilpatrick AM, Brownstein JS, Hutchison OC, Doyle-Capitman C, Deaville R, Morse SS, Cunningham AA, Daszak P (2013). Using network theory to identify the causes of disease outbreaks of unknown origin. **Journal of the Royal Society, Interface** 10(81), 10.1098/rsif.2012.0904.
- b. Kilpatrick AM, **Chmura AA**, Gibbons DW, Fleischer RC, Marra PP, Daszak P (2006). Predicting the global spread of H5N1 avian influenza. **PNAS**, 103: 19368-19373.

**3. Studies of wildlife disease ecology to understand emerging zoonoses.** The majority of EIDs are zoonotic, with the majority of these originating in wildlife. Over the past 15-years, I have collaborated on international and national research programs on how the ecology of specific wildlife-origin zoonoses can help explain patterns of risk to people.

- a. Wu ZQ, Lu L, Du J, Yang L, Ren XW, Liu B, Jiang JY, Yang J, Dong J, Sun LL, Zhu YF, Li YH, Zheng DD, Zhang C, Su HX, Zheng YT, Zhou HN, Zhu GJ, Li HY, **Chmura AA**, Yang F, Daszak P, Wang JW, Liu QY, Jin Q (2018). Comparative analysis of rodent and small mammal viromes to better understand the wildlife origin of emerging infectious diseases. **Microbiome**, 6(178) 10.1186/s40168-018-0554-9.
- b. Monagin C, Ning L, Schneider B, **Chmura AA**, Epstein JH, Wu D, Paccha B, Ke CW, Daszak P, Rabinowitz P (2018) Serologic and Behavioral Risk Survey of Workers with Wildlife Contact in China. **PLOS ONE**, 13(4) 10.1371/journal.pone.0194647.
- c. Nava A, Shimabukuro JS, **Chmura AA**, Luz LBS (2017) The Impact of Global Environmental Changes on Infectious Disease Emergence with a Focus on Risks for Brazil. **Institute for Laboratory Animal Research** 58(3): 393-400.
- d. Newman S, **Chmura AA**, Converse K, Kilpatrick AM, Patel N, Lammers E, Daszak P (2007) Disease Associated Aquatic Bird Mortality as an Indicator of Changing Aquatic Ecosystem Health: Analysis of a 30-year USA Mortality Database. **Marine Ecosystem Progress Series** 352: 299-309.

#### **D. Additional Information: Research Support and/or Scholastic Achievements**

##### **Ongoing Research Support**

Emerging Pandemic Threat Program, USAID Mazet (PI)

10/01/14-09/30/19



PREDICT 2

The goal of this project is to create and implement a global virus surveillance system in animals and humans and analyze spillover risk.

Role: Program Coordinator

**Completed Research Support**

(not showing 4 previous awards, none completed within last 3 years)

**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Li, Hongying

eRA COMMONS USER NAME (credential, e.g., agency login): (b) (6)

POSITION TITLE: China Programs Coordinator & Research Scientist

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Sun Yat-Sen University, China	B.S.	06/2012	Biosciences
Emory University, US	MPH	05/2015	Health Policy
Kingston University, UK	Ph.D. (candidate)	2018 -	Infectious Diseases

**A. Personal Statement**

I have an interdisciplinary background in ecology, public health, and human behavior, coupled with extensive on-the-ground experience working with communities, governmental and academic partners in China. For the past 3 years I have worked as China Programs Coordinator at EcoHealth Alliance, acting as the key point-of-contact among EcoHealth staff and our partners in China. I have coordinated fieldwork to conduct bat sampling, and human behavioral risk assessments across 5 provinces in southern China. I have also liaised directly with all key partners on this proposal. Additionally, I coordinate EcoHealth Alliance's wildlife trade research in China and SE Asia focusing on analyzing incentives to trade and consume wildlife. I work closely with Chinese Health and Forestry governmental departments, research institutes, and local organizations to foster collaboration and communication as part of my PhD research on "*Policy and Human Behavioral Strategies to Mitigate Zoonotic Disease Emergence in Southern China*".

**B. Positions and Honors****Positions and Employment**

2011 -12 Research Assistant, HIV Prevention Program, Yunnan Mat. and Children's Hospital, China  
 2013 -14 Program Assistant, School HIV/AIDS & School Edu., UNESCO Beijing, China  
 2015 - China Programs Coordinator & Research Scientist, EcoHealth Alliance, New York  
 2017 - Coordinator, National Virome Project Initiative, China

**Other Experience and Professional Memberships**

2018 - Member, IUCN SSC Pangolin Specialist Group  
 2018 - Member, Society for Applied Microbiology  
 2017 - Member, China Health Policy and Management Society  
 2016 - Member, International Association for Ecology & Health  
 2016 - Columnist, *China Environment*  
 2016 - Asian Representative, Conservation Leadership Programme

**Honors**

2010 National Scholarship, Ministry of Education, the People's Republic of China.

- 2012 Outstanding Graduate Award, Sun Yat-sen University, China
- 2016 Invited speaker, China Conservation Network workshop. "Impacts of wildlife trade on public health"
- 2017 Invited Speaker, International Association for Ecology & Health. "Understanding the wildlife trade in China"

### C. Contributions to Science

**1. Understanding the risk factors of zoonotic disease emergence among the high-risk communities.** With its rapid urbanization and development as well as the high diversity of animal species, southern China is facing major social and ecological changes that result in human and animal interactions favoring the emergence of zoonotic diseases. In order to identify the zoonotic risks and develop a risk-mitigation strategy, the study used a biological-behavioral surveillance method to demonstrate the serological evidence of viral spill-over into human population, and identify demographic factors and human-animal interactions associated with viral exposure and self-reported severe acute respiratory and influenza-like illness symptoms. Combining existing protective factors and intervention opportunities, individual, social, community, and policy-level mitigation strategies are recommended to prevent zoonotic risk in Southern China.

- a. Wu Z, Lu L, Du J, Yang L, Ren X, Liu B, **Li H**, Zhu Y (2018). Comparative analysis of rodent and small mammal viromes to better understand the wildlife origin of emerging infectious diseases. **Microbiome** 6(1), 178.

### D. Additional Information: Research Support and/or Scholastic Performance

#### Ongoing Research Support

USAID Emerging Pandemic Threats                      Mazet (PI)                      10/01/14 - 09/30/19  
PREDICT 2

The goal of this project is to create and implement a global virus surveillance system in animals and humans and analyze spillover risk.

Role: Country Coordinator for China

#### Completed Research Support

R01 AI110964                      Daszak (PI)                      06/01/14 - 05/31/19

Understanding Risk of Bat Coronaviruses

The goal of this study is to analyze the risk of coronavirus spillover from bats to humans in Southern China

Role: Project Coordinator & Human Research Lead

China Environmental Protection Foundation

Conservation of Chinese pangolin in National Nature Reserve      Zhang (PI)      01/01/16 - 12/31/17

The goal of this study is to understand the current population and distribution of the critically endangered Chinese pangolin (*Manis pentadactyle*) in mainland China

Role: Community Research Lead



**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Hemachudha, Thiravat

eRA COMMONS USER NAME (credential, e.g., agency login): (b) (6)

POSITION TITLE: Director

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Chulalongkorn University Hospital, Thailand	M.D.	06/1981	Internal Medicine
Chulalongkorn University Hospital, Thailand	Board	12/1983	Neurology Residency
John Hopkins University School of Medicine	Fellowship	12/1986	Fogarty (NIH) Fellowship in Neurology & Neuroimmunology

**A. Personal Statement**

I have 20+ years of internationally funded research in various fields, from immunological studies, to rabies pathology, to CNS infection pathology. I am a member of the WHO Expert Advisory Panel on Rabies since 1990. I have served as president in Academic Affairs of Thai Neurological Association and was elected a fellow of American College of Physicians in 2010. I am a WHO member of the International Health Regulations Roster of Experts, as an expert in the human-animal interface (zoonoses). I am also on the national board on emerging infectious diseases, and I am a member of the subcommittee on strategic planning on emerging infectious diseases. I have been the PI on several multidisciplinary projects over the years.

1. Pliapat T, Buathong R, Wacharapluesadee S, Siriarayapon P, Pittayawonganon C, Sangsajja C, Kaewpom T, Petcharat S, Ponpinit T, Jumpasri J, Joyjinda Y, Rodpan A, Ghai S, Jittmitraphap A, Khongwichit S, Smith D, Corman V, Drosten C, **Hemachudha T** (2017). Imported case of Middle East respiratory syndrome coronavirus (MERS-COV) infection from Oman to Thailand, June 2015. **Euro Surveill** 22(33).pii:30598.
2. Fooks AR, Cliquet F, Finke S, Freuling C, **Hemachudha T**, Mani RS, Müller T, Nadin-Davis S, Picard-Meyer E, Wilde H, Banyard AC (2017). Review Subsection on Pathogenesis, Management of Bitten Persons and Diseased Patient. **Nat Rev Dis Primers** 3:17091
3. **Hemachudha T**, Ugolini G, Sungkarat W, Shuangshoti S, Wacharapluesadee S Laothamatas J (2013). Human Rabies: neuropathogenesis, diagnosis and management. **Lancet Neurol** 12(5):498-513
4. Shantavasinkul P, Tantawichien T, Wacharapluesadee S, Jeamanukoolkit A, Udomchaisakul P, Chattranukulchai P, Wongsaroj P, Khawplod P, Wilde H, **Hemachudha T** (2010). Failure of rabies postexposure prophylaxis in patients presenting with unusual manifestations. **Clin Infect Dis** 1;50(1):77-9.

**B. Positions and Honors****Positions and Employment**

1982 - Neurology staff, Chulalongkorn University Hospital, Thailand  
 1984 -88 Consultant Neurologist, Queen Saovabha Memorial Institute, Thai Red Cross Society  
 1989 -90 Secretary to Associate Dean in Research Affairs, Chulalongkorn University Hospital, Thailand  
 1990 -93 Assistant Director, Queen Saovabha Memorial Institute, Thai Red Cross Society

- 1990 -93 Director, WHO Collaborating Centre for Research on Rabies Pathogenesis and Prevention
- 1997 -98 President, Academic Affairs, Thai Neurological Association
- 2000 - Director of Neuroscience Centre for Research and Development, Chulalongkorn University Hospital, Thailand
- 2008 - Director, WHO Collaborating Centre for Research and Training on Viral Zoonoses
- 2017 - Director, Thai Red Cross Emerging Infectious Diseases – Health Science Centre

### **Other Experience and Professional Membership**

- 1989 -98 Member of the Board Committee of the Thai Neurological Association
- 1990 - Member of the WHO Expert Advisory Panel on Rabies
- 1998 -01 Member of the Board Committee of the Thai Royal College of Physicians
- 1999 -03 Member of the Board Committee of the National Research Council, Thailand
- 1999 - Member of the New York Academy of Sciences
- 2006 - Member of the Scientific Committee of the International Conference: Towards the Elimination of Rabies in Eurasia (2007)
- 2006 - Member of the Technical Advisory Group of Alliance for Rabies Control (UK)
- 2006 - Member of Rabies Control in Asia
- 2007 -08 Board member of Office of Knowledge Management and Development
- 2007 -08 Board member of Thai Government Pharmaceutical Organization
- 2013 - WHO member of the International Health Regulations Roster of Experts as an expert in Human-animal interface (Zoonoses)
- 2017 - Member of National Health Reform committee

### **Honors**

- 1992 National Research Council award for distinguished research projects
- 1993 Mahidol University – B. Brown Prize for distinguished researcher
- 1994 National Research Council award for distinguished researcher
- 2000 (Elected) Corporate Member of American Neurological Association
- 2001 Invited expert in “Treatment options in Human Rabies” organized by CDC (USA), Toronto
- 2001 Invited expert in “Rabies international meeting in the Americas” organized by CDC (USA), Ontario
- 2004 Outstanding Scientist Award from Foundation for the Promotion of Science and Technology under the Patronage of His Majesty the King
- 2009 Rabies Oration lecture in honor of Eddie and Piloo Bharucha and received honorary plaque at the World Congress of Neurology, Bangkok
- 2010 (Elected) Fellow of American College of Physicians
- 2014 Member of the National Board on Emerging Infectious Diseases, Thailand
- 2014 Member of Subcommittee on strategic planning on Emerging Infectious Diseases, Thailand
- 2015 Co-chair Scientific Committee and Plenary lecture – International Congress of Pathogens at Humana and Animal Interface (ICOPHAI)
- 2017 Honorary lecturer: NTD (Neglected Tropical Disease) Asia

## **C. Contributions to Science**

- 1. Research on the neuroimmunology of neurological diseases.** I have spent years researching neuroimmunology in neurological diseases such as autoimmune encephalitis, myasthenia gravis, Guillain-Barré syndrome, and stroke. I have developed clinical and lab-based diagnostics, and have conducted research to differentiate between immune- and infectious encephalitis in order to facilitate treatments.

- a. Mungaomklang A, Chomcheoy J, Wacharapluesadee S, Joyjinda Y, Jittmittraphap A, Rodpan A, Ghai S, Saraya A and **Hemachudha T** (2016). Influenza virus associated acute fatal necrotizing encephalopathy: role of non-permissive viral infection? **Clin Med Insights**.
  - b. Thanprasertsuk S, Pleumkanitkul S, Wacharapluesadee S, Ponpinit T, **Hemachudha T**, Suankratay C (2017). HTLV-1-Associated Myelopathy/Tropical Spastic Paraparesis: the First Case Report in Southeast Asia. **AIDS Res Hum Retroviruses**.
  - c. **Hemachudha T**, Phanthumchinda K (1994). Encephalitis in Southeast Asia. **Trav Med Int** 12:207-13.
  - d. **Hemachudha T**, Phanthumchinda K, Indrakoses A, Wilde H (1984). Intractable hiccups (singultus) as a presenting manifestation of Japanese encephalitis. **J Med. Assoc. Thailand** 67:620-3.
- 2. Extensive research on rabies.** I have researched and published extensively on rabies, working specifically on topics such as: streamlining of vaccination regimens, neuropathogenesis of rabies virus, and finding alternative treatment plans. I have analyzed rabies from the clinical, proteomics, and molecular level, hoping to be able to paint the full picture of rabies virus infection. I have also analyzed the socio-political level of rabies management and continue to do so at the national level. The papers below are selected from nearly 200 other studies I've published on this topic.
- a. **Hemachudha T**, Ugolini G, Sungkarat W, Shuangshoti S, Wacharapluesadee S Laothamatas J (2013). Human Rabies: neuropathogenesis, diagnosis and management. **Lancet Neurol** 12(5):498-513.
  - b. Virojanapirom P, Yamada K, Khawplod P, Nishizono A, **Hemachudha T** (2016). Increased pathogenicity of rabies virus due to modification of a non-coding region. **Arch Virol** 161(11):3255-61.
  - c. Ghai S, **Hemachudha T** (2018). Evaluating human rabies control in Asia: using 'One Health' principles to assess control programmes for rabies. **Rev Sci Tech** 37(2):617-627.
  - d. Denis M, Knezevic I, Wilde H, **Hemachudha T**, Briggs D, Knopf L (2018). An overview of the immunogenicity and effectiveness of current human rabies vaccines administered by intradermal route. **Vaccine pii: S0264-410X(18)31635-9**.
- 3. Wildlife virus surveillance at the human interface in Thailand.** My lab has been at the forefront of zoonotic disease surveillance in Thailand for over 20 years, including active surveillance for Nipah virus, Ebola viruses, and coronaviruses in wildlife. This work also includes international collaborations to better understand the global distribution of key groups of viruses, e.g. novel hepaciviruses.
- a. Drexler JF, Corman VM, Müller MA, Lukashev AN, Gmyl A, Coutard B, Adam A, Ritz D, Leijten LM, van Riel D, Kallies R, Klose SM, Gloza-Rausch F, Binger T, Annan A, Adu-Sarkodie Y, Oppong S, Bourgarel M, Rupp D, Hoffmann B, Schlegel M, Kümmerer BM, Krüger DH, Schmidt-Chanasit J, Setién AA, Cottontail VM, **Hemachudha T**, Wacharapluesadee S, Osterrieder K, Bartenschlager R, Matthee S, Beer M, Kuiken T, Reusken C, Leroy EM, Ulrich RG, Drosten C (2013). Evidence for novel hepaciviruses in rodents. **PLoS Pathog** 9(6):e1003438.
  - b. Wacharapluesadee S, Ngamprasertwong T, Kaewpom T, Kattong P, Rodpan A, Wanghongsa S, **Hemachudha T** (2013). "Genetic Characterization of Nipah Virus from Thai Fruit Bats (Pteropusylei)." **Asian Biomed** 7(6):813-19.
  - c. Wacharapluesadee S, Olival KJ, Kanchanaska B, Duengkae P, Kaewchot S, Srongmongkol P, leamsaard G, Maneern P, Sittidetvoripat N, Kaewpom T, Petcharat S, Yingsakmongkon S, Rollin PE, Towner JS, **Hemachudha T**. Surveillance for Ebola Virus in Wildlife, Thailand. **Emerg Infect Dis**. 21(12):2271-3.
  - d. Wacharapluesadee S, Duengkae P, Chaiyes A, Kaewpom T, Rodpan A, Yingsakmongkon S, Petcharat S, Phengsakul P, Maneern P, **Hemachudha T** (2018). Longitudinal study of age-specific pattern of coronavirus infection in Lyle's flying fox (Pteropus lylei) in Thailand. **Virol J** 15(1):38.
- 4. Identifying viral etiological agents in symptomatic patients.** Our research has shown that a large proportion of clinical cases, including encephalitides, remain undiagnosed in Thailand across Southeast



Asia. I have led several projects to identify etiological agents from clinical cases, and also to help facilitate the rapid detection and characterization of key groups of emerging pathogens in Thailand, like MERS-CoV and Ebola.

- a. Plipat T, Buathong R, Wacharapluesadee S, Siriarayapon P, Pittayawonganon C, Sangsajja C, Kaewpom T, Petcharat S, Ponpinit T, Jumpasri J, Joyjinda Y, Rodpan A, Ghai S, Jittmitraphap A, Khongwichit S, Smith D, Corman V, Drosten C and **Hemachudha T** (2017). Imported case of Middle East respiratory syndrome coronavirus (MERS-COV) infection from Oman to Thailand, June 2015. **Euro Surveill** 22(33).pii:30598
- b. Saraya A, Mahavihkanont A, Shuangshoti S, Sittidetboripat N, Deesudchit T, Callahan M, Wacharapluesadee S, Wilde H, **Hemachudha T** (2013). Autoimmune Causes of Encephalitis Syndrome in Thailand: Prospective Study of 103 Patients. **BMC Neurology** 2013.
- c. Hemachudha P, Wacharapluesadee S, Buathong R, Petcharat S, Bunprakob S, Ruchiseesarod C, Roeksomtawin P, **Hemachudha T** (2019). Lack of Transmission of Zika Virus Infection to Breastfed Infant. **Clin Med Insights Case Rep.** 12:1179547619835179.
- d. Joyjinda Y, Rodpan A, Chartpituck P, Suthum K, Yaemsakul S, Cheun-Arom T, Bunprakob S, Olival KJ, Stokes MM, **Hemachudha T**, Wacharapluesadee S (2019). First Complete Genome Sequence of Human Coronavirus HKU1 from a Nonill Bat Guano Miner in Thailand. **Microbiol Resour Announc** 8(6)pii:e01457-18.

#### **D. Additional Information: Research Support and/or Scholastic Performance**

##### **Ongoing Research Support**

WHO Zika Project	Hemachudha (PI)	04/01/18 - 09/30/19
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The goal is to study Zika epidemiology, reservoir host, vector dynamics and genetics in a presumptive endemic setting in the Mekong sub-region in Thailand.

##### **Completed Research Support (last 3 years only)**

NSTDA Chair Research Grant	Hemachudha (PI)	04/01/16 - 03/31/19
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The goal was to study Zoonotic diseases, and the role of reservoirs and vectors, diagnosis, mechanism and potential therapeutics.

**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: William, Timothy

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: President

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Malaysia	MBBS	1995	Medicine
The Royal College of Physicians, UK	MRCP	2002	Medicine
The Royal College of Physicians, UK	FRCP	2013	Infectious Diseases

**A. Personal Statement**

I am a Senior Clinical Researcher at the Malaysian Ministry of Health's Clinical Research Centre, Kota Kinabalu Sabah (2008 – present) and also Head of Infectious Diseases at Gleneagles Hospital, Kota Kinabalu (2018-present). Prior to these appointments, from 2008 – 2015 I was the State Infectious Diseases Physician for Sabah. I am President of the Infectious Diseases Society, Kota Kinabalu Sabah, which has an excellent track record of administering research grants with Menzies and other international partners. My basic Physician Training at the Queen Elizabeth Hospital in Sabah was followed by Infectious Diseases Subspecialty Training from 2004 to 2008, including three years at the Kuala Lumpur General Hospital and one year with at Royal Darwin Hospital, Australia. I am a Fellow of the Royal College of Physicians of Edinburgh and an Honorary Research Consultant with the Menzies School of Health Research Darwin. I am a key member of the Malaysian National Clinical Practice Guideline Committee for Malaria, Infection Control, HIV/AIDS and Adult Vaccinations. My research on *P. knowlesi* with the Menzies-CRC collaboration has been incorporated into not only National but also WHO Guidelines for the Treatment for Severe Malaria (2014, 2015 and now 2017).

1. **William T**, Menon J, Rajahram G, Chan L, Ma G, Donaldson S, Khoo S, Fredrick C, Jilip J, Anstey NM, Yeo TW (2011). Severe *Plasmodium knowlesi* Malaria in a Tertiary Hospital, Sabah, Malaysia. **Emerg Infect Dis** 7: 17: 1248-55.
2. **William T**, Rahman HA, Jelip J, Ibrahim MY, Menon J, Grigg M, Yeo TW, Anstey NM, Barber BE (2013). Increasing incidence of *Plasmodium knowlesi* malaria following control of *P. falciparum* and *P. vivax* malaria in Sabah, Malaysia. **PLoS Negl Trop Dis** 7 (1): e2026.
3. Barber BE, **William T**, Grigg M, Menon J, Auburn S, Marfurt J, Anstey NM, Yeo TW (2013). A prospective comparative study of knowlesi, falciparum and vivax malaria in Sabah, Malaysia: high proportion with severe disease from *Plasmodium knowlesi* and *P. vivax* but no mortality with early referral and artesunate therapy. **Clin Infect Dis** 56: 383-97.

4. **William T, Jelip J, Menon J, Anderios F, Mohammad, Mohammad TA, Matthew J Grigg MJ, Yeo TW, Anstey NM, Barber BE (2014).** Changing epidemiology of malaria in Sabah, Malaysia: increasing incidence of *Plasmodium knowlesi*. **Malaria J** 13 (1): 390.

## **B. Positions and Honors**

### **Positions and Employment**

1995 -96	House Officer
1996 -99	Medical Officer and Hospital Director, Tambunan Hospital, Sabah, Malaysia.
1999 -02	Medical Officer, Dept. of Medicine, Queen Elizabeth Hospital, Kota Kinabalu, Sabah, Malaysia
2002 -05	General Physician for Internal Medicine and Clinical Specialist of Infectious Diseases, Kuala Lumpur Hospital, Malaysia
2006	General Physician for Internal Medicine and Clinical Specialist of Infectious Diseases, Queen Elizabeth Hospital, Kota Kinabalu, Sabah, Malaysia
2007	Registrar, Dept. of Medicine, Royal Darwin Hospital, NT, Australia
2008 -15	Consultant, Infectious Disease Unit, Queen Elizabeth Hospital, Kota Kinabalu, Sabah
2008 -	Clinical Researcher, Queen Elizabeth Hospital Clinical Research Centre, Kota Kinabalu
2012 -	Honorary Associate, Menzies School of Health Research, Darwin Australia
2012 -	President, Infectious Disease Society of Kota Kinabalu, Sabah, Malaysia
2017 -	Infectious Disease Consultant and Head Infectious Disease Unit, GLENEAGLES Hospital, Kota Kinabalu, Sabah Malaysia

### **Other Experience and Professional Membership**

Member, Malaysian Medical Association  
Member, Malaysian Medical Council  
Executive Committee, Sabah Medical Association  
President, Infectious Disease Society of Kota Kinabalu Sabah

### **Honors**

2000	Professional Excellence Award, Ministry of Health, Sabah, Malaysia
2003	Professional Excellence Award, Ministry of Health, Sabah, Malaysia
2003	Royal Rotary Club Award (Kuala Lumpur), Service for the Treatment of patients with Severe Acute Respiratory Distress Syndrome
2009	Professional Excellence Award, Ministry of Health, Sabah, Malaysia
2010	Professional Excellence Award, Ministry of Health, Sabah, Malaysia
2013	American Society of Tropical Medicine and Hygiene Travel Award
2017	Merdeka Award for Health, Science and Technology

## **C. Contributions to Science**

1. **Publications.** Since 2011, I have co-authored >80 publications with >2000 citations. These publications have made a major contribution to the knowledge of the epidemiology, clinical features and treatment of *P. knowlesi* malaria. My studies on artesunate in severe knowlesi and vivax malaria (William *et al*, *Emerg Infect Dis* 2011, Barber *et al*, *Clin Inf Dis* 2013) have changed global (WHO) and SE Asian policy and practice. With collaborators Anstey, Barber and Grigg, my RCTs of artemisinin combination therapy (ACT) for non-falciparum species have led to national policy change to universal ACT for uncomplicated vivax and knowlesi malaria. In Sabah, I lead a large ongoing program of research into the prevention, surveillance and management of malaria and other tropical infections with national and international collaborators. In 2017 I was a joint recipient of Malaysia's prestigious Merdeka Award in Health, Science and Technology, for outstanding contribution to the treatment of knowlesi malaria.



- a. Grigg MJ, **William T**, Menon J, Dhanaraj P, Barber BE, Wilkes CS, von Seidlein L, Rajahram GS, Pasay C, McCarthy JS, Price RN, Anstey NM†, Yeo TW† (†: equal contribution authors) (2016). A randomized open-label clinical trial of artesunate-mefloquine versus chloroquine for the treatment of uncomplicated *Plasmodium knowlesi* malaria in Sabah, Malaysia (ACT KNOW trial). **Lancet Infect Dis** 16(2):180-8.
- b. Rajahram GS, Barber BE, **William T**, Grigg MJ, Menon J, Yeo TW, Anstey NM (2016). Falling *Plasmodium knowlesi* malaria death rate among adults despite rising incidence, Sabah, Malaysia, 2010-2014. **Emerg Infect Dis** 22(1).
- c. Grigg MJ, Cox J, **William T**, Jelip J, Fornace KM, Brock PM, von Seidlein L, Barber BE, Anstey NM, Yeo TW Drakeley CJ (2017). Individual factors associated with the risk of acquiring human *Plasmodium knowlesi* malaria in Malaysia: a case-control study. **Lancet Planet Hlth** 1 (3), e97–e104.
- d. Grigg MJ, **William T**, Barber BE, Rajahram GS, Menon J, Schimann E, Wilkes CS, Patel K, Chandna A, Price RN, Yeo TW, Anstey NM (2018). Artemether-lumefantrine versus chloroquine for the treatment of uncomplicated *Plasmodium knowlesi* malaria: an open-label randomized controlled trial (CAN KNOW). **Clin Infect Dis** 66 (2): 229-236.

#### **D. Additional Information: Research Support and/or Scholastic Performance**

##### **Ongoing Research Support**

NIH 1R01 AI116472-01 William (PI) 2015-2020  
Comparative incidence and clinical spectrum of *Plasmodium knowlesi* malaria, a longitudinal study in Sabah, Malaysia.

Aus. Gov. Dept. of Foreign Affairs and Trade William (PI) 2016-2019  
Strengthening regional research collaboration in the prevention and containment of multidrug-resistant tuberculosis and malaria

##### **Completed Research Support**

MRC (UK) William (Malaysian PI) 2012-2017  
Environmental and Social Ecology of Human Infectious Diseases (ESEI) Grant  
Defining the biomedical, environmental and social risk factors for human infection with *Plasmodium knowlesi*