



01 July 2015

Michelle Colby, DVM, MS  
Branch Chief  
Agricultural Defense Branch  
Department of Homeland Security  
Science and Technology Directorate  
Washington, DC 20528

Dear Dr. Colby,

As the Authorized Organizational Representative of EcoHealth Alliance, I am pleased to present you with the enclosed proposal (*Mantle: A Software Platform for the Future of Infectious Disease Biosurveillance and Research*) in response to BAA 15DHS-001-TTA-3-0009-I. I am certain you will find the information in line with your needs. The proposal covers the following key points:

- Establishes universal biosurveillance data standards
  - Develops a novel open-source and open access (free to all users) cloud-based One Health biosurveillance platform that can fuse multiple data streams for research and analysis in near real time
  - Develops a friendly and efficient user interface for researchers, policy makers, and the general public (including corporate entities) to interact with worldwide One Health biosurveillance data and to use predictive models developed by EcoHealth Alliance
- EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. EcoHealth Alliance is dedicated to developing solutions that promote conservation and prevent pandemics.

Thank you for the opportunity to serve you. I look forward to meeting with you again after you have reviewed our proposal,

Sincerely,

Aleksei Chmura  
Authorized Organizational Representative  
Senior Coordinator of Programs  
460 West 34<sup>th</sup> Street, 17<sup>th</sup> Floor  
New York, NY. 10001, USA  
(t) 1.212.380.4473  
(e) [chmura@ecohealthalliance.org](mailto:chmura@ecohealthalliance.org)  
[www.ecohealthalliance.org](http://www.ecohealthalliance.org)

cc: Dr. Andrew Huff, Dr. Peter Daszak, and Mr. Harvey Kasdan



## Cover Page

1. **BAA Number:** BROAD AGENCY ANNOUNCEMENT (BAA) 15DHS-001 National Bio- and Agrodefense Facility Transition Research Project on behalf of Department of Homeland Security Science and Technology (S&T) Directorate
2. **Title:** *Mantle: An open-source and open-access software platform for biosurveillance and infectious disease research*
3. **Prime Offeror:** EcoHealth Alliance
  - a. **Subcontractors:**
    - i. ProMED
    - ii. International Society for Disease Surveillance (ISDS)
    - iii. Distributed Information Technologies Inc.
    - iv. Clango Inc.
4. **Technical Contact:** Dr. Andrew Huff  
EcoHealth Alliance  
460 West 34<sup>th</sup> St.  
17<sup>th</sup> Floor  
New York, NY 10001-2320  
(direct) 212-380-4497
5. **Administrative Contact:** Ms. Karissa Whiting  
EcoHealth Alliance  
460 West 34<sup>th</sup> St.  
17<sup>th</sup> Floor  
New York, NY 10001-2320  
(direct) 212-380-4476
6. **Duration of Effort:** 3 years

## Table of Contents

<b>Cover Page .....</b>	<b>2</b>
<b>Executive Summary .....</b>	<b>4</b>
<b>Proposal .....</b>	<b>5</b>
Inadequacy of current biosurveillance data management software .....	5
No existing software product is a complete solution .....	6
Mantle is the solution .....	6
<b>Performance Goals .....</b>	<b>8</b>
<b>Detailed Technical Approach .....</b>	<b>9</b>
Mantle database .....	9
Mantle graphic user interface .....	10
Mantle mobile app .....	11
<b>Statement of Work, Schedule, and Milestones .....</b>	<b>12</b>
Planning .....	12
Implementation .....	12
Evaluation and Deliverables .....	13
<b>Deliverables .....</b>	<b>15</b>
Mantle planning documents .....	15
Mantle user interface .....	15
Mantle mobile application .....	15
Mantle training videos and workshop .....	15
Mantle reports .....	15
Mantle outreach materials .....	16
<b>Management Plan .....</b>	<b>16</b>
<b>Facilities .....</b>	<b>18</b>
Facilities at DIT and Clango .....	19
<b>Government Furnished Resources .....</b>	<b>20</b>
<b>Cost Summary .....</b>	<b>20</b>
Planning .....	20
Implementation .....	21
Evaluation and Deliverables .....	21
<b>Resumes for Key Personnel .....</b>	<b>23</b>
<b>Other DHS Support .....</b>	<b>23</b>
<b>Assertion of Data Rights .....</b>	<b>23</b>
<b>Appendix A: CVs of Key Personnel .....</b>	<b>24</b>

## Executive Summary

Mantle is a free and open-source project, developed under the Apache License 2.0, with all code hosted on GitHub. Data that are made publicly available by contributors will be open access (free to any other Mantle user). Infectious diseases cause great harm to human and animal health across the globe. Furthermore, the unforeseen emergence of infectious diseases has destabilized economies, harmed biodiversity, and reduced the capacity of public health systems to respond to future infectious disease threats. Events like the 2014-2015 Ebola epidemic highlight that the international health community lacks either the sheer capacity or the appropriate distribution of resources to respond to outbreaks when and where they first occur. The One Health approach to public health proposes that human interaction with ecosystems not only contributes to ecosystem degradation (harming the health of these systems), but also puts human, plant, and animal populations at risk for subsequent outbreaks of infectious diseases. By acknowledging that human, animal, and ecosystem health are linked, One Health proposes an interdisciplinary and holistic approach to solving problems. Despite a movement towards One Health research, the infrastructure to manage the information and datasets that are ever growing in size and complexity remains unsuited to the magnitude of the problem. The desire for single entities to control information, to achieve greater personal and organizational wealth and power, directly opposes the intended goals of biosurveillance and One Health. Open access and open source software platforms are needed to address these complex One Health problems.

Mantle is an open-source web platform designed for the storage, sharing, and visualization of One Health biosurveillance data and is designed to meet the needs of a wide variety of users. One Health researchers in the field or the lab can upload datasets to Mantle in a variety of commonly used formats to an intelligent database where they are stored in a unified system for easy download and analysis. Users of Mantle can set fine-grained sharing and privacy controls on uploaded datasets to share or protect their data. Once in Mantle, users can examine datasets in a number of views appropriate to their content, including tables, maps, and charts. Additionally, Mantle's intelligent storage layer can display datasets from different data sources alongside one another and save and export combined datasets. Users with export privileges can download data in a number of formats for use with external software like SAS, R, and ArcGIS.

Mantle's users can belong to organizations and teams, and individual datasets can be grouped together into larger projects, all with group-level access permissions. These features enable scientists to collaborate across geographic, institutional, and disciplinary boundaries to accomplish large-scale data collection efforts not otherwise possible. Mantle also includes a number of open-access datasets from partners and biosurveillance data streams that are available for users to combine with their own data or content.

Mantle will uniquely provide free access to high fidelity infectious disease data, which will enable scientists, practitioners, and policy-makers to tackle the world's biggest One Health threats. Furthermore, Mantle will enable faster response to disease threats as data are continuously uploaded, checked, and contextualized rather than waiting for a worldwide crisis. Open access health data and open source biosurveillance software will help One Health research advance, and Mantle will fill a critical gap in emerging infectious disease knowledge and One Health preparedness.

## Proposal

### *Inadequacy of current biosurveillance data management software*

Our ability to avert future public health crises, like those posed by emerging infectious diseases (EIDs) like highly pathogenic Avian Influenza, FMD, and MERS, depends largely on our ability to accurately and rapidly collect, process, and analyze large amounts of information on infectious disease events. Existing software packages for managing the collection, storage, and sharing of One Health biosurveillance and research data are inadequate for this discipline-spanning, collaborative endeavor.

Datasets do exist for a wide manner of events related to disease and health, and can be utilized to inform traditional disease reporting or develop novel biosurveillance methods (Morse, 2012; Hay et al., 2013). In practice, this is limited by the nature of the datasets, which are generally large, complex, and in disparate locations and formats.

Novel approaches to combining, analyzing, and visualizing data can break down these barriers, and hold great promise for finding new solutions to complex global problems. For instance, in the case of inconsistent data for infectious disease datasets, heuristics can be applied to apply appropriate models to best estimate the spatial distribution of risk given the available data (Hay et al., 2013). Even with relatively poor quality data, the information learned from these types of models can direct the allocation of international development resources to improve environmental health, determine where biosurveillance gaps exist, and identify where public health and medical resources should be staged to more rapidly respond to infectious disease outbreaks.

However, even with modeling methods flexible enough to work with a wide variety of datasets, the relevant datasets are generally kept private, inaccessible to scientists and policymakers alike, and in disparate formats such that a single implementation of the data combination and analysis methods is impossible or overly burdensome.

The field of biosurveillance exemplifies these problems. Traditional disease surveillance operates under a model whereby certain diseases were designated “reportable” under International Health Regulations (IHR) (Morse, 2012) or local, state, and federal regulations. Until 2005, the IHR included cholera, plague, yellow fever, and, before its declared eradication, smallpox. These biosurveillance methods are not designed to detect EIDs, however—pathogens either heretofore unseen in humans, that are increasing in incidence, or in range (Jones et al. 2008).

Event-based surveillance systems have begun to monitor other data feeds to respond to potential disease threat indicators, whether of known or unknown cause. Syndromic surveillance monitors streams of data like employee absenteeism and sales of prescription and over-the-counter medication to identify signals suggesting a public health event (Morse, 2012). These signals have not yet predicted an outbreak and are currently best used as an early warning system that supplements the other types of existing biosurveillance systems (Morse, 2012).

Disease surveillance is one of many areas that would benefit from improvements in information management and analytics. USAID and partner organizations have access to vast datasets of disease- and development-related phenomena, including passive and active surveillance on IHR diseases, novel pathogen identification, and emerging infectious diseases. These data are almost entirely spatial in nature: if not explicitly, they at least implicitly describe phenomena occurring across the Earth’s surface and when combined can help identify where

biosurveillance information gaps exist, and assist with resource allocation during disease outbreaks.

A system to host disparate datasets and make them interoperable would enable many new applications in One Health research, allowing, for example, heuristics such as those described by Hay et al. to be applied to the data to generate new knowledge and improve the allocation of resources to combat infectious disease threats worldwide (Hay et al., 2013).

*No existing software product is a complete solution*

Existing tools only partly address the need to collate and combine infectious disease data. For example, USAID's GeoCenter takes advantage of these datasets spatial nature by displaying each on an interactive map, which the user can zoom and pan around to examine the data. GeoCenter is a storehouse of spatial datasets hosted by ESRI. It displays spatial datasets, but is not open access, lacks interoperability, and is not compatible with generally accepted and user-friendly data formats. Most problematically, GeoCenter does not provide the metadata for fields in its' tabular data which makes it very difficult to analyze outside of their systems. Lastly, GeoCenter is prohibitively expensive for many users and users can only download data in ESRI's formats.

Another example, Dryad, is an open-source archive of datasets. It hosts detailed metadata for each dataset, provides DOI numbers for datasets it hosts so that it can associate them with published papers, and provides an interface to search. It also indexes KNB and TreeBASE, two other dataset archives. All three are part of DataONE, and NSF-funded collaboration working toward better data practices in science.

Dryad differs from USAID's GeoCenter in a few ways. It is not specifically designed for any kind of data, but is designed for users to be able to register and upload their own datasets. Both treat datasets as single units, with dataset-level metadata but a lack of sub-dataset-level metadata. Mantle aims to operationalize users' datasets and will uniquely allow the combining and filtering of existing datasets, generating new possibilities for existing surveillance data feeds not provided by Dryad or GeoCenter.

Currently, most One Health analyses are carried out on local machines, and on static datasets, like those downloadable from GeoCenter. Analyses might be carried out in GIS software, whether closed-source like ESRI's ArcGIS or open-source like QGIS and GRASS. Programming languages like R and Python also allow for in-depth analyses to be conducted on spatial data, using custom statistical procedures as warranted. These tools form a crucial part of the tool chain, and the ability to examine and explore datasets with them will be important for the foreseeable future. Mantle will still allow users to download data for analysis in these software applications while also providing value-added products and services for combined datasets.

*Mantle is the solution*

Mantle is an open-source, cloud-compatible platform for storing, studying, and sharing data on infectious diseases across plants, animals, and humans. It is designed to meet the needs of three groups of users: scientists, policymakers, and the general public.

For scientists, Mantle makes datasets portable and connected. Scientists can upload datasets to the Mantle website or collect data from the field using a mobile app. Datasets in Mantle can easily be made entirely private, publicly accessible, or shared with specific users or groups.

Mantle can handle tabular data, and other widely used spatial data formats. Data can be visualized and explored in useful ways, and can be downloaded in the originally uploaded file or in a customizable format for use in analytical software.

Mantle stores metadata—information about a dataset and its contents—using development standards for linked data—namely JSON-LD and WCSV, part of the overarching Resource Description Framework (RDF). Tapping into the emerging semantic web enables richer interactions with datasets, streamlining many common data tasks. Mantle natively understands a number of data types common to One Health data, including spatial and temporal elements, taxonomic names, case counts, and associates these data with published ontologies. However, it also works seamlessly with any numeric, categorical, and textual data.

Mantle is pre-populated with a variety of open-access datasets for common One Health data types, including land cover types, land use change, human population, wildlife population, agricultural animal populations, weather and climate, species ranges, and land use types. User datasets can be visualized alongside these datasets, and they can be exported alongside user datasets for use in analyses. In addition to these, any user-uploaded datasets and biosurveillance APIs marked as open-access can be visualized and exported in the same manner. In contrast, user-uploaded datasets marked as private are secure and confidential in accordance with the level of security indicated or marked by the user. By combining open access data with EcoHealth Alliance's Hot Spot Mapping models and technology, users can predict where diseases are likely to emerge or travel over road, rail, or air travel networks. Thus, Mantle fills a critical knowledge communication gap between scientists in the field, laboratory and public health scientists conducting analysis, and decision makers and emergency response personnel.

Policymakers and decision makers can view real-time visualizations of biosurveillance streams and data feeds in Mantle's dashboards. Researchers can upload datasets representing the output of models built in other analytical software, which can be shared with policymakers, and policymakers can also view and interact with the output of custom-built modeling modules to view timely and meaningful summaries of public health data feeds. Potential use cases for the general public include browsing day-to-day textual and syndromic surveillance information, viewing the predictions of a one-time study, and monitoring the latest calculated epidemic curve in an outbreak or ongoing epidemic. This use case helps train new One Health personnel in the methods employed in One Health and may help to reduce the general public's panic during outbreak events.

Mantle facilitates crosscutting collaborations between disciplines and institutions. Users can create, manage, and join organizations and groups. Groups of users can access and collaborate on collections of datasets, grouped manually or by specified properties. For instance, users interested in Rhanavirus can view the Global Rhanavirus Reporting System, a collaborative effort by scientists worldwide to aggregate observed cases of Rhanavirus across species and locations (a Mantle prototype). This will significantly improve One Health information management within many organizations and groups.

Mantle is developed as an open source project on GitHub. Users can run their own Mantle servers, which will be able to interface with other Mantle instances using semantic web standards. Mantle's flexibility makes it suited to a spectrum of tasks related to infectious disease data, while it is simultaneously tailored to commonalities and frequent problems in One Health.



## Performance Goals

Mantle will be a novel biosurveillance tool, to address the objectives of Focus Area 3. In Mantle, data are stored and retrieved in a standardized spatial format that does not require the user to significantly clean or convert scientific data, thus allowing Mantle users to rapidly analyze data in emergency situations in near real time. Mantle requires extensive investment initially, however as an open-source and open-access project, improvements to Mantle will be made by users and the scientific community, similar to the software program R. Thus, Mantle is a cost-effective technology to support the monitoring, communication, and facilitation of emerging infectious disease (EID) prevention. Mantle accepts data on a limitless variety of diseases making it more likely to be used on an ongoing basis and improving the accuracy of FMD outbreak assessments alongside of many other EIDs that put humans and animals at risk. Finally, Mantle's open source (free to be edited and examined by the public) and open access (free to all users) format, along with its user-friendly interface will appeal to the general public and scientists alike. Open source and open access software programs like Mantle improves public perception of disease modeling due to complete transparency of the software. Mantle is currently at a TRL 3 and MRL3, but we anticipate reaching TRL 8 and MRL 5 (this work contains both technology and models) by the end of the 3-year project.

We aim to:

- Establish international universal data standards for biosurveillance systems and metadata
- Develop a novel open-source and open access (free to all users) cloud-based One Health biosurveillance platform that combines and integrates disparate data sources in a variety of formats
- Develop a friendly and efficient user interface for researchers, policy makers, and the general public (including corporate entities) to interact with worldwide One Health biosurveillance data
- Enable advanced users to download shared data combined with other open access data layers that are relevant to One Health research and development to answer complex and relevant One Health questions

Performance goals include:

- Back end
  - Create a secure identity and access management system for users and their data
  - Create a system to combine disparate data sources (APIs or uploaded data sets)
  - Refine One Health existing ontologies to improve Mantle's performance
  - Construct a RESTful API for others to ingest or use Mantle
  - Provenance metadata and/or version control
  - APIs to ingest the hundreds of existing biosurveillance systems into a single One Health platform
  - Obfuscating human health and agricultural data, from research or surveillance streams or field based research, to maintain regulatory compliance and privacy when necessary (e.g., HIPAA, SOX, etc.)
- Front end



- Provide a user friendly and simple interface for complex One Health data and systems
- Provide mobile apps for One Health data collection in the field in multiple languages
- Provide mobile apps for users to view analyses and reports on the go in multiple languages
- Develop a centralized secure web portal for users to upload and store datasets, collect raw data, and share datasets with other scientists and the general public
- Provide users with spatial data visualization tools via the web portal
- Provide users with tools to predict the spread of pathogens via multiple modalities based on each specific agent's characteristics

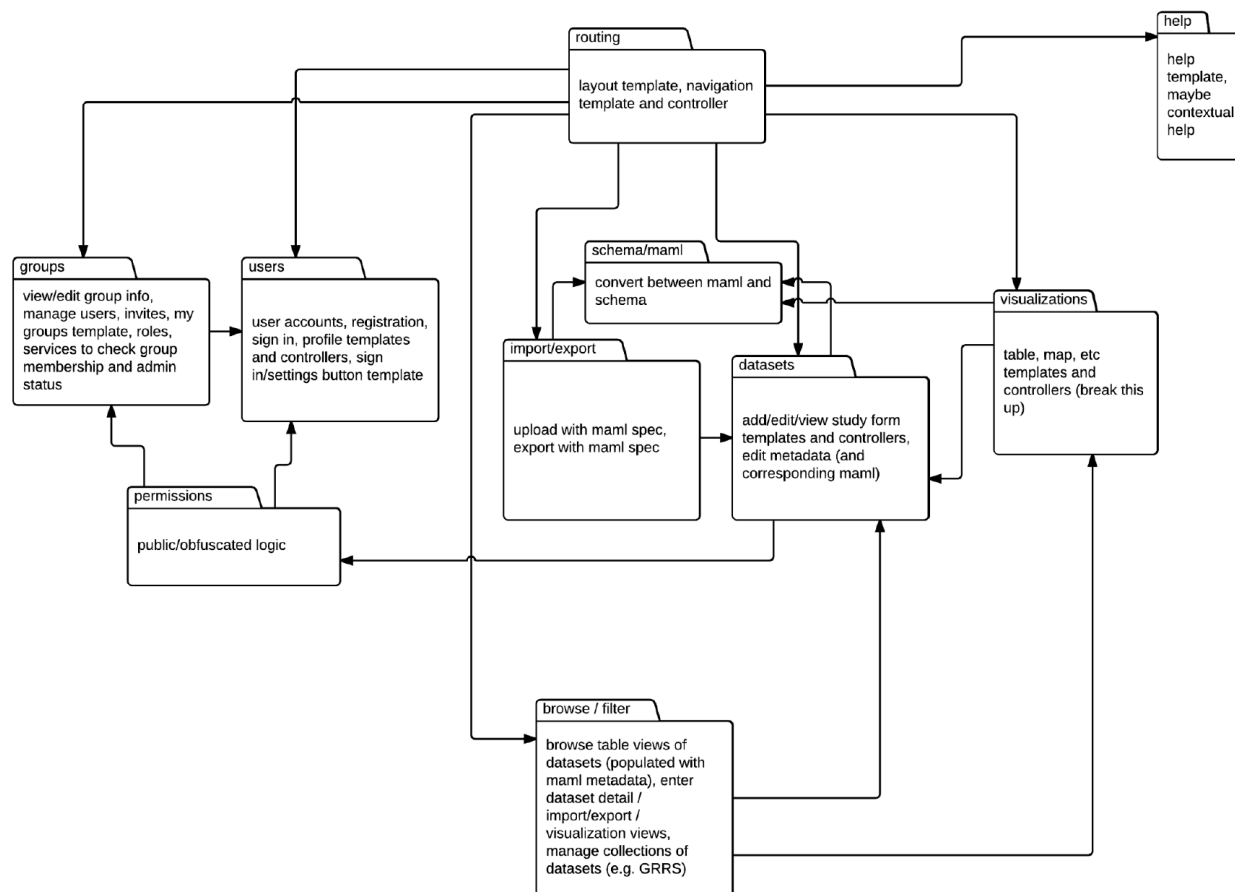
### **Detailed Technical Approach**

Mantle consists of 3 key components. First, there is a back-end cloud-based database that handles the integration of disparate data storage types. Second, there is the front-end graphic user interface that provides the portal for users to input, query, and download data or view pre-loaded analyses (mobile and web apps), and spatial emerging infectious diseases models (for 162 infectious diseases initially). Finally, there is a mobile application to aid Mantle users in collecting and instantly uploading data to the cloud-based server to expedite One Health disease research and development.

#### *Mantle database*

Mantle will use the Resource Description Framework (RDF), which is a standard data interchange model for web-based applications. Mantle will use XML syntax to define both the relationship between two things and the two ends of any link to accommodate evolving data schemas. These Uniform Resources Identifiers (URIs) will allow Mantle to organize and index data from sources such as tabular data, based on best practices developed by the W3C working group. In the case of a CSV file, all of the columns, rows, and cells are converted to an annotated tabular data model. Mantle will be a Linked Data Platform Resource (LDPR), which is an HTTP resource that can be modified and accessed using HTTP code and is managed through a LDP server (<http://www.w3.org/TR/ldp/>).

Mantle will become a Digital Object Identifier (DOI) provisioner so that hosted datasets can be cited and used in published works. We will likely use DataCite (<https://www.datacite.org/node>) to register DOIs for datasets that are uploaded to Mantle because they use an XML schema. Existing tools such as Dryad currently use DataCite for this purpose. Data will be stored in the cloud hosted by Amazon Web Services. See Figure 1 for a detailed illustration of Mantle's schematic.

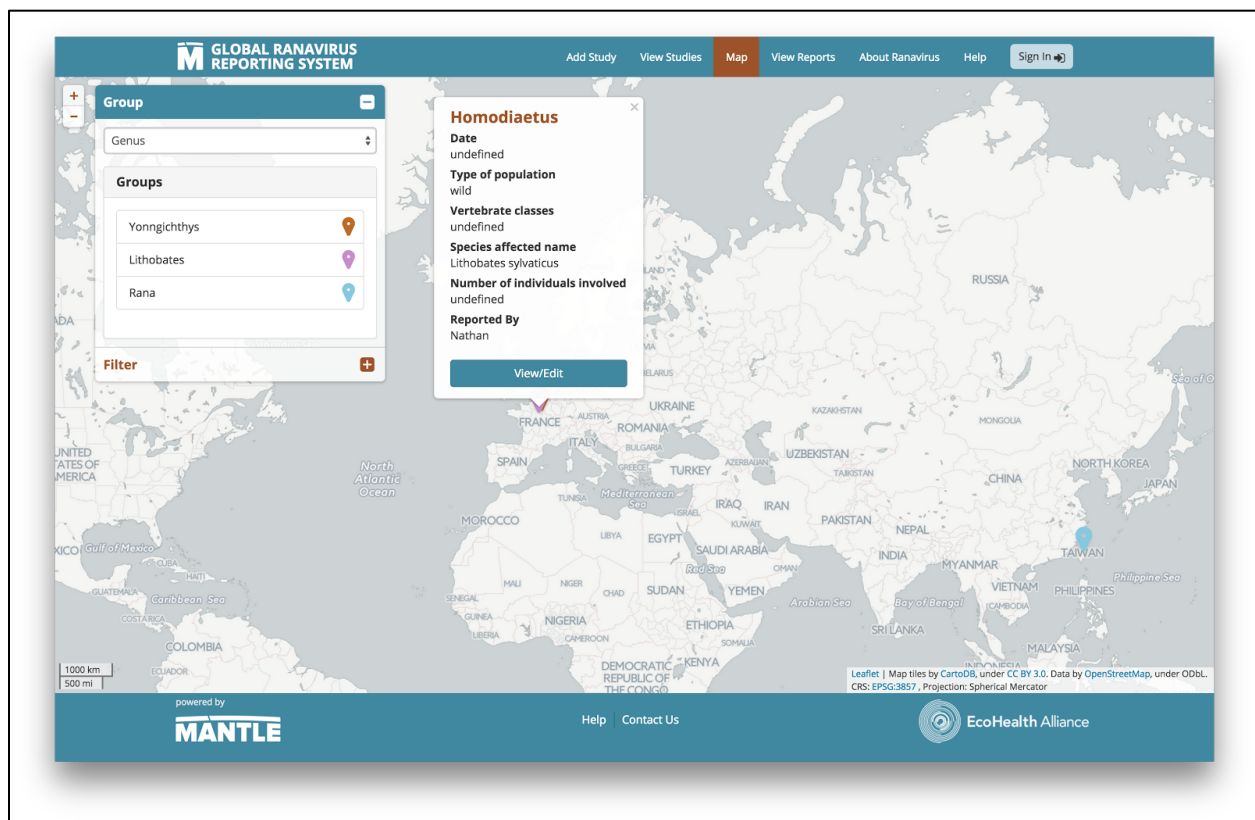


**Figure 1.** Diagram of components of Mantle's functions, permissions, and data visualizations.

### *Mantle graphic user interface*

Mantle's web portal will include 6 key pages:

1. The login & registration page;
2. A dashboard and report view which provides pertinent information based on the user's unique needs or organizational affiliation;
3. Detailed dataset view / management page;
4. A page that enables users to upload and specify it's metadata;
5. A page that allows users to download open access data across taxa and disease emergence drivers via a simple queries and via selection in a spatial interface (Figure 2);
6. A page that enables users to run models developed and published by EHA under the PREDICT & IDEEAL programs (Emerging Infectious Disease (EID) Hotspots – Hotspots 3, Pathogen Network Travel Analysis – EID Glowurm, Macroeconomic consequence prediction).



**Figure 2.** A screen shot of Mantle’s graphic user interface and web portal. This particular view shows one project, the Global Ranavirus Reporting System, used as a proof of concept for Mantle and is currently being used by the U.S. Forest Service (USDA) and multiple users across the Ranavirus scientific community.

### *Mantle mobile app*

Mantle users will be able to freely download and use a mobile application built for iOS and Android. The mobile application will focus primarily on data entry capabilities for users collecting biosurveillance field data, and will instantly link each data point to a user’s predefined Mantle project and dataset. The mobile application will work best with wireless Internet, but will allow a user to save the data locally until the user can upload data through a cellular network or with wireless connectivity.

## **Statement of Work, Schedule, and Milestones**

The following Statement of Work is supported by a general graphical timeline for the three project phases: Planning, Implementation, and Evaluation and Deliverables (Figure 3).

### *Planning*

1. Task 1: Recruit and hire Mantle staff and students.
  - 1.1. Deliverables: New students and staff on board to aid in Mantle development.
  - 1.2. Completion date: We anticipate completing task 1 by December 2015, with ongoing recruitment of project personnel for various Mantle tasks.
2. Task 2: Mantle kickoff meeting.
  - 2.1. Deliverables: A one-day event that brings together Mantle project managers, a representative from each sub-contract award, and stakeholders from three groups: scientists, policy-makers, and interested parties from the general public.
  - 2.2. Completion date: We anticipate completing task 2 in the late fall/early winter of 2015.
3. Task 3: Construct research, security, and management plans.
  - 3.1. Deliverables: 5 documents that detail the data collection method, web-hosting specifications, research steps, information security protocols, and information management specifications for Mantle development. An outline for a technical document for source code and access information for GitHub.
  - 3.2. Completion date: We anticipate completing task 3 by January of 2015, with input from end-users and stakeholders at the kickoff meeting in task 2.
4. Task 4: User advisory group meetings.
  - 4.1. Deliverables: Initial feedback groups for task 3 research plans and then bi-annual meetings to share progress and obtain specific feedback.
  - 4.2. We anticipate task 4 to be ongoing with bi-annual meetings in the fall and spring of each award year.
5. Task 5: Develop communication and marketing strategy.
  - 5.1. Deliverables: A task list of media outlets and scheduled press releases, and a communications packet (hard copy and electronic) that includes a pamphlet, one-page summary, user instructions, and contact information.
  - 5.2. We anticipate completing task 5 by January of 2016.

### *Implementation*

6. Task 6: Develop application.
  - 6.1. Software testing.
  - 6.2. Field-testing.
  - 6.3. Software refinement (continuous throughout) and stress testing.
  - 6.4. Deliverables: Fully functional database, graphic user interface, and mobile application. We anticipate initial development to take 6-8 months from the award date with software testing beginning in the spring of 2016 (continuous throughout). Field testing will also begin in the spring of 2016 and testing will continue in parallel with development until such a time as user-groups and

research staff are satisfied that the product can be launched for use (target launch is spring of the third year).

7. Task 7: Project management meetings.
  - 7.1. Deliverables: Project managers and representatives from sub-contract awardees will meet by conference or web-based calling bi-annually and as needed for updates and progress reports.
  - 7.2. We anticipate at least bi-annual meetings in October and March of each project year.
8. Task 8: Mantle launch event.
  - 8.1. Deliverables: An evening hosted in New York City to launch Mantle. We will invite all sub-contract awardees, stakeholders, user advisory group members, funders, and donors. The event will involve a demonstration, speakers, and a panel to answer questions.
  - 8.2. We anticipate hosting the Mantle launch event in the spring of year 3.
9. Task 9: Mantle trainings and workshops
  - 9.1. Deliverables: We will post YouTube videos on how to use Mantle and detailing Mantle's source code. We will also host one in-person workshop for users to input datasets and to develop several example modules of data analysis and synthesis using Mantle data. These modules will be available on Mantle.
  - 9.2. We anticipate posting videos in the summer of year 1, the winter and summer of year 2, and hosting the workshop in the winter of year 3. Modules will be posted in the summer of year 3.
10. Task 10: Marketing and Outreach (see Planning, task 5).
  - 10.1. Deliverables: 10 press releases to major U.S. and global cities; posting the Mantle user interface link to public health department websites in academic institutions and state/country health departments; dissemination of communications packet to list servers and key global research and policy contacts.
  - 10.2. We anticipate continuing this task until the final project date.

### *Evaluation and Deliverables*

11. Task 11: Reporting
  - 11.1. Deliverables:
    - 11.1.1. Peer-reviewed journal articles (4);
    - 11.1.2. Financial reports (annual);
    - 11.1.3. Copyright documents; Progress reports (annual);
    - 11.1.4. Technical reports (3);
    - 11.1.5. Property reports (1).
  - 11.2. We anticipate reporting to continue throughout the project and conclude in the summer of Year 3.
12. Task 12: Attend regional, national, and international conferences to share results
  - 12.1. Deliverables: Project staff will disseminate research findings and conduct outreach on Mantle capabilities at conferences and agency meetings.
  - 12.2. We anticipate attending at least 3 conferences in the fall/winter of years 2 and 3.
13. Task 13: Analyze user traffic and data uploads
  - 13.1. Deliverables: User traffic analysis reports (2), and summary of data uploads (2).

13.1.1. We anticipate preparing reports in the spring and summer of year 3 to evaluate progress after the launch date.

14. Task 14: Annual audit

14.1. Deliverables: 3 Annual audits

14.2. We anticipate delivering the annual audit by May of 2016, 2017, and 2018.

Mantle Timeline		Base Year				Option 1				Option 2			
		Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer
Planning	Recruit and hire PhD students	x	x										
	Recruit and hire software developers	x	x										
	Conduct Mantle kickoff meeting	x	x										
	Construct data collection plan	x	x										
	Conduct user advisory group meeting	x		x		x		x		x		x	
	Construct web hosting development plan	x	x										
	Construct research & development plan	x	x										
	Information & cyber security plan	x	x	x									
	Establish data & information management plan	x	x	x									
	Establish marketing and communication strategy	x	x	x									
Implementation	Develop application	x	x	x	x	x	x	x	x	x	x		
	Software testing			x	x	x	x	x	x	x	x	x	
	Field test application			x	x			x	x	x	x		
	Project management meetings	x		x		x		x		x		x	
	Software refinement and stress testing					x	x	x	x	x	x	x	x
	Host a Mantle launch event											x	
	Mantle training and workshops				x		x		x		x		x
	User focus groups and feedback			x	x	x	x	x	x	x	x	x	x
	Marketing and outreach			x	x	x	x	x	x	x	x	x	x
Evaluation and Deliverables	Prepare peer-reviewed journal articles				x			x	x			x	x
	Attend regional, national, and international conferences to present results		x			x	x			x	x		
	Financial reports	x	x	x	x	x	x	x	x	x	x	x	x
	Copyright (no patent required as open source open access application)				x				x				x
	Progress & technical reports		x				x				x		
	Property reports				x				x				x
	Analyze user traffic, user accounts, and data uploads									x	x	x	x
	Annual audit			x				x				x	

**Figure 3.** Planning, implementation, and project evaluation and deliverables for Mantle.

## **Deliverables**

### *Mantle planning documents*

Mantle planning documents will be complete 60 – 90 days after the effective date of the award. These documents will outline specific research tasks, security protocols, database architecture, mobile and web application testing procedures, and long-term data management information.

### *Mantle database*

The Mantle database structure will be completed approximately two years after the effective date of the award, and launched within 3 years after the award. Data are stored and retrieved in a standardized spatial format that does not require the user to significantly clean or convert scientific data. These infectious disease data are then stored where the user can decide whether to hide, share with spatial obfuscation, or to completely share with other users in the community. Users are then able to rapidly identify relevant publications, scientists, and host nation partners based on location in maps and tables, rather than by traditional literature reviews via taxonomic description or through social networks.

### *Mantle user interface*

The user interface will be completed approximately one year after the effective date of the award, and launched along with the database two years after the award. The web-based interface enables users to quickly visualize infectious disease data in tables, graphs, and maps and shares this information with partners internationally.

### *Mantle mobile application*

The Mantle mobile application will be completed approximately one year after the effective date of the award, and launched along with the database and user interface two years after the award. The mobile application will allow users to collect and upload data to Mantle projects in real time.

### *Mantle training videos and workshop*

The Mantle training videos will be complete approximately two years after the effective date of the award. These videos will include detailed step-by-step instructions for uploading data, exporting data, using the spatial data viewer, and viewing existing models and analyses. The workshop will gather interested users to develop modules for distribution via Mantle such as the Global Coronavirus Reporting System. This workshop will be held in the winter of the third project year.

### *Mantle reports*

Mantle reports will include technical documents outlining the specifications of the database and mobile application code and architecture, ontology, syntax, and peer-reviewed papers on Mantle development and implementation. These documents will be prepared two years after the effective of the award.



### *Mantle outreach materials*

Mantle outreach materials will include a pamphlet, one-page summary, how-to guides, and press releases. These materials will be available online and in hard copy format. They will be complete two years after the effective date of the project award and disseminated during year 3.

## **Management Plan**

Building on over 40 years of groundbreaking science, EcoHealth Alliance (EHA) is a global nonprofit organization dedicated to protecting wildlife and safeguarding human health from the emergence of disease. The organization develops ways to combat the effects of damaged ecosystems on human and wildlife health. Using environmental and health data covering the past 60 years, EHA's scientists created the first ever global disease hotspots map that identified at-risk regions, to help predict and prevent the next pandemic crisis. That work is the foundation of EHA's rigorous, science-based approach, focused at the intersection of the environment, health and capacity building. Working in the U.S. and more than 20 countries worldwide, EHA's strength is founded on innovations in research, training, global partnerships, and policy initiatives.

EHA is a partner of the USAID Emerging Pandemic Threats PREDICT program, a \$75 million effort focused on predicting and preventing pandemic diseases. PREDICT is building a global early warning system to detect and reduce the impacts of emerging diseases that move between wildlife and people (zoonotic diseases). PREDICT has developed a SMART surveillance method (Strategic, Measurable, Adaptive, Responsive, and Targeted) that accounts for the fact that zoonotic pathogens, like influenza and MERS, are responsible for the majority of emerging infectious diseases in people, and that more than three quarters of these emerging zoonoses are of wildlife origin. The SMART surveillance approach is designed to detect novel diseases with pandemic potential early, giving health professionals the best opportunity to prevent emergence and spread. It also targets sentinel animal species at active human interfaces in hotspot regions to improve surveillance efficiency.

The PREDICT team builds on a broad coalition of partners to develop the global capacity to monitor diseases at the animal-human interface and develop a risk-based approach to concentrate these efforts in surveillance, prevention, and response at the most critical points for disease emergence from wildlife.

### PREDICT project objectives:

- Assess local surveillance capacity;
- Implement targeted and adaptive wildlife disease surveillance systems;
- Develop and deliver new technologies to improve efforts close to the source; and,
- Use cutting-edge information management and communication tools to bring the world closer to realizing an integrated, global approach to emerging zoonotic diseases.

*EcoHealth Alliance* will be the primary organization leading this project with Dr. Andrew Huff as the project lead. EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics. EcoHealth Alliance pioneered the field of conservation medicine, a discipline that addresses the link between

ecological disruption of wildlife, livestock, and human health and survival. EcoHealth Alliance is committed to unifying biodiversity conservation, ecology and health by its leadership and strategic role with its local conservation partners. Project staff includes software developers, data scientists, social scientists, public health scientists, clinicians, diagnostic laboratory personnel, veterinarians, information and cyber security experts, and administrative support (Figure 3).

Our management plan blends strong scientific expertise in global emerging infectious disease (EID) surveillance, using Agile software methodologies for rapid application development. The project will be managed by our team of data scientists and software developers at EcoHealth Alliance, in consultation with thought leaders in the field of One Health biosurveillance (EHA, ProMED, ISDS), infused with innovative technologies DIT Inc., developers of leading edge, high quality software, and secured by in the information and cyber security experts at Clango Inc.

*DIT*, Distributed Integrated Technologies Inc., creates and supports leading edge, high quality software in the fields of spatial databases, GIS & Mapping interfaces, visualization, 3D data publishing, and technical software development. DIT will be responsible for the scaling development of interactive web models and network analyses for rail, air, and road transportation networks for Mantle. DIT employs an open source development model to foster extended, collaborative communities, and an open source business model to provide flexible, low-cost technical solutions. DIT's services and products include technology integration, software support, consulting, custom application development, and training and productivity tools that leverage our open-source software systems.

*Clango* will be responsible for the security aspects of Mantle. Clango has 15 years experience in identity and access management, anti-fraud solutions, governance, and advisory services worldwide. Clango has deployed numerous identity and access management (IAM) capabilities like user registration and lifecycle management; adaptive and federated authentication; privileged administration and access governance. Clango has worked in finance, healthcare, higher education, and across federal, state, and local governments. Clango uses the IAM framework to assure that authorized identities have access to the right data at the right time.

*ProMED*, the Program for Monitoring Emerging Disease, is an internet-based reporting system that provides fast and reliable news about threats to human, animal, and plant health worldwide. Sources of information include media reports, official reports, local observers, and other confidential sources of human intelligence. ProMED staff screens this information before it is posted to the network that includes over 70,000 subscribers in 185 countries. ProMED personnel contributing to this project include infectious disease doctors and epidemiologists (Figure 3).

*ISDS*, the International Society for Disease Surveillance, works to improve population health by advancing the science and practice of surveillance to support timely and effective prevention and response. The International Society for Disease Surveillance (ISDS) is a 501(c) 3 nonprofit organization founded in 2005 and dedicated to the improvement of population health by advancing the science and practice of disease surveillance. ISDS' membership represents professional and academic subject matter experts in the fields of public health surveillance, clinical practice, health informatics, health policy, and other areas related to national and global health surveillance. ISDS works toward a vision of timely, effective, and coordinated disease prevention and response among a skilled public health workforce through programs that position us at the vanguard of the disease surveillance field.

	EcoHealth Alliance																				ProMED	ISDS	DIT	Clango					
AREAS OF EXPERTISE	Andrew Huff	Peter Daszak	Catherine Machalaba	Kevin Olival	Nathan Breit	Maureen Miller	C. Zambrana-Torrello	Jonathan Epstein	Melinda Rostal	Emily Hagan	Russel Horton	Jonathan Golley	Allison White	Simon Anthony	Noam Ross	Frederico Rosario	William Karesh	Amy Slinge	Toph Allen	Daniel Sullivan	Larry Madoff	Marjorie Pollack	Laura Streichert	Edward Trudeau	Patrick McGeehan	Stelhen Matta	Arun Kothannath	Steven Hawkins	Kamille White
Emerging Infectious Disease Modeling																													
Data Management	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Informatics	X	X		X	X	X				X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Modeling and Simulation	X			X	X	X				X		X		X				X	X				X	X	X	X			
Visualization	X			X	X	X					X	X			X			X	X				X	X	X	X			
Software Development																													
Applications Development	X			X						X	X				X	X	X	X	X	X				X	X	X	X	X	X
Functionality & Design	X			X						X	X				X	X	X	X	X	X				X	X	X	X	X	X
Mobile Applications				X						X	X				X	X	X	X	X	X				X	X	X	X	X	X
Scientific Development	X	X		X		X				X					X	X	X	X	X	X				X	X	X	X	X	X
Systems Development	X			X		X				X	X				X	X	X	X	X	X				X	X	X	X	X	X
Testing & Automation	X			X						X	X				X	X	X	X	X	X				X	X	X	X	X	X
Cyber & Information Security																													
Application and Systems Development Security	X			X						X						X	X		X						X	X	X	X	X
Business Continuity and Disaster Recovery Planning	X															X										X	X	X	X
Cryptography				X														X						X		X	X	X	X
High Availability Systems	X															X	X		X					X	X	X	X	X	X
Identity and Access Management / Control				X														X						X		X	X	X	X
Laws, Investigation, and Ethics	X																									X	X	X	X
Physical Security	X															X										X	X	X	X
Security Management Practices	X			X												X								X		X	X	X	X
Telecommunications and Networking Security				X												X	X	X								X	X	X	X
One Health																													
Bacteriology		X						X	X	X				X							X	X	X						
Biology		X	X	X			X	X	X	X				X	X	X	X				X	X	X						
Biostatistics	X	X	X			X	X	X	X	X			X	X	X				X		X	X	X	X					
Biosurveillance	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
Clinical Laboratory Science		X				X	X	X	X	X				X	X	X					X	X	X	X					
Environmental Health Science	X	X	X	X			X						X	X	X	X	X	X	X	X	X	X	X						
Epidemiology	X	X	X			X	X	X	X	X			X	X			X	X	X	X	X	X	X	X					
Field Surveillance		X		X		X	X	X	X	X			X	X			X	X	X	X	X	X	X						
Food Systems	X		X				X	X	X								X												
Health Systems Research	X	X	X			X	X		X				X			X	X	X	X	X	X	X	X	X					
Infectious Disease Ecology	X	X	X	X			X	X	X	X			X	X	X	X	X	X	X	X	X	X							
Medicine		X												X							X	X	X						
Parasitology		X						X	X	X				X							X	X	X						
Plant Pathology		X													X						X	X							
Policy	X	X	X	X		X				X							X				X	X	X						
Veterinary Medicine		X						X	X	X							X				X	X							
Virology		X		X				X	X	X				X							X	X	X						
Zoology / Wildlife		X	X	X			X	X	X								X	X			X	X							
Other																													
Cartography	X														X				X										
Data Science	X			X		X				X					X	X	X	X	X					X	X	X	X	X	X
Geographic Information Systems	X			X		X			X				X	X	X	X	X	X	X								X	X	X
Governance		X	X			X			X					X			X				X	X	X				X	X	X
Implementation Science	X			X						X					X	X	X	X	X								X	X	X
Legal and Regulatory	X	X	X			X			X				X				X				X	X	X			X	X	X	X
Linguistics / Ontology	X			X						X					X			X	X	X	X	X	X	X		X	X	X	X
Spatial Databases	X			X		X				X	X		X	X	X	X	X	X	X					X	X	X	X	X	X
Statistics	X					X	X			X	X	X	X	X	X		X	X						X					
Social Science																													
Anthropology						X			X																				
Psychology	X			X																									
Sociology				X															X										

**Figure 4.** Summary chart illustrating areas of expertise and capacity of project staff.

## Facilities

EHA is a 501(c)(3) nonprofit organization that specializes in scientific research on the causes, origins, and spread of zoonotic emerging diseases. EHA scientists have been working on spatial modeling for over 15 years, and on modeling of infectious disease emergence and spread for over a decade. EHA is based in New York City with 10,000 square feet of office space including a meeting room and basic laboratory. A core administrative staff of 11 employees support EHA's scientific team (15 core scientists, 100+ field staff) and are available for work on this project through foundation support. EHA is equipped with 25 networked PCs including ARRA funded International Live Meeting Video Conferencing facilities. EHA has access to multiple servers, server support, and all necessary software on Mac, Linux, and Windows operating systems. Additional computing power is acquired from commercial cloud providers to meet project needs.

EHA has an active program of staff development and this is reviewed and adjusted annually as part of each employee's evaluation process. Specific provisions are made for internal training and external training resources, tuition support programs via a partnership with Columbia University, and active support of staff to spend time in collaborators organizations. All early stage investigators are mentored to provide guidance in research practices, grant management, administration and project management. Financial support from EHA core funds is available to support external tuition, travel to conferences and to conduct joint research in collaborator's institutions. There is no obligation for teaching time at EHA and all research staff are funded for 100% research time; however, there is a provision, through partnership with Columbia University, to enable staff to teach at the undergraduate and graduate level, with monetary support provided by Columbia University. Administration and other staff are supported in their efforts to enhance their careers by the provision of tuition fees for external courses, travel funds for conferences, and time off their core activities.

#### *Facilities at DIT and Clango*

DIT is headquartered in Arlington, VA. DIT's affiliate Clango has an office in Minneapolis, MN. Both offices have their own virtual private networks and phone systems, and share financial and administrative personnel. They also have on-site office managers, lunchrooms, private meeting rooms, and advanced conference facilities including large screen projection systems and whole-room Polycom video conferencing systems. The proposed work will be performed at the Arlington and Minneapolis sites.

DIT has a mixed environment of personal and shared computing platforms. Employees average two computers per person (desktop, laptop, and/or personal home owned system), with each computer typically equipped with multiple multi-core processors, a high-performance graphics card, dual monitors, and 8GB or more of main memory. These personal systems run a mix of Windows, Mac OS X, and Linux operating systems. Shared resources include compilation and testing farms and workstations running a variety of alternative operating systems for testing purposes.

## **Government Furnished Resources**

Mantle does not require information or data from the government to support this work. However, government-collected data at the local, state, and national level can and should be uploaded to Mantle's database or be provided via an API (existing biosurveillance systems) for complete reporting of infectious disease outbreaks and to quantify and predict future emerging infectious disease risk.

## **Cost Summary**

The following Cost Summary is supported by a general graphical timeline for the three project phases: Planning, Implementation, and Evaluation and Deliverables (Figure 3).

### *Planning*

1. Task 1: Recruit and hire Mantle staff and students.
  - 1.1. Subcontracts: N/A
  - 1.2. Man hours: 500
  - 1.3. Consumables: N/A
  - 1.4. Total Cost: \$500,000
2. Task 2: Mantle kickoff meeting.
  - 2.1. Subcontracts: N/A
  - 2.2. Man hours: 1500
  - 2.3. Consumables: N/A
  - 2.4. Total Cost: \$100,000
3. Task 3: Construct research, security, and management plans.
  - 3.1. Subcontracts: N/A
  - 3.2. Man hours: 5000
  - 3.3. Consumables: \$5000
  - 3.4. Total Cost: \$750,000
4. Task 4: User advisory group meetings.
  - 4.1. Subcontracts: N/A
  - 4.2. Man hours: 540
  - 4.3. Consumables: N/A
  - 4.4. Total Cost: \$150,000
5. Task 5: Develop communication and marketing strategy.
  - 5.1. Subcontracts: N/A
  - 5.2. Man hours: 1000
  - 5.3. Consumables: N/A
  - 5.4. Total Cost: \$50,000

*Implementation*

6. Task 6: Develop application.
  - 6.1. Subcontracts: \$1,105,073
  - 6.2. Man hours: 30,000
  - 6.3. Consumables: N/A
  - 6.4. Total Cost: \$2,575,419
7. Task 7: Project management meetings.
  - 7.1. Subcontracts: N/A
  - 7.2. Man hours: 1000
  - 7.3. Consumables: N/A
  - 7.4. Total Cost: \$151,830
8. Task 8: Mantle launch event.
  - 8.1. Subcontracts: N/A
  - 8.2. Man hours: 500
  - 8.3. Consumables: N/A
  - 8.4. Total Cost: \$150,000
9. Task 9: Mantle trainings and workshops
  - 9.1. Subcontracts: N/A
  - 9.2. Man hours: 1000
  - 9.3. Consumables: N/A
  - 9.4. Total Cost: \$50,000
10. Task 10: Marketing and Outreach (see Planning, task 5).
  - 10.1. Subcontracts: N/A
  - 10.2. Man hours: 2000
  - 10.3. Consumables: N/A
  - 10.4. Total Cost: \$100,000

*Evaluation and Deliverables*

11. Task 11: Reporting
  - 11.1. Subcontracts: N/A
  - 11.2. Man hours: 5000
  - 11.3. Consumables: N/A
  - 11.4. Total Cost: \$300,000
12. Task 12: Attend regional, national, and international conferences to share results
  - 12.1. Subcontracts: N/A
  - 12.2. Man hours: 1000
  - 12.3. Consumables: N/A
  - 12.4. Total Cost: \$100,000



13. Task 13: Analyze user traffic and data uploads

- 13.1. Subcontracts: N/A
- 13.2. Man hours: 3000
- 13.3. Consumables: N/A
- 13.4. Total Cost: \$200,000

14. Task 14: Annual audit

- 14.1. Subcontracts: N/A
- 14.2. Man hours: 500
- 14.3. Consumables: N/A
- 14.4. Total Cost: \$75,000.60



## **Resumes for Key Personnel**

Please see Appendix A for resumes and *curriculum vitae* of project staff. Figure 3 provides a summary of the project staff's skills provided in Appendix A. The specific program personnel were not individually listed in this document or the budget because we will rotate project staff as necessary to accomplish all of the tasks listed in statement of work.

## **Other DHS Support**

EcoHealth Alliance does not receive DHS support at this time.

## **Assertion of Data Rights**

No claims of proprietary rights in pre-existing data or technology are made, and Mantle will be an open source technology made publicly available via an Apache 2.0 license. One of the major barriers to One Health biosurveillance efforts has been the desire for system owners to profit off of the technology and data provided. At EcoHealth Alliance we want to make the world a better place and we do not want to exploit the technology or data for our own personal gain. Simply, we want to provide tools and technologies that reduce the global threat of pandemics, promote conservation, and make the world a better place.

## **Appendix A: CVs of Key Personnel**

# Andrew G. Huff

## Curriculum Vitae

Cell Phone: 612-743-1265 Email: andrewgeorgehuff@gmail.com

### EDUCATION

- 2011-2014 University of Minnesota, Minneapolis, MN  
Doctor of Philosophy in Public Health – Environmental Infectious Disease  
Dissertation title: *Enhancing food defense: Risk managers' perceptions, criticality assessments, and novel method for objectively determining food systems' criticality*  
Advisors: Jeff Bender, Jim Hodges, & Mike Osterholm
- 2010-2011 University of Minnesota, Minneapolis, MN  
Master of Science in Security Technologies, Geographic Information Science Minor  
Thesis title: *Youth bulges, education, property crime, and income disparity: Utilizing geographic information systems to predict violence within the United States*  
Advisor: Massoud Amin
- 2006-2010 University of Minnesota, Minneapolis, MN  
Bachelor of Arts in Psychology  
Thesis title: *An exploration of client process outcomes at the University of Minnesota Vocational Assessment Clinic*  
Advisor: Jo-Ida Hansen

### ACADEMIC APPOINTMENTS

- 2014-Present EcoHealth Alliance  
Data analysis, Infectious Diseases, Technical Research & Development  
*Senior Research Scientist*
- 2014-Present Columbia University  
Ecology & Evolutionary Biology E3B  
*Adjunct Faculty*
- 2013-2014 Sandia National Laboratories  
Epidemiology, Environmental Health, Food and Agriculture, & Public Health Systems  
*Senior Member of the Technical Staff*
- 2011-2013 University of Minnesota  
National Center for Food Protection and Defense  
*Research Fellow*
- 2008-2010 University of Minnesota  
Center for Interest Measurement Research  
*Psychological Research Assistant*

### PROFESSIONAL EXPERIENCE

- 2010-Present Risk Factor Research, LLC  
*Chief Executive Officer*

- 2009-2011     State of Minnesota, Office of Administrative Hearings, Administrative Court  
*Judicial Extern*
- 2006-2009     United States Department of Veterans Affairs  
*Outpatient Mental Healthcare Program Assistant/Manager*
- 2002-2010     United States Army & Minnesota Army National Guard  
*Infantryman – Two combat tours in Central America and the Middle East*

## **TEACHING**

- 2014            Columbia University, E3B, New York NY  
*Guest Lecturer*  
 Food Systems & Emerging Infectious Disease Ecology
- 2014            Georgetown University, School of Medicine, Washington, D.C.  
*Guest Lecturer*  
 Agroterrorism
- 2012            University of Minnesota, School of Public Health, Minneapolis, MN  
*Teaching Assistant*  
 Spatial Epidemiology
- 2012            University of Minnesota, College of Science and Engineering, Minneapolis, MN  
*Teaching Assistant*  
 Security Science & Technologies Foundations

## **PEER REVIEWED PUBLICATIONS**

- Huff, A. G., Beyeler, W. E., Kelley, N. S., & McNitt, J. A. (2015). How resilient is the United States food system to pandemics?. *Journal of Environmental Studies and Sciences*. 1-11.
- Huff, A. G., Hodges, J., Kennedy, S. P., & Kircher, A. (2015). Analysis of the Food and Agriculture Systems Criticality Assessment Tool (FASCAT) and collected data. *Risk Analysis*.
- Huff, A. G. (2014). Enhancing Food Defense: *Risk managers' perceptions, criticality assessments, and novel method for objectively determining food systems' criticality* (dissertation). University of Minnesota, Minneapolis, MN.
- Huff, A. G., Hodges, J. Kircher, A., & Kennedy, S. (2014). State officials' perceptions of Food and Agriculture Sector Criticality Assessment Tool (FASCAT), food-system risk, and food defense funding. *Journal of Homeland Security and Emergency Management*, 0, 1-16.
- Huff, A. G., Kircher, A., Hoffman, J., & Kennedy, S. P. (2013). The development and use of the Food and Agriculture Systems Criticality Assessment Tool (FASCAT), *Food Protection Trends*, 33, 218-223.
- Huff, A. G. (2011). *Youth bulges, education, property crime, and income disparity: Utilizing geographic information systems to predict violence within the United States* (Master thesis). University of Minnesota, Minneapolis, MN.

## **PATENTS**

Huff, A. G., Kircher, A., Hoffman, J., & Kennedy, S. P. (2014). Criticality Spatial Analysis (CRISTAL). Filed by the University of Minnesota. Patent number 61784675.

## **UNPUBLISHED MANUSCRIPTS**

Huff, A. G., Lambert, G. L., Finley, P. D., Evans, L., Mecher, C. E., & Davey, V. J. (2014). Ranking of pandemic influenza mitigation strategies: Why local population demographics matter. Unpublished manuscript.

Huff, A. G., Hansen, J. I. (2011). An evaluation of client process outcomes at the University of Minnesota Vocational Assessment Clinic. Unpublished manuscript.

Huff, A. G., Kennedy, S. P., & Hoffman, J., & Kircher, A. (2013). *Criticality Spatial Analysis (CRISTAL)*. Unpublished manuscript.

Huff, A. G., & Silver, E. J. (2014). Rural access to healthcare: Will the Patient Protection and Affordable Care Act make a difference? Unpublished manuscript.

## **BOOK CHAPTERS**

Huff, A. G., Ramsey, W., & Kennedy, S. P. (2013). Chapter 4 Assessing Vulnerabilities. Barach, J. T. (Edition 1)., *A systems approach using preventive controls for safe food production; Part 2 Food defense planning: Prevention of intentional adulteration of food*; GMA, 1350 I Street, N. W. Washington, D.C., 20005.

## **PRESENTATIONS**

Huff, A. G., Slagle, A., Horton, R., Breit, N, & Gold, Z. (2015, March). *Global Rapid Identification Tool Set (GRITS)*. DDD3: Florence, Italy.

Huff, A. G., Slagle, A., Horton, R., Breit, N, & Gold, Z. (2015, March). *Global Rapid Identification Tool Set (GRITS)*. Defense Threats Reduction Agency Technical Interchange Meeting: Washington, D.C.

Lambert, G., Huff, A., & Finley, P. (2014, August). *Ranking pandemic influenza mitigation strategies*. Presented at the Joint Statistical Meeting. Boston, MA.

Huff, A. G., Beyeler, W., Fogleman, B., & Pate, R. (2014, May). *Food and agriculture Systems Simulation and Modeling*. Presented at North Carolina Food Safety and Food Defense Summit. Raleigh, NC.

Huff, A. G., Beyeler, W., Fogleman, B., & Pate, R. (2014, March). *Food and agriculture Systems Simulation and Modeling*. Presented at the United States Department of Homeland Security Government Coordinating Council and Sector Coordinating Council Quarterly Meeting. Washington, D.C.

Huff, A. G., Lambert, G., Evans, L., & Finley, P. (2013, October). *Ranking pandemic interventions via multilevel sensitivity analysis of model results*. Presented at the INFORMS annual conference, Minneapolis, MN.

Huff, A. G., & Hoffman, J. (2013, June). *CRISTAL – A novel method to measure criticality and risk spatially*. Presented at the United States Department of Homeland Security Government Coordinating Council and Sector Coordinating Council Quarterly Meeting. Washington, D.C.

- Huff, A. G., Hodges, J., & Kircher, A. (2013, June). *State officials' perceptions of Food and Agriculture Sector Criticality Assessment Tool (FASCAT), food-system risk, and food defense funding*. Presented at the International Symposium Society and Resource Management.
- Huff, A. G. (2013, May). *CRISTAL – A novel method to measure criticality and risk spatially*. Presented to the Food and Drug Administration Center for Food Safety and Applied Nutrition, Washington, D.C.
- Huff, A. G. & Kircher, A. (2013, April). *CRISTAL – A novel method to measure criticality and risk spatially*. Presented at Burger King Global Headquarters to members of the board of directors, Miami, FL.
- Huff, A. G. (2013, March). *EMA, FIDES, CRISTAL – Methods and technologies to enhance international border security*. Presented at the Border Management North conference. Detroit, MI.
- Huff, A. G. (2013, May). *CRISTAL – A novel method to measure criticality and risk spatially*. Presented to Battelle, Minneapolis, MN.
- Huff, A. G. (2012, April). *CRISTAL – A novel method to measure criticality and risk spatially*. Presented at the Grocery Manufacturers Association Food Defense Working Group, Washington, D.C.
- Huff, A. G. (2012, October). *Methods to quantify economic and public health risks to critical infrastructures*. Presented at the United States Department of Homeland Security Criticality Working Group. Washington, D.C.
- Huff, A. G. (2012, October) *CRISTAL – A novel method to measure criticality and risk spatially*. Presented at the National Center for Food Protection and Defense Biannual Meeting, Minneapolis, MN.
- Huff, A. G. & Hoffman, J. (2012, June). *Quantitative analysis and validation of the Food and Agriculture Systems Criticality Assessment Tool*. Presented at the United States Department of Homeland Security Government Coordinating Council and Sector Coordinating Council Quarterly Meeting. Washington, D.C.

## **SYNERGISTIC ACTIVITIES**

- 2011-2014 I interviewed top-level state government food defense and security managers and built collaborative relationships to enable the sharing of private and sensitive data between large multinational privately owned food companies, multiple state governments, and the federal government to improve food system resiliency to foodborne infectious diseases.
- 2012-2014 I am a regular contributor and risk assessment subject matter expert at the Department of Homeland Security's Sector Coordinating Council and Government Coordinating Council for Food and Agriculture, and Health and Human Services Sector Coordinating Council and Government Coordinating Council, where I provided food industry leaders and government agencies with information and to inform public health policies on foodborne and intentionally introduced infectious diseases.
- 2012-2013 I was the host and organizer of the Department of Homeland Security's, National Center for Food Production and Defense, Food Defense Research Working Group, which brought the leadership of the USDA, FDA, and HHS to meet with the leadership of the

world's largest food producers and distributors to develop new methods for food safety and defense.

2011-2012 I created new labs, reading, writing, practical exercises, and exams for a graduate level spatial epidemiology course, which bridged the gap between the geography department's GIS courses, veterinary medicine courses, and public health infectious disease courses.

## **COLLABORATORS**

### *Current*

Walter Beyeler	Sandia National Laboratories
Peter Daszak	EcoHealth Alliance
Jonathan Epstein	EcoHealth Alliance
Patrick Finley	Sandia National Laboratories
William Karesh	EcoHealth Alliance
Nicholas Kelley	University of Minnesota –Center for Infectious Disease Research and Prevention
Maureen Miller	EcoHealth Alliance
Kevin Olival	EcoHealth Alliance
Melinda Rostal	EcoHealth Alliance
Emily Silver	University of Maine

### *PhD Advisors and Research Collaborators*

Jeff Bender	University of Minnesota, College of Veterinary Medicine
Craig Hedberg	University of Minnesota, School of Public Health, Env. Health Science
Jim Hodges	University of Minnesota, School of Public Health, Biostatistics
Shaun Kennedy	University of Minnesota, College of Veterinary Medicine
Mike Osterholm	University of Minnesota, School of Public Health, Env. Health Science

### *MS Advisors and Research Collaborators*

Massoud Amin	University of Minnesota, College of Science and Engineering
Elizabeth Amin	University of Minnesota, Pharmacology
Alfred Marcus	University of Minnesota, Carlson School of Management
Susanna McMaster	University of Minnesota, Geographic Information Science

### *BA Advisor and Research Collaborators*

Jo-Ida Hansen	University of Minnesota, Associate Dean of the College of Liberal Arts, and the Department of Psychology, Vocational Counseling
---------------	---

## **PROFESSIONAL MEMBERSHIPS**

American Public Health Association (APHA)  
American Society of Industrial Security (ASIS)  
Association of American Geographers (AAG)  
International Association for Society and Natural Resources (IASNR)  
Institute of Food Technologists (IFT)  
Institute for Operations Research and the Management Sciences (INFORMS)  
International Society for Disease Surveillance (ISDS)  
International Society for Infectious Diseases (ISID)  
International Society of Risk Analysis (ISRA)  
National Environmental Health Association (NEHA)



## **HONORS AND AWARDS**

- 2014 North Carolina Food Safety and Food Defense Summit - Honorarium
- 2014 Grocery Manufacturers Association – Honorarium
- 2008 Department of Veterans Affairs team leader and office manager training planning committee member, which resulted in a significant bonus
- 2002-2008 Military Awards: Army Commendation Medal, Army Achievement Medal, Army Good Conduct Medal (2x), National Defense Service Medal, Army Service Ribbon, Overseas Service Ribbon, Armed Forces Reserve Medal (2x), Global War on Terrorism Service Medal, Global War on Terrorism Expeditionary Medal, and the Iraq Campaign Medal

## **SERVICE**

- 2014-Present Reviewer for the *Journal of Environmental Studies and Sciences*
- 2014-Present Reviewer for the *Journal of Career Development*
- 2013-Present Reviewer for the *Journal of Homeland Security and Emergency Management*
- 2013-Present Reviewer for *Risk Analysis*

## **RESEARCH MANAGEMENT**

### *EcoHealth Alliance*

- United States Department of Defense, Defense Threats Reduction Agency (DTRA) (\$2,400,000 annually)
- United States Department of Defense, Defense Threats Reduction Agency (DTRA) (\$1,200,000 annually)
- United States Department of Agriculture (USDA) (\$45,000)
- United States Forest Service (\$8,000)

### *Sandia National Laboratories –Federally Funded Research and Development Center*

- United States Department of Veterans Affairs Office of Public Health (\$450,000 annually)
- United States Department of Homeland Security - Food and Agriculture Sector (\$450,000 annually)
- United States Department of Defense, Defense Threats Reduction Agency (DTRA) (classified - unable to disclose award amount)

### *University of Minnesota*

- U.S. Department of Homeland Security grant (No. 2010-ST-061-FD0001) awarded to the National Center for Food Protection and Defense at the University of Minnesota – P.I. Amy Kircher - (\$1,200,000)

## **VOLUNTEER WORK**

- 2014-Present State of New York Science Fair Judge.
- 2012-Present Volunteer consultant on food protection for small and medium sized food companies.
- 2006-2010 Patrick Henry High School, Minneapolis, Minnesota  
In-classroom teacher's assistant and tutor for students learning English as a second language, and mathematics.
- 2005-2006 Courage Center, Golden Valley, Minnesota  
Volunteer ski instructor to teach people with disabilities new skills in the Courage Alpine Skiing Program, and the Archery Program.

**Dr. William B. Karesh**  
EcoHealth Alliance  
460 West 34<sup>th</sup> St., 17<sup>th</sup> Flr  
New York, NY 10001  
Phone: 212-380-4463  
Email: karesh@ecohealthalliance.org

## **EDUCATION**

University of Georgia, Athens, GA, USA  
Doctorate - 5/1982, Major: Veterinary Medicine

Clemson University, Clemson, SC, USA  
Bachelor's Degree - 12/1977, Major: Biology

## **WORK EXPERIENCE**

### **Executive Vice President for Health and Policy**

**9/2010 - Present**

Ecohealth Alliance  
New York, New York, USA

- Build and strengthen Ecohealth Alliance partnerships with mission-critical government agencies, international non-governmental organizations, and private sector businesses to provide guidance and sound policy development to protect the health of human and animal populations.
- Represent organization to federal, state, and city government personnel and elected officials, as well as foreign governments and multi-lateral agencies.
- Serve a leadership role in strategic planning, improving organizational effectiveness, and expanding external recognition of its work.
- Provide scientific expertise around wildlife health surveillance and disease emergence.
- Serve as Technical Director for USAID's Emerging Pandemic Threats PREDICT program; President of OIE Working Group on Wildlife Diseases, and Co-Chair of the IUCN Wildlife Health Specialist Group (see descriptions below).

### **Vice President and Director of Global Health Program**

**1/2008 – 8/2010**

Wildlife Conservation Society  
Bronx, New York, USA

- Designed and implemented transformational approaches to integrated, multi-disciplinary health programs that have been adopted by numerous organizations and professionals around the world (ex.: One World – One Health®).
- Developed and led multi-million dollar international projects and grant giving programs in 45 countries focused on the disease control and prevention for people, domestic animals and wildlife.

- Served as lead contact in working directly with government agencies, international non-governmental organizations, and private sector businesses to provide guidance and sound policy development to protect the health of human and animal populations.
- Represented organization to federal, state, and city government personnel and elected officials, as well as foreign governments and multi-lateral agencies.
- Developed working agreements (Memoranda of Understanding, Letters of Agreement, and Cooperative Agreements) with organizations and agencies such as USAID's Global Health Bureau, U.S. Centers for Disease Control and Prevention, U.S. Department of Agriculture, Food and Agriculture Organization of the U.N., World Bank, U.S. Geologic Survey, and foreign governments.
- Supervise, manage and evaluate senior scientists, board certified clinicians and pathologists.
- Develop and direct international surveillance and monitoring programs for infectious and non-infectious diseases including Ebola hemorrhagic fever, Influenza A viruses, coronaviruses, morbilliviruses, poxviruses, tuberculosis, anthrax, rickettsial diseases, etc.
- Responsible for compliance with local government, state, and US federal regulations regarding all aspects disease surveillance, research and medical programs.
- Serve as the Chair of the Institutional Animal Care and Use Committee that reviews all research proposals involving any of the 20,000 animals of over 300 species in the institution's facilities.

**President, Working Group on Wildlife**

**6/2008 - Present**

Office International des Epizootics (World Organization for Animal Health)  
Paris, France

- Lead team of international scientists and policy experts to inform and advise the OIE on disease problems (emerging, zoonotic, livestock and wildlife).
- Review and advise on international health standards and regulations used by the World Trade Organization and bilateral trade negotiations on animal and animal product movement, vaccine standards and diagnostic test standards.

---

**Emerging Pandemic Threats-2 Partner Liaison  
Technical Director**

**10/2014 –  
9/2009 – 9/2014**

PREDICT and PREDICT-2, USAID Emerging Pandemic Threats Initiative

- Built a coalition of organizations, university scientists, foreign government agencies and laboratories to enhance capacity for surveillance of emerging human pathogens of wildlife origin, predictive modeling and information sharing for developing countries.
- Provide leadership across the program and liaise with management teams of other EPT programs.
- Oversee and coordinate surveillance activities in twenty-five developing countries.

**Consultant/Advisor**

**8/2006 - Present**

Bio Economics Research Associates (Bio-ERA)  
Cambridge, Massachusetts, USA

- Develop and inform disease preparedness, contingency, and scenario planning for corporation clients in consumer retail, transportation, pharmaceutical, and agricultural products/food industries.

---

**Co-Chair, Wildlife Health Specialist Group**

**9/2004 - Present**

International Union for the Conservation of Nature  
Gland, Switzerland

- Built and now lead team of over 450 international scientists and health experts to inform and advise the IUCN, sovereign governments, organizations and on disease prevention and control (emerging, zoonotic, livestock and wildlife).
- Created open access, web-based database of members searchable by geographic location, areas of subject matter expertise, etc. to provide knowledge network of experts for emergency response, advice and other services.
- Lead strategic planning, mission development, 4-year work planning and reporting efforts.

---

**Director**

**10/1989 - 12/2007**

International Field Programs  
Wildlife Conservation Society  
Bronx, New York, USA

- Developed and led multi-million dollar international projects and grant giving programs focused on the health of wildlife, domestic animals and people.
- Designed and implemented transformational approaches to disease control and prevention programs that have been adopted by numerous organizations and professionals around the world.
- Work directly with government agencies and international non-governmental organizations to provide guidance and sound policy development to protect the health of animal and human populations.
- Led a team of approximately 75 health professionals and management staff to provide project development guidance, veterinary services and technical consultations for field projects being established or conducted by governmental and non-governmental agencies and organizations globally.
- Develop and direct international surveillance and monitoring programs for infectious and non-infectious diseases including Ebola hemorrhagic fever, Influenza A viruses, coronaviruses, morbilliviruses, poxviruses, tuberculosis, anthrax, rickettsial diseases, etc.

---

**Chief of Party**

**6/2006 - 5/2009**

Global Avian Influenza Network for Surveillance of Wild Birds

- Designed, organized and managed the implementation of wildlife disease surveillance network operating in 34 countries and involving dozens of government agencies, NGO, universities and private businesses around the world.

- Expanded operational field capabilities, improved understanding of viral strains and transmission of influenza viruses in wild birds.
- Created the first open access database on influenza in wildlife birds with results from sampling tens of thousands of wild birds, denominator data on over a hundred million wild birds.
- Oversaw funding and budgeting from USAID, NIH, USDA, and private industry.

---

**Advisor/Consultant**

**9/2005 - 6/2006**

Food and Agriculture Organization of the U.N.  
Rome, Italy

- Developed strategies and implementation plans for global trans-boundary and emerging disease surveillance efforts.
- Created structure and program for new initiative for influenza and diseases emergence from wildlife.
- Developed and strengthened working relationships of FAO with other U.N. agencies, NGO's, and U.S. government agencies.

---

**Director**

**2/1989 - 9/1989**

Woodland Park Zoological Gardens  
Seattle, Washington, USA

- Responsible for the establishment and management of a new international division to coordinate and support intramural and extramural activities.
- Developed and implemented strategic work plan and programs under the auspices of this new Center.
- Acquired short- and long-term financial support for the Center's operations including private and federal government support.

---

**Chief Veterinarian**

**7/1984 - 1/1989**

Woodland Park Zoological Gardens  
Seattle, WA, USA

- Primary responsibility for the operation of the Animal Health & Research Department providing clinical medicine, preventive medicine, surgery, pathology, research, and nutrition services for the zoo and aquarium collections.
- Develop programs to upgrade existing medical care, preventive medicine, and general husbandry procedures at both institutions.
- Responsible for providing animal health care input into facility design, staff education, and institution policy development. Serve as a professional resource on zoo animal care to the director, operations manager, curators, keeper staff, city officials, and the general public.
- Coordinate compliance of zoo operations with local, state, and federal regulations regarding all aspects of animal management.
- Manage and supervise veterinarians, veterinary technicians, biologists, keepers, clerical workers, and volunteers. Write grant proposals and manage grant implementation.

---

**Veterinary Resident****7/1982 - 6/1984**

Zoological Society of San Diego  
San Diego, California, USA

- Responsible for the health care of animals in the Society's collection (over 800 species). This involved clinical medicine and surgery, preventive medicine programs, neonatal care, dentistry, animal husbandry, consulting on animal restraint and handling, nutrition evaluation, facility design and construction evaluation, U.S.D.A regulation compliance, and animal keeper education.
- Supervised veterinary technicians, animal keepers and clerical workers as well as provided consultation to director, general manager, curators, and keeper staff.

---

**Research Assistant****1/1981 - 5/1981**

University of Georgia  
Athens, Georgia, USA

- Experimental inoculation, sample collection and vaccine testing for the prevention of infectious keratoconjunctivitis of cattle involving *Moraxella bovis*.
- Participated in the care and medical treatment of cattle used in the project.

---

**Laboratory Technician****6/1980 - 8/1980**

USDA Foreign Animal Disease Diagnostic Laboratory  
Plum Island, New York, USA

- Responsible for cell and virus culture and the handling, storage, and maintenance of select agents used in the diagnostic work at Plum Island.
- Involved in diagnostic testing for foreign animal diseases and developed techniques of survey testing for exotic diseases.
- Participated in inoculation, observation, and sampling of animals infected with select agents.

**COUNTRY EXPERIENCE (programs or projects conducted by me or under my supervision)**

Afghanistan	Democratic Republic of Congo	Nicaragua
Argentina	Ecuador	Peru
Belize	Falkland Islands	Republic of Congo
Bolivia	Gabon	Russia
Brazil	Guatemala	Sao Tome and Principe
British Virgin Islands	Indonesia,	St. Vincent
Burma/Myanmar	Iran	South Africa
Cambodia	Jamaica	Sudan
Cameroon	Kazakhstan	Tajikistan
Cayman Islands	Kenya	Tanzania
Central African Republic	Laos PDR	Uganda
Chad	Madagascar	Ukraine
Chile	Malaysia	Venezuela
China	Mali,	Vietnam
Colombia	Mongolia	Zambia
Congo	Mozambique	Zimbabwe
Costa Rica		

**SELECTED INVITED PUBLIC SPEAKING AND MEDIA WORK**

- U.S. Department of Defense
- U.S. Centers for Disease Control
- U.S. Environmental Protection Agency
- U.S. State Department
- US Agency for International Development
- U.S. National Institutes of Health
- U.S. Food and Drug Administration
- U.S. Congress
- U.S. Office of the President, Science and Technology Policy
- National Academies of Science, Institute of Medicine
- United Nations World Health Organization
- United Nations Food and Agriculture Organization
- United Nations Environmental Program
- United Nations Convention on Biodiversity
- World Organization for Animal Health (O.I.E.)



- Asia Pacific Economic Cooperation
- African Union
- Chinese Centers for Disease Control
- Public Health Agency of Canada
- International Meeting on Emerging Diseases
- American Association for the Advancement of Science
- International Risk Governance Council
- International Society for Disease Surveillance

In addition to prominence in the professional realm, I am frequently asked by both print and broadcast media to provide expertise and commentary, and have appeared in/on television (ABC, NBC, CBS, CNN, Fox, NGS, Discovery), National Public Radio, BBC and local radio programming, Newsweek, Time Magazine, Science News, New Scientist, National Geographic, New York Times, Washington Post, and the International Herald Tribune. I have gained extensive experience in working with the press over the last 27 years and continue to sharpen my skills by working with communications and media professionals.

#### **PROFESSIONAL AND ACADEMIC APPOINTMENTS (current and past)**

- World Health Organization International Health Regulations Roster of Experts
- GF-TADs Steering Committee, Global Framework for Transboundary Animal Diseases
- OFFLU Steering Committee, OIE – FAO Network of expertise on animal influenza
- Mt. Sinai School of Medicine, Adjunct Professor
- Columbia University School of Public Health, Member of the Center for Infection and Immunity
- University of Washington School of Medicine, Adjunct Professor
- New York Medical College, Visiting Professor

#### **PROFESSIONAL PUBLICATIONS (Selected from over 160)**

1. **Karesh WB**, Cook RA. The Human-Animal Link, One World - One Health. **Foreign Affairs**. 2005; **84**: 38-50.
2. **Karesh WB**, Cook RA, Bennett EL, Newcomb J. Wildlife trade and global disease emergence. **Emerging Infectious Diseases**. 2005; **11**(7): 1000-2.
3. Rouquet P, Froment JM, Bermejo M, Kilbourn A, **Karesh W**, Reed P, et al. Wild animal mortality monitoring and human Ebola outbreaks, Gabon and Republic of Congo, 2001-2003. **Emerging Infectious Diseases**. 2005; **11**(2): 283-90.
4. Dierauf LA, **Karesh WB**, Ip HS, Gilardi KV, Fischer JR. Avian influenza virus and free-ranging wild birds. **Journal of the American Veterinary Medical Association**. 2006; **228**(12): 1877-82.

5. Steiper ME, Wolfe ND, **Karesh WB**, Kilbourn AM, Bosi EJ, Ruvolo M. The phylogenetic and evolutionary history of a novel alpha-globin-type gene in orangutans (*Pongo pygmaeus*). **Infection Genetics and Evolution**. 2006; **6**(4): 277-86.
6. Daszak P, Epstein JH, Kilpatrick AM, Aguirre AA, **Karesh WB**, Cunningham AA. Collaborative research approaches to the role of wildlife in zoonotic disease emergence. *Wildlife and Emerging Zoonotic Diseases: The Biology, Circumstances and Consequences of Cross-Species Transmission*; 2007. p. 463-75.
7. **Karesh WB**, Cook RA, Gilbert M, Newcomb J. Implications of wildlife trade on the movement of avian influenza and other infectious diseases. **Journal of Wildlife Diseases**. 2007; **43**(3): S55-S9.
8. Goldberg TL, Chapman CA, Cameron K, Saj T, **Karesh WB**, Wolfe ND, et al. Serologic evidence for novel poxvirus in endangered red colobus monkeys, western Uganda. **Emerging Infectious Diseases**. 2008; **14**(5): 801-3.
9. Kim JK, Seiler P, Forrest HL, Khalenkov AM, Franks J, Kumar M, et al. Pathogenicity and Vaccine Efficacy of Different Clades of Asian H5N1 Avian Influenza A Viruses in Domestic Ducks. **Journal of Virology**. 2008; **82**(22): 11374-82.
10. Goldberg TL, Sintasath DM, Chapman CA, Cameron KM, Karesh WB, Tang S, et al. Coinfection of Ugandan Red Colobus (*Procolobus Piliocolobus rufomitratus tephrosceles*) with Novel, Divergent Delta-, Lenti-, and Spumaretroviruses. **Journal of Virology**. 2009; **83**(21): 11318-29.
11. **Karesh WB**, Cook RA. One world - one health. **Clinical Medicine**. 2009; **9**(3): 259-60.
12. Spackman E, Swayne DE, Gilbert M, Joly DO, **Karesh WB**, Suarez DL, et al. Characterization of low pathogenicity avian influenza viruses isolated from wild birds in Mongolia 2005 through 2007. **Virology Journal**. 2009; **6**.
13. Campbell K, Cooper D, Dias B, Prieur-Richard AH, Campbell-Lendrum D, **Karesh WB**, et al. Strengthening international cooperation for health and biodiversity. **EcoHealth**. 2011; **8**(4): 407-9.
14. Anthony SJ, St Leger JA, Pugliares K, Ip HS, Chan JM, Carpenter ZW, et al. Emergence of fatal avian influenza in New England harbor seals. **mBio**. 2012; **3**(4): e00166-12.
15. Gaidet N, Caron A, Cappelle J, Cumming GS, Balanca G, Hammoumi S, et al. Understanding the ecological drivers of avian influenza virus infection in wildfowl: a continental-scale study across Africa. **Proc Biol Sci**. 2012; **279**(1731): 1131-41.
16. Gilbert M, Jambal L, **Karesh WB**, Fine A, Shiilegdamba E, Dulam P, et al. Highly pathogenic avian influenza virus among wild birds in Mongolia. **PLoS One**. 2012; **7**(9): e44097.
17. **Karesh WB**, Dobson A, Lloyd-Smith JO, Lubroth J, Dixon MA, Bennett M, et al. Ecology of zoonoses: natural and unnatural histories. **Lancet**. 2012; **380**(9857): 1936-45.
18. Langlois EV, Campbell K, Prieur-Richard AH, **Karesh WB**, Daszak P. Towards a Better Integration of Global Health and Biodiversity in the New Sustainable Development Goals Beyond Rio+20. **EcoHealth**. 2012.
19. Morse SS, Mazet JA, Woolhouse M, Parrish CR, Carroll D, **Karesh WB**, et al. Prediction and prevention of the next pandemic zoonosis. **Lancet**. 2012; **380**(9857): 1956-65.
20. Smith KM, Anthony SJ, Switzer WM, Epstein JH, Seimon T, Jia H, **Karesh WB**, et al. Zoonotic viruses associated with illegally imported wildlife products. **PLoS One**. 2012; **7**(1): e29505.
22. Vora NM, Smith KM, Machalaba CC, **Karesh WB**. Reptile- and amphibian-associated Salmonellosis in childcare centers, United States. **Emerg Infect Dis**. 2012; **18**(12): 2092-4.

22. Levinson J, Bogich TL, Olival KJ, Epstein JH, Johnson CK, **Karesh W**, et al. Targeting surveillance for zoonotic virus discovery. **Emerg Infect Dis.** 2013; **19**(5): 743-7.

## KEVIN JAMES OLIVAL

**EcoHealth Alliance**, Senior Research Scientist  
460 West 34th Street – 17th floor  
New York, NY 10001  
office: +1-212-380-4478; email: olival@ecohealthalliance.org

### Additional Current Positions:

**USAID PREDICT-2 Project**, Modeling & Analytics Coordinator  
**Columbia University**, Affiliate Faculty  
*Department of Ecology, Evolution, and Environmental Biology*  
**Columbia University**, Adjunct Research Scientist  
*Earth Institute Center for Environmental Sustainability*  
**American Museum of Natural History**, Visiting Research Scientist  
*Department of Vertebrate Zoology*

## **PUBLICATIONS *IN REVIEW***

---

1. Weekley CC and **Olival KJ\***. (In Review). “Optimizing Viral Discovery in Bats”. PLOS ONE.
2. Wacharapluesadee S, **Olival KJ**, Kanchanasaka B, Duengkae P, Kaewchot S, Srongmongkol P, Ieamsaard G, Maneern P, Sittidetboripat N, Kaewpom T, Petcharat S, Yingsakmongkon S, Rollin PE, Towner JS, Hemachudha T. (In Review). “Surveillance for Ebola Virus in Wildlife, Thailand”. Emerging Infectious Diseases.
3. Brierley L, Vonhof M, Jones KE, **Olival KJ**, Daszak P. (In Review). “Global Drivers of Zoonotic Bat Viruses: A Process-based Perspective”. American Naturalist.

## **PUBLICATIONS *IN PRESS***

---

4. Loh EH, Bogich TL, **Olival KJ**, Johnson CK, Mazet JAK, Karesh W, Daszak P. (In Press). “Targeting emergence pathways for zoonotic disease surveillance and control”. Vector Borne and Zoonotic Diseases.
5. Jayme S, Yu M, Jong Cd, **Olival KJ**, Tagtag A, Hughes T, Foord A, Marsh G, Crameri G, Epstein JH, Santos I, Catbagan D, Lim M, Benigno C, Wang L, Daszak P, Field H, Newman S. (In Press). “Molecular evidence of Ebola Reston virus infection in Philippine bats”. Virology Journal.
6. Aziz SA, **Olival KJ**, Bumrungsri S, Richards G, Racey PA. (In Press). “Mitigating the conflict between fruit bats and commercial fruit growers”. In: Kingston T, Voight CC,

editors. *Bats in the Anthropocene: Conservation of bats in a changing world*. Springer, New York.

## PEER-REVIEWED PUBLICATIONS

---

7. Wacharapluesadee S, Duengkae P, Rodparn A, Kaewpom T, Maneeorn P, Kanchanasaka B, Yinsakmongkon S, Sittidetboripat N, Chareesaen C, Khlangsap N, Pidthong A, Leadprathom K, Ghai S, Epstein JH, Daszak P, **Olival KJ**, Blair PJ, Callahan MV, Hemachudha T. (2015). "Diversity of Coronavirus in Bats from Eastern Thailand". *Virology Journal* 12:57.
8. Schaer J, Reeder DM, Vodzak ME, **Olival KJ**, Weber N, Mayer F, Matuschewski K, Perkins SL. (2015). "Nycteria parasites of Afrotropical insectivorous bats". *International Journal for Parasitology* 45, 375-384.
9. Russell AL, Pinzari CA, Vonhof MJ, **Olival KJ**, Bonaccorso FJ. (2015). "Two Tickets to Paradise: Multiple Dispersal Events in the Founding of Hoary Bat Populations in Hawai'i". *PLOS ONE* 10, e0127912.
10. **Olival KJ**, Weekley CC, Daszak P. (2015). "Are bats really "special" as viral reservoirs?: What we know and need to know". in *Bats and Viruses: From Pathogen Discovery to Host Genomics* (ed L Wang), John Wiley & Sons, Inc, pp. 281-294.
11. Epstein JH, **Olival KJ**. (2015). "Animal Reservoirs of Middle East Respiratory Syndrome Coronavirus". Institute of Medicine, Forum on Microbial Threats, Washington D.C. pp. 119-133.
12. **Olival KJ\***, Dittmar K, Bai Y, Rostal MK, Lei BR, Daszak P, Kosoy MY. (2014). "Bartonella spp. in a Puerto Rican Bat Community". *Journal of Wildlife Diseases*. 51(1): 274-278.
13. Zhu Q, Kosoy M, **Olival KJ**, Dittmar K. (2014). "Horizontal Transfers and Gene Losses in the Phospholipid Pathway of Bartonella Reveal Clues about Early Ecological Niches". *Genome Biology and Evolution*. 6(8): 2156-2169.
14. **Olival KJ\***, Hayman DTS. (2014). "Filoviruses in Bats: Current Knowledge and Future Directions". *Viruses-Basel*. 6(4): 1759-1788.
15. Lei BR, **Olival KJ\***. (2014). "Contrasting Patterns in Mammal-Bacteria Coevolution: Bartonella and Leptospira in Bats and Rodents". *PLOS Neglected Tropical Diseases*. 8(3): e2738.
16. Gay N, **Olival KJ**, Bumrungsri S, Siriaronrat B, Bourgarel M, Morand S. (2014). "Parasite and viral species richness of Southeast Asian bats: Fragmentation of area distribution matters". *International Journal for Parasitology: Parasites and Wildlife*. 3(2): 161-170.

17. Allen T, Murray K, **Olival KJ**, Daszak P. (2014). "Eight Critical Questions for Pandemic Prediction". Washington D.C.: Institute of Medicine; Forum on Microbial Threats Workshop Summary. 182-193.
18. Wacharapluesadee S, Sintunawa C, Kaewpom T, Khongnomnan K, **Olival KJ**, Epstein JH, Rodpan A, Sangsri P, Intarut N, Chindamporn A, Suksawa K, Hemachudha T. (2013). "Group C Betacoronavirus in Bat Guano Fertilizer, Thailand". Emerging Infectious Diseases. (8): 1349-1351.
19. **Olival KJ**, Islam A, Yu M, Anthony SJ, Epstein JH, Khan SA, Khan SU, Crameri G, Wang LF, Lipkin WI, Luby SP, and Daszak P. (2013). "Ebola virus Antibodies in Fruit Bats, Bangladesh". Emerging Infectious Diseases 19(2): 270-273.
20. **Olival KJ\***, Hoguet RL, Daszak P. (2013). "Linking the Historical Roots of Environmental Conservation with Human and Wildlife Health". EcoHealth. 10(3):224-227.
21. Levinson J, Bogich TL, **Olival KJ**, Epstein JH, Johnson CK, Karesh WB, and Daszak P. (2013). "Targeting surveillance for zoonotic virus discovery". Emerging Infectious Diseases 19(5): 743-747.
22. **Olival KJ\***, Dick CW, Simmons NB, Morales JC, Melnick DJ, Dittmar K, Perkins SL, Daszak P, DeSalle R. (2013). "Lack of population genetic structure and host specificity in the bat fly, *Cyclopodia horsfieldi*, across species of Pteropus bats in Southeast Asia". Parasites & Vectors. 8(6): e231.
23. Memish ZA, Mishra N, **Olival KJ**, Fagbo SF, Kapoor V, Epstein JH, AlHakeem R, Al Asmari M, Islam A, Kapoor A, Briese T, Daszak P, Al Rabeeah AA, Lipkin WI. (2013). "Middle East Respiratory Syndrome Coronavirus in Bats, Saudi Arabia". Emerging Infectious Diseases. 19(11): 1819-1823.
24. Anthony SJ, Epstein JH, Murray KA, Navarrete-Macias I, Zambrana-Torrel CM, Solovyov A, Ojeda-Flores R, Arrigo NC, Islam A, Khan SA, Hosseini P, Bogich TL, **Olival KJ**, Sanchez-Leon MD, Karesh WB, Goldstein T, Luby SP, Morse SS, Mazet JAK, Daszak P, Lipkin WI. (2013). "A Strategy To Estimate Unknown Viral Diversity in Mammals". Mbio. 4(5): e00598-13.
25. Rostal M, **Olival KJ**, Loh EH, Karesh WB. (2013). "Wildlife: the need to better understand the risks and linkages". Current Topics in Microbiology and Immunology. One Health: The Human-Animal Interface in Emerging Infections. J Mackenzie, P Daszak, and M Jeggo, Editors. Springer. 365: 101-125.
26. Morse SF, **Olival KJ**, Kosoy M, Billeter SA, Patterson BD, Dick CW, and Dittmar K. (2012). "Global distribution and genetic diversity of Bartonella in bat flies (Hippoboscoidea, Streblidae, Nycteribiidae)". Infection, Genetics and Evolution. 12(8): 1717-1723.

27. **Olival KJ.** (2012). "Correlates and evolutionary consequences of population genetic structure in bats". Evolutionary History of Bats: Fossils, Molecules, and Morphology. GF Gunnell and NB Simmons, Editors. Cambridge University Press, Cambridge. 267-316.
28. **Olival KJ,** Epstein JH, Wang LF, Field HE, and Daszak P. (2012). "Are bats unique viral reservoirs?". New Directions in Conservation Medicine: Applied Cases of Ecological Health. AA Aguirre, RS Ostfeld, and P Daszak, Editors. Oxford University Press, Oxford. 195-212.
29. Bogich TL, **Olival KJ,** Hosseini PR, Mazet J, Morse S, Karesh WB, Jones KE, Levy M, Funk S, Brito I, Epstein JH, Brownstein J, Joly D, and Daszak P. (2012). "Using Mathematical Models in a Unified Approach to Predicting the Next Emerging Infectious Disease". New Directions in Conservation Medicine: Applied Cases of Ecological Health. AA Aguirre, RS Ostfeld, and P Daszak, Editors. Oxford University Press, Oxford. 607-618.
30. Smith CS, Epstein JH, Breed A, Plowright R, **Olival KJ,** de Jong C, Daszak P and Field HE. (2011). "Satellite Telemetry and Long-Range Bat Movements". PLOS ONE 6(2): e14696.
31. Khan SA, Epstein JH, **Olival KJ,** Hassan MM, Hossaini MB, Rahman KBMA, Elahi MF, Mamun MA, Haider N, Yasin G, and Desmond J. (2011). "Hematology and serum chemistry reference values of stray dogs in Bangladesh". Open Veterinary Journal 1:13-20.
32. Islam MR, Mannan MA, Kabir MHB, Islam A and **Olival KJ.** (2010). "Analgesic, anti-inflammatory and antimicrobial effects of ethanol extracts of mango leaves". J. Bangladesh Agril. Univ. 8(2): 239–244.
33. Rahman SA, Hassan SS, **Olival KJ,** Mohamed M, Chang L-Y, Hassan L, Saad NM, Shohaimi SA, Mamat ZC, Naim MS, Epstein JH, Suri AS, Field HE, Daszak P and HERG. (2010). "Characterization of Nipah virus from Naturally Infected *Pteropus vampyrus* Bats, Malaysia." Emerging Infectious Disease 16(12): 1990-1993.
34. Murdock C, **Olival KJ,** and Perkins SL. (2010). "Feeding preference of snow-melt mosquitoes (Culicidae: *Culiseta* and *Ochelerotatus*) show a link between cervid amplifying hosts for Jamestown Canyon Virus (Bunyaviridae: *Orthobunyavirus*) and humans". Journal of Medical Entomology 47(2): 226-229.
35. Turmelle A and **Olival KJ.** (2009). "Correlates of viral richness in bats (Order Chiroptera)". EcoHealth 6(4): 522-539.
36. Epstein JH, **Olival KJ,** Pulliam JRC, Smith CS, Westrum J, Hughes T, Dobson A, Zubaid A, Rahman SA, Basir MM, Field HE, and Daszak P. (2009). "Management of *Pteropus vampyrus*, a hunted migratory species with a multinational home-range". Journal of Applied Ecology 46(5): 991-1002.

37. **Olival KJ**, Stiner EO, and Perkins SL. (2007). "Detection of *Hepaticocystis* sp. in Southeast Asian Flying Foxes (Pteropodidae) using Microscopic and Molecular Methods". Journal of Parasitology 93(6): 1538-1540.
38. Daszak P, Plowright R, Epstein JH, Pulliam JRC, Rahman SA, Field HE, Smith CS, **Olival KJ**, Luby S, Halpin K, Hyatt AD, and HERG. (2006). "The emergence of Nipah and Hendra virus: pathogen dynamics across a wildlife-livestock-human continuum". Disease Ecology: Community structure and pathogen dynamics. S Collinge and C Ray, Editors. Oxford University Press: Oxford. 188-203.
39. **Olival KJ** and Higuchi H. (2006). "Monitoring the long-distance movement of wildlife in Asia using satellite telemetry". Conservation Biology in Asia. JA McNeely, TM McCarthy, A Smith, L Olsvig-Whittaker, ED Wikramanayake, Editors. Society for Conservation Biology Asia Section and Resources Himalaya Foundation: Kathmandu, Nepal. 319-339.
40. Pulliam JRC, Field HE, **Olival KJ**, and HERG. (2005). "An alternative explanation of Nipah virus strain variation". Emerging Infectious Diseases 11(12): 1978-1979.
41. **Olival KJ** and Daszak P. (2005). "The ecology of emerging neurotropic viruses". Journal of NeuroVirology 11(5): 440-445.
42. Hadfield MG, Holland BS, and **Olival KJ**. (2004). "Contributions of *ex situ* propagation and molecular genetics to conservation of Hawaiian tree snails". Experimental approaches to conservation biology, MS Gordon and SM Bartol, Editors. University of California Press: Berkeley. 16-34.

---

#### INVITED SEMINARS AND CONFERENCE PRESENTATIONS (\*presenting author)

1. Verant ML\*, Bohuski EA, **Olival KJ**, Epstein JH, Blehert DS. "Playing the odds on bat white-nose syndrome: Information from the field to inform surveillance strategies". 7<sup>th</sup> Annual White-Nose Syndrome Workshop. St. Louis, MO. 8-12 Sept 2014.
2. Ziegler A, Howarth F, Simmons NB, Olson S, Bonaccorso F, **Olival KJ\***. "A Tale of Two Bats: A Previously Undescribed Extinct Vespertilionine Bat from Hawaii". Hawaii Conservation Conference. Honolulu, HI. 17 July 2014.
3. Wacharapluesadee S\*, Duengkae P, Rodparn A, Kaewpom T, Maneeorn P, **Olival KJ**, Epstein KJ, Hemachudha T. "Diversity of Coronavirus in Bats from Eastern Thailand". Infectious Diseases of Bats Symposium. Fort Collins, CO. 26-27 June 2014.
4. **Olival KJ\*** and Weekley CC. "Viral Discovery in Bats: A Quantitative Review of ~100 Studies from the Last 7 Years". Infectious Diseases of Bats Symposium. Fort Collins, CO. 26-27 June 2014.



5. **Olival KJ\*** and Epstein JH\*. “Investigating the Ecology and Animal Origins of MERS-CoV”. Institute of Medicine, Forum on Microbial Threats. Washington DC. 18-19 March 2014.
6. **Olival KJ\***. “Middle East Respiratory Syndrome Coronavirus Overview”. Thailand Government Preparedness and Surveillance Briefing on MERS-CoV. Bangkok, Thailand. 6 Feb 2014.
7. **Olival KJ\***. “The Ecology and Discovery of Emerging Bat Viruses”. Biology Department Seminar, University at Buffalo, Buffalo, NY. 13 Nov 2013.
8. **Olival KJ\***. “Investigating pathogens and diseases in flying foxes”. Southeast Asian Bat Conservation Research Unit, Flying Fox Workshop. Phnom Penh, Cambodia. 17-19 Oct 2013.
9. **Olival KJ\***. “What’s Brewing with Bats?”. EcoHealth Alliance’s Young Professionals Council. Evening Lecture Fundraiser. Brooklyn Brewery. Brooklyn, NY. 22 Oct 2013.
10. **Olival KJ\***. “The Importance of Bats for the Environment and Emerging Disease”. Core Club, New York City. 8 Oct 2013.
11. **Olival KJ\***. “The Ecology and Discovery of Emerging Bat Viruses”. Department Seminar, Ecology, Evolution, and Environmental Biology, Columbia University. 24 Sept 2013.
12. **Olival KJ\***, Epstein JH, Anthony SJ, Murray K, Zambrana-Torrel C, and Daszak P. “Ecology and Field Surveillance of Bat Viruses”. 16<sup>th</sup> International Bat Research Conference. San Juan, Costa Rica. 12-15 Aug 2013.
13. **Olival KJ\*** and Epstein JH. “Integrating Wildlife Conservation and Zoonotic Disease Surveillance”. 26<sup>th</sup> International Congress for Conservation Biology. Baltimore, MD. 23 July 2013.
14. **Olival KJ\*** and Epstein JH\*. “Understanding the Origins of Emerging Coronaviruses”. Institute of Medicine’s Forum on Microbial Threats, Briefing on Emerging Viral Diseases (MERS-CoV and H7N9). Washington DC, USA. 25 June 2013.
15. **Olival KJ\*** and Epstein JH. “Nipah virus: A case study for using a One Health approach to understand emerging zoonoses”. 3<sup>rd</sup> International Berlin Bat Meeting: Bats in the Anthropocene. Berlin, Germany. 1-3 Mar 2013.
16. **Olival KJ\***, Daszak P, Brierley L, Jones KE, Bogich TL, Zambrana-Torrel C, Vonhof M, Epstein JH, and Anthony S. “Analyzing, Predicting, and Preventing the Emergence of Infectious Diseases from Bats”. ASM Biodefense and Emerging Disease Research Meeting Plenary Talk. Washington DC, USA. 26 Feb 2013.

17. **Olival KJ\***, Rostal M\*, Daszak P\*. “Debunking the Myths: Science-Based Approaches to Understanding Frog and Honey Bee Declines”. EcoHealth Alliance Event, New York City and Washington DC, USA. 5-6 June 2012.
18. Epstein JH\*, Islam A, Khan SA, Sanchez M, **Olival KJ**, Khan S, Kilpatrick AM, Hossein MJ, Anthony SJ, Crameri G, Gurley ES, Brieze T, Wang LF, Lipkin WI, Luby SP, Daszak P. “Understanding the Ecology of Nipah Virus in Pteropodid Bats in Bangladesh”. International Conference on Emerging Infectious Diseases. Atlanta, GA, USA. 11-14 March 2012.
19. Dittmar K\*, Morse S, **Olival KJ**, Kosoy M, Billeter S, Patterson BD, and Dick C. “Global Distribution and Genetic Diversity of *Bartonella* in Bat Flies (Hippoboscoidea, Streblidae, Nycteribiidae)” 7<sup>th</sup> International Conference on Bartonella as Animal and Human Pathogens. Raleigh, NC, USA. 25-28 April 2012.
20. Daszak P\*, Bogich TL, **Olival KJ**, Zambrana-Torrel C, Hosseini PR, Karesh WB, Epstein JH, and Loh EH. “PREEMPT - Prediction and Risk Evaluation for Emerging and Malicious Pathogen Threats”. Department of Defense, Chemical and Biological Defense Science and Technology Conference. Las Vegas, NV, USA. 14-18 Nov 2011.
21. Karesh WB\*, Epstein JH, **Olival KJ**, Bogich TL, Hosseini PR, Zambrana-Torrel C, and Daszak P. “New Approaches to Global Surveillance for the Next Emerging Pandemic”. Department of Defense, Chemical and Biological Defense Science and Technology Conference. Las Vegas, NV, USA. 14-18 Nov 2011.
22. **Olival KJ\***, Bogich TL, Brierley L, Jones KE, Epstein JH, Wang LF, Field HE, and Daszak P. “Are bats exceptional among mammals as viral reservoirs?” 41<sup>st</sup> Meeting of the North American Society for Bat Research. Toronto, Canada. 26-29 Oct 2011.
23. **Olival KJ\***. “Integrating Evolution and Ecology to Understanding Emerging Zoonoses”. Department of Ecology, Evolution, and Environmental Biology Invited Seminar Series, Columbia University, New York, 20 Sept 2011.
24. **Olival, KJ\***, Epstein JH, Wang LF, Bogich TL, Field HE, and Daszak P. “Are bats exceptional viral reservoirs and how do we reconcile conservation and public health?” 2<sup>nd</sup> Southeast Asian Bat Research Conference, Bogor, Indonesia, 5-9 June 2011.
25. **Olival KJ\*** “Zoonoses: Emerging Infectious Diseases from Wildlife. Case Studies: SARS and Nipah Virus”. Invited Lecture, American Language Program, Columbia University. 5 April 2011.
26. Epstein JH\*, A Islam, SA Khan, M Sanchez, **Olival KJ**, SU Khan, AM Kilpatrick, MJ Hossein, SJ Anthony, G Crameri, ES Gurley, T Brieze, L Wang, WI Lipkin, SP Luby, P. Daszak. “Understanding the Ecology of Nipah Virus in Pteropodid Bats in Bangladesh”. International Conference on Emerging Infectious Diseases. Atlanta, GA, USA. 11-14 March 2012.

27. Daszak P\*, TL Bogich, PR Hosseini, C Zambrana-Torrellio, **Olival KJ**, J Mazet, and SS Morse. "Modeling Risk: The Use of Geo-Temporal Models for Focusing Risk Reduction Interventions". 1<sup>st</sup> International One Health Congress. Melbourne, Australia. 14-16 Feb 2011.
28. Daszak P\*, TL Bogich, PR Hosseini, **Olival KJ**, C Zambrana-Torrellio, WB Karesh, J Mazet, and S Morse. "Wildlife and Emerging Diseases: Drivers, maps and the road ahead". International Meeting on Emerging Diseases and Surveillance. Vienna, Austria. 4-7 Feb 2011.
29. **Olival KJ\***, TL Bogich, C Zambrana-Torrellio, E Loh, PR Hosseini, and P Daszak. "Bats, rats, or monkeys: Who's to blame? Testing the relative importance of wildlife-human contact and phylogenetic relatedness in zoonotic disease emergence" 59th Wildlife Disease Association, Iguazú, Argentina, 1-5 June 2010.
30. Daszak P, TL Bogich\*, C Zambrana-Torrellio, **Olival KJ**, PR Hosseini, C Krueder-Johnson, D Joly, J Brownstein, A Dobson, M Levy, IL Brito, KE Jones, and V Mara. "The Future of Emerging Zoonoses: a reality check on mathematical models" 59th Wildlife Disease Association, Iguazú, Argentina, 1-5 June 2010.
31. Epstein JH\*, SA Rahman, A Khan, AM Kilpatrick, **Olival KJ**, HE Field, S Luby, and P Daszak. "Understanding the Dynamics of Nipah virus in Pteropid Bats" 59th Wildlife Disease Association, Iguazú, Argentina, 1-5 June 2010.
32. **Olival KJ\***. Understanding the link between host ecology and viral diversity". One Health in South Asia Conference, Dhaka, Bangladesh, 8 April 2010.
33. Epstein JH and **Olival KJ\***. "Understanding the Ecology of Nipah virus in Malaysia and Bangladesh", 2<sup>nd</sup> International Berlin Bat Meeting, Berlin, Germany, 19-21 Feb 2010.
34. **Olival KJ\***. "Determinants of population genetic structure in bats". 39<sup>th</sup> North American Symposium on Bat Research, Portland, OR, USA. 4-7 Nov 2009.
35. Russell A\* and **Olival KJ\***. "Genetics of the Hawaiian Hoary Bat". Hawaiian Hoary Bat Workshop. Hilo, HI, USA. 24-27 Feb 2009.
36. **Olival KJ\***, JH Epstein, CS Smith, J Westrum, T Hughes, A Dobson, A Zubaid, SA Rahman, MM Basir, H Field, and P Daszak. "Long-distance movement of the Old-World fruit bat, *Pteropus vampyrus*, determined by satellite telemetry and population genetics". First International Symposium on Bat Migration, Berlin, Germany. 18 Jan 2009.
37. **Olival KJ\***, S Perkins, P Daszak, and H.E.R.G. "Population genetic structure of reservoir hosts (Chiroptera: Pteropodidae) and ectoparasites (Diptera: Nycteribiidae) informs Nipah virus ecology". Molecular Epidemiology and Evolutionary Genetics of Infectious Diseases IX, Irvine, CA. 31 Oct 2008.

38. **Olival KJ\***. "Giant Fruit Bats, Wingless Flies, and Emerging Viruses: A Study of Population Genetic Structure and Its Implications". Comparative Biology Seminar Series, American Museum of Natural History, NY. 6 Oct 2008.
39. **Olival KJ\***. "Population genetics and phylogeography of flying foxes in Southeast Asia". 1<sup>st</sup> Southeast Asian Bat Research Conference, Phuket, Thailand. 7-10 May 2007. *Best Student Presentation Award*
40. Epstein JH, **Olival KJ\***, CS Smith, J Westrum, T Hughes, A Dobson, A Zubaid, SA Rahman, H Field, and P Daszak. "Hunting, international movement, and the need for regional conservation of flying foxes (*Pteropus* spp)". 1<sup>st</sup> Southeast Asian Bat Research Conference. Phuket, Thailand. 7-10 May 2007.
41. Gomez A\*, **Olival KJ**, M Jaiteh, and M Levy. "The last transboundary wild areas: opportunities for conservation and international cooperation". Society for Conservation Biology Annual Meeting, San Jose, CA. 25 June 2006.
42. **Olival KJ\*** and J Epstein. "*Pteropus vampyrus* roost counts and hunting activity 2003-2005". Invited scientific advisor, Perhilitan (Malaysian Wildlife Department) meeting of directors accepting proposals for changes to the Wildlife Protection Act, Kuala Lumpur, Malaysia. Jan 2006
43. **Olival KJ\***, JH Epstein, C Smith, SA Rahman, J Westrum, JC Morales, D Melnick, P Daszak, and H.E.R.G. "Conservation of flying foxes in Southeast Asia". Society for Conservation Biology, First Regional Meeting of the Asia Section, Katmandu, Nepal. 19 Nov 2005.
44. **Olival KJ\***. "Population genetics and phylogeography of Southeast Asian flying foxes". Henipavirus Ecology Research Group 3<sup>rd</sup> Annual Meeting, Langkawi, Malaysia. 28 Nov 2005.
45. **Olival KJ\***. "Population genetics and phylogeography of *Pteropus vampyrus*". Henipavirus Ecology Research Group 2<sup>nd</sup> Annual Meeting, Fraser Island, Australia. 11 Oct 2004.
46. Gomez, A, Mockrin M, **Olival KJ\***. "A review of freshwater protected areas: current status, limitations, and potential". CERC Seminar Series, Columbia University, NY. 3 Feb 2004.

## CONFERENCE POSTERS

---

1. Verant ML\*, **Olival KJ**, Bohuski EA, Epstein JH, Blehert DS. "Bat species composition drives environmental persistence of *Psuedogynmoascus destructans* within hibernaculae". 63<sup>rd</sup> Annual International Conference of the Wildlife Disease Association. Albuquerque, NM. 27 July – 1 Aug 2014.

2. Epstein JH, J Hossain, A Islam, **Olival KJ\***, AM Kilpatrick, SU Khan, S Anthony, P Rota, M Hahn, SA Khan, JRC Pulliam, M Rahman, A Dobson, E Gurley, WI Lipkin, SP Luby, and P Daszak. "The Ecology and Emergence of Nipah Virus in Bangladesh, 2013 Update". NIH Ecology and Evolution of Infectious Diseases Annual PI Meeting. Athens, GA, USA. 16-17 March 2013.
3. Wacharapluesadee S\*, P Virojanapirom, A Mahavithakanont, S Yaophrukchai, W Chantratita, **Olival KJ**, S Anthony, and T Hemachudha. "A method for increasing viral detection in human and wildlife samples with low nucleic acid content". 15<sup>th</sup> International Congress on Infectious Diseases. Bangkok, Thailand. 13-16 June 2012.
4. Blehert DS, ML Verant\*, **Olival KJ**, and JH Epstein. "Evaluation of micro-site parameters within bat hibernacula for determining the presence of *G. destructans* and severity of WNS". White-nose Syndrome Symposium. Madison, WI, USA. 4-7 June 2012.
5. Epstein JH, J Hossain, A Islam, **Olival KJ**, AM Kilpatrick, SU Khan, S Anthony, P Rota, M Hahn, SA Khan, JRC Pulliam, M Rahman, A Dobson, E Gurley, WI Lipkin, SP Luby, and P Daszak. "Nipah Virus Ecology in Bangladesh, 2012 EEID Update". NIH Ecology and Evolution of Infectious Diseases Annual PI Meeting. Berkeley, CA, USA. 25-28 March 2012.
6. **Olival KJ\***, A Islam, JH Epstein, R Engstrand, SU Khan, A Islam, N Haider, SA Khan, A Mikolon, S Luby, and P Daszak. "Investigating non-*Pteropus* reservoirs of Nipah virus and Genetic connectivity of *Pteropus giganteus* in Bangladesh". NIH Ecology and Evolution of Infectious Diseases Annual PI Meeting. Madison, WI, USA. 26-29 March 2011.
7. Phelps K\*, **Olival KJ**, Kingston T. "Influence of anthropogenic disturbance on cave-roosting bats and the potential emergence of associated zoonotic diseases". 15<sup>th</sup> International Bat Research Conference. Prague, Vienna. 23-27 Aug 2010.
8. Perkins SL, **Olival KJ**, and Schaer J\*. "Malaria Parasites of Bats from West Africa". 2<sup>nd</sup> International Berlin Bat Meeting. Berlin, Germany. 19-21 Feb 2010.
9. Phelps KL\*, **Olival KJ**, and Kingston T. "Influence of Anthropogenic Disturbance on Cave-Roosting Bats and the Potential Emergence of Associated Zoonotic Diseases". 2<sup>nd</sup> International Berlin Bat Meeting, Berlin, Germany. 19-21 Feb 2010.
10. **Olival KJ\*** and Turmelle A. "Correlates of viral richness in bats". Bats and Emerging Viral Disease Workshop. Sponsored by DMID/NIAID/NIH. Rockville, MD, USA. 10-11 Sep 2009.
11. Epstein JH, SA Khan, M Hahn, J Hossain, AM Kilpatrick, A Islam, SU Khan, E Gurley, **Olival KJ\***, HE Field, WI Lipkin, S Luby, and P Daszak. "Understanding the dynamics

of Nipah virus in *Pteropus giganteus*". North American Symposium on Bat Research, Portland, OR, USA. 4-7 Nov 2009.

12. **Olival KJ\*** and A Turmelle. "Correlates of viral diversity in bats". Exploring the Dynamic Relationship Between Health and the Environment, American Museum of Natural History, NY, USA. 2-3 April 2009.
13. **Olival KJ\***, JC Morales, P Daszak, N Simmons, D Melnick, S Perkins, and R DeSalle. "Conservation genetics of Southeast Asian flying foxes (Genus: *Pteropus*)". Conservation Genetics Symposium, American Museum of Natural History, NY, USA. 27-29 Sep 2007.
14. **Olival KJ\***. "Population Structure of Flying Foxes and the Ecology of Nipah Virus". EPA Graduate Fellowship Conference, Washington D.C., USA. 24-26 Sep 2006.
15. Gomez A\*, Mockrin M\*, **Olival KJ\***. "Characterizing Protected Areas for Freshwater Systems—conservation potential and limitations". New Currents in Conserving Freshwater Systems, American Museum of Natural History, NY, USA. 7-8 April 2005.
16. **Olival KJ\***, BS Holland, MG Hadfield. "The conservation and management of endangered O`ahu tree snails (Genus: *Achatinella*)". Expanding the Ark Invertebrate Science and Conservation Conference, American Museum of Natural History, NY, USA. 25 Mar 2004.

---

### **GRANTS CURRENTLY IN REVIEW**

**Department of Defense, Defense Threat Reduction Agency (DTRA).** "Western Asia Bat Research Network (*WAB-Net*)" \$3,500,000 Role: PI. *In Review*

**National Science Foundation, Dimensions of Biodiversity.** "Taxonomic, genetic and functional limits of mammalian virodiversity". 11/06/15 – 10/05/18. \$2,000,000. Role: co-PI. *In Review*

### **CURRENTLY FUNDED**

#### **USAID Emerging Pandemic Threat Program PREDICT-2**

Global virus surveillance in animals and humans and analysis of spillover risk.

10/01/14 – 09/30/18. \$100,000,000. Role: Modeling and Analytics Coordinator; and **Project Manager for Indonesia, Jordan, South Sudan, Myanmar, Thailand.**

**National Institutes of Health R01.** "Understanding Risk of Bat Coronaviruses". Behavioral and molecular analysis of coronavirus spillover risk in Southern China 11/1/2013-10/20/2018. \$3,362,338. Role: co-PI.

## **PAST GRANTS**

### **USAID Emerging Pandemic Threat Program PREDICT**

Zoonotic virus surveillance in wildlife in 20 countries, and modeling hotspots and drivers for disease emergence. 10/01/09 – 09/30/14. \$75,000,000

Role: **Key Personnel:** Modeling Team; Project Manager for Thailand and Indonesia.

**US Fish and Wildlife Service Award** “Characterization of Climatic Parameters within Bat Hibernacula, their Influence on Environmental Loads of *Geomyces destructans*, and Implications for the Migration of White-Nose Syndrome in Bats.” 09/01/12-09/30/14. \$308,711. Role: **Co-PI**

**NIH/NIAID Non-Biodefense Emerging Infectious Diseases.** “Risk of viral emergence from bats”. Award # NIH 1 R01AI079231. PI: Daszak. 09/18/08 – 08/31/13. \$2,590,144  
Modeled hotspots for viral diversity and emergence in bats, discovery of new viruses, and in vitro test of infectiousness for novel pathogens.

Role: **Key Personnel:** led project implementation, study design, and phylogenetic modeling

**US Geological Survey (USGS) Endangered Species grant** “Genetic Approaches to Defining Taxonomic and conservation Units for the Hawaiian Hoary Bat” PIs Russell, Vonhof, and Olival. 06/18/12-06/17/13. \$20,000. Role: **Co-PI**

**NIH Fogarty Ecology of Infectious Diseases ARRA award**, supplement to parent grant “The Ecology, Emergence and Pandemic Potential of Nipah virus in Bangladesh”. Award # NIH 3R01TW005869-06S1. 09/01/09 – 8/31/11. \$204,668. Role: **Fogarty US Global Health Fellow** (post-doc); wrote grant and lead on Nipah virus research under supplement award.

## **PAST FELLOWSHIPS AND AWARDS**

**NIH-NSF Ecology and Evolution of Infectious Diseases Workshop Stipend**, \$500 (2012)

**EPA STAR Fellowship Award**, 3-years of doctoral research support. \$111,000 (2004-2007)

**Columbia University Faculty Fellowship**, \$250,000 (2002-2007)

**Bat Conservation International Student Scholarships**, \$5,000 (2005-2007)

**Lubee Bat Conservancy Research and Travel Grants**, \$4,000 (2005, 2008)

**Columbia University, Earth Institute Travel Grant**, \$750 (2006, 2007)

**Colorado State University:** Distinguished Scholar Award (1993-1997), Academic Grant (1993-1997), Charles N. Shepardson Memorial Scholarship (1993-1995), Delano F. Scott Scholarship in Agriculture (1993-1995). *Total \$37,763*

## **EDUCATION**

---

**Post-Doc** American Museum of Natural History, Sackler Institute for Comparative Genomics (2008-09). *Microbial evolution and phylogeny of Plasmodium parasites.*

**Ph.D.** Columbia University, Ecology and Evolutionary Biology (2008, with Distinction)  
*Dissertation Title: "Population genetic structure and phylogeography of Southeast Asian flying foxes: Implications for conservation and disease ecology"*

**E.P.C.** Columbia University, Environmental Policy Certificate (2006)  
*Focused on international environmental policy*

**M.A. & M.Phil.** Columbia University, Ecology and Evolutionary Biology (2003 & 2007)  
*Department of Ecology, Evolution, and Environmental Biology*

**B.S.** Colorado State University, Bio-agricultural Science (1997)  
*Double minor in Anatomy/Neurobiology and Philosophy*

## **PREVIOUS PROFESSIONAL EXPERIENCE**

---

### **WILDLIFE TRUST/ECOHEALTH ALLIANCE, New York**

#### ***NIH Fogarty US Global Health Postdoctoral Scientist (2009-2011)***

- Investigated the role of small fruit bat species in Nipah virus ecology in Bangladesh
- Population genetics of primary Nipah virus host, *Pteropus giganteus*
- Managed NIH grant for viral discovery in bats globally
- Analyzing patterns in host-virus associations across mammals

### **AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK**

#### ***Post-doctoral researcher, PI: Susan Perkins (2008-2009)***

- Discovery and evolution of non-human malaria parasites. Molecular genetic investigation of *Plasmodium* systematics and origins, laboratory work, analysis, collected and procured samples from bats, and established network of international research collaborators.
- Host species identification of dipteran blood meals using PCR and DNA sequencing.
- Meta-analysis, predicting viral diversity using host species traits and phylogeny.

### **COLUMBIA UNIVERSITY, NEW YORK, *Doctoral student (2004-2008)***

- Population genetic structure and historical demography of two flying fox species, *Pteropus vampyrus* and *P. hypomelanus*, in Southeast Asia. Lab work and analysis.
- Delimiting taxonomic boundaries of fruit bats using molecular tools.
- Comparative host-parasite population genetics; fruit bats and Nycteribiid flies.
- Historical DNA analysis from museum specimens (50-100 yrs).
- Proficient in phylogenetic and population genetic analyses.

### **CONSORTIUM FOR CONSERVATION MEDICINE, NEW YORK**

#### ***Research collaborator (2002-2008)***

- Nipah virus ecology and bat distribution in Peninsular Malaysia.



- Field capture and sampling of wildlife, monitoring health of bat populations, mark-recapture studies, and molecular genetic analysis of host species.
- Satellite telemetry of the large flying fox (*P. vampyrus*) in Malaysia.
- Lobbied for change in policy on bat hunting with Malaysia Wildlife Department.

## **KEWALO MARINE LABORATORY, UNIVERSITY OF HAWAII**

### ***Research Associate (1999-2002)***

- Managed captive colonies of critically endangered Hawaiian tree snails
- Conducted field surveys, mark-recapture and demography studies, and DNA sampling on Oahu, Maui, and Molokai.
- Assisted with conservation genetic laboratory work.
- Supervised graduate and undergraduate assistants in lab.
- Drafted State, Federal, and NGO reports and permit applications.

## **FORBIO TROPICAL PLANTS, INC. AIEA, HAWAII**

### ***Lab/Field Technician & Assistant Lab Manager (1997-1999)***

- Helped establish new agricultural biotechnology R&D facility.
- Coordinated transfer of technology from ForBio Ltd. in Australia to Hawaii.
- Micropropagation, somatic embryogenesis, and *in vitro* experimentation with Teak, Eucalyptus, Acacia, Coffee, and Cocoa species.
- Operation of automated tissue culture robot for propagation of GMO plants.

## **INTERNATIONAL EXPERIENCE**

---

**Manage viral surveillance programs and training workshops in wildlife capture, sampling, and safe handling** (2009-Present). In Bangladesh, India, Indonesia, Malaysia, Thailand, Philippines, and other countries under USAID PREDICT and NIH-funded programs.

**Extensive field research in Southeast Asia** (2002-Present): Fieldwork and specimen collection for pathogen discovery from wild mammals with focus on bats; conservation genetic studies; development and dissemination of non-lethal sampling protocols.

### **Lead Field Team Investigation of Animal Origins of MERS-CoV (2013-14)**

With Ministry of Health, Saudi Arabia; Columbia University; EcoHealth Alliance

### **Lead Field Researcher, FAO Investigation of Bat Origins of Ebola Reston Virus (2010)**

With FAO and Philippine Ministries of Health, Agriculture, and Wildlife

**Other In-country Collaborative Zoonoses Research** Veterinary Research Institute, Malaysia; Institute for Ecology and Biological Resources, Vietnam; Wildlife Conservation Society Cambodia and Malaysia; Pasteur Institute, Cambodia; ICDDR,B Bangladesh; and Chulalongkorn University and Kasessart University in Thailand.

**Lived in Australia** for 6 months; ecological restoration project at Portland aluminum plant.

Basic conversational **Bahasa Malaysia**/Indonesia; studied Japanese language for 3 years.

## **TEACHING AND MENTORSHIP**

---

**Columbia University** Dept. of Ecology, Evolution, and Environmental Biology, New York  
*Adjunct Faculty*, mentor MA thesis projects (2011-Present)

**EcoHealthNET** NSF-funded Research Coordination Network  
*Research Project Mentor* (2011-2014)

**Columbia University Secondary School Program**, New York  
*Instructor*, Issues in Biological Conservation (Summer 2006-2013)  
Designed and taught intensive college prep course, 3 weeks 4-6 hours/day.

**Columbia University** Dept. of Ecology, Evolution, and Environmental Biology, New York  
*Graduate Teaching Assistant* – led discussion sections and labs.  
Disease Ecology (Fall 2006)  
Conservation Biology (Spring 2006)  
Environmental Biology II (Spring 2004)  
Graduate Seminar in Conservation Biology (Fall 2003)

**Columbia University, Center for Environmental Research and Conservation**, New York  
*Lecturer*, adult continuing education course in Disease Ecology (Fall 2003; 2012)

**American Museum of Natural History**, New York  
*Research Mentor*, Conservation Genetics High School Internship Program (2006-2007)

**University of Hawaii**, Manoa  
*Research Mentor*, NSF Undergraduate Mentoring in Environmental Biology (UMEB) for Pacific Islander undergraduate students (2000-2002)

## **PROFESSIONAL SERVICE AND OUTREACH**

---

**Journal Referee**, *EcoHealth* (Review Editor), *Biodiversity and Conservation*, *Conservation Biology*, *Emerging Infectious Diseases*, *Journal of Parasitology*, *Journal of Wildlife Disease*, *mBio*, *Molecular Ecology Resources*, *Molecular Phylogenetics and Evolution*, *Mitochondrial DNA*, *Nature*, *Nature Communications*, *PLOS Neglected Tropical Diseases*, *PLOS One*, *Vector-Borne and Zoonotic Diseases*, *Zoonoses and Public Health*.

### **Grant Referee**

*NIH Scientific Review Group Panel* for Vector Biology – October 2014  
*Wildlife Conservation Society*, Research Fellowship Program  
*Fauna and Flora International*, Rufford Innovation Awards  
*Lubee Bat Conservancy* – Annual Grant Reviews

**Professional Membership**

International Association for Ecology and Health, 2009-Present  
Henipavirus Ecology Research Group, 2003-Present  
Bat Conservation International, 2005-2007  
Society for Conservation Biology, 2001-2006  
American Society of Mammalogists, 2003-2005  
New York Academy of Sciences, 2005-2006  
American Association for the Advancement of Science, 1998-2000

**Rapporteur**

Prince Mahidol Award Conference. “A World United Against Infectious Diseases: Cross-Sectoral Solutions”. Bangkok, Thailand. 28 Jan – 2 Feb 2013.

**Steering Committee Member**

White-Nose Syndrome National Response Team (2013-present)  
Southeast Asian Bat Conservation Research Unit - NSF RCN, 2011-present  
Student Conference on Conservation Science New York (SCCS-NY), 2010  
Small Matters: Microbes and Their Role in Conservation, AMNH Spring Symposium, 2007

**Scientific Advisory Board**

Lubee Bat Conservancy, Gainesville, FL, USA. 2011-Present

**Symposium Organizer**

Disease Symposium, *North American Symposium on Bat Research*, 2011.  
Bat Hunting and Bushmeat Symposium, *First International Southeast Asian Bat Conference*, Phuket, Thailand, 2007.  
Disease Symposium, *First International Symposium on Bat Migration*, Berlin, Germany, 2009.

**Abstract Review and Organization Committee,**

*AMNH Spring Symposium*, “Exploring the Dynamic Relationship Between Health and the Environment”, New York, 2009.  
*Society for Conservation Biology Annual Meeting*, New York, 2004.

**Volunteer Judge**, New York Science and Engineering Fair, NYAS, 2005.

## Catherine C. Machalaba

Address: 460 West 34<sup>th</sup> St, 1701, New York, NY 10001 USA

E-mail: [Machalaba@ecohealthalliance.org](mailto:Machalaba@ecohealthalliance.org); Phone: +1-401-569-7371

### Education

Wake Forest University, NC	Biology	BA	2008
Dartmouth Medical School, NH	Public Health	MPH	2009
The School of Public Health, CUNY, NY	Env. & Occ. Health	DPH	2014 –

### Recent Work Experience

Future Earth ecoHEALTH Project Science Officer/IPO Lead 2013 – present  
Based at EcoHealth Alliance, NY, NY, USA

- Responsible for project management, including grant drafting, ongoing communication and outreach, research team coordination, and policy engagement
- Co-development of updated scientific priorities for the project's 10-year research agenda
- Coordination of project transition from DIVERSITAS into the Future Earth research initiative on global environmental change toward sustainability, including development of the project's statement of commitments
- Oversaw expansion of the ecoHEALTH Scientific Committee to include strong scientific and multi-sectorial policy representation

Program Coordinator for Health and Policy, EcoHealth Alliance, NY, NY, USA 2010 – present

- EcoHealth Alliance One Health Coordinator for USAID Emerging Pandemic Threats PREDICT-2 program
- Policy strengthening and development of best practices around public health and conservation at regional, national and international scale (e.g. Convention on Biological Diversity [CBD], International Union for the Conservation of Nature [IUCN], World Organisation for Animal Health [OIE], and federal, state and city agencies/ministries)
- Administrative and technical assistance to Executive Vice President for Health & Policy
- Scientific, policy, and public outreach document preparation (e.g. manuscripts, EcoHealth Alliance website materials, fact sheets)
- Management and oversight of departmental interns, volunteers and consultants
- Grant proposal preparation (>15 proposals submitted to federal agencies and foundations)

Program Officer, IUCN SSC Wildlife Health Specialist Group 2010 – present  
Based at EcoHealth Alliance, NY, NY, USA

- Member communications and outreach efforts for 300+ expert network (website ([www.iucn-whsg.org](http://www.iucn-whsg.org)) and membership database management, newsletter drafting, social media: <https://twitter.com/IUCNWildHealth> & [www.facebook.com/IUCNSSCWHS](https://www.facebook.com/IUCNSSCWHS))
- Communications with IUCN Headquarters and external partners
- Development of wildlife disease information summaries
- Editorial support for the OIE-IUCN Guidelines to Wildlife Disease Risk Analysis

Contributing Writer, Consumer Reports on Health (part-time) 2009 – 2014

- Monthly freelance writer for Consumer Reports on Health's On Your Mind page
- Conduct literature reviews and synthesize information into practical health advice

Fellow, Veterans Engineering Resource Center, VA Boston Healthcare System 2009 - 2010

- Led multidisciplinary teams based at the VA Boston Healthcare System on process redesign projects using systems engineering methodologies
- Process redesign leader for three teams enrolled in the VA national Cancer Care Collaborative (Boston, San Juan, and New York)
- Developed local and national VA healthcare system performance improvement metrics, and organized training seminars for hospital staff

### **Other Work Experience**

Tobacco Control Program Intern, Vermont Office of the Attorney General 2008 - 2009  
Research Intern, Cancer Biology, Wake Forest University School of Medicine 2006 - 2007  
Field Agent/Educator (Lyme disease and West Nile virus), Vermont Department of Health 2005

### **Synergistic Activities**

#### *Expert Group Membership and Roles:*

- Chair-Elect, American Public Health Association Veterinary Public Health Special Primary Interest Group (APHA VPH SPIG) (2015 - )
- Policy Chair, APHA VPH SPIG (2015 - )
- Newsletter Editor, APHA VPH SPIG (November 2012 - 2014)
- Member, IUCN SSC Policy Subcommittee (May 2013 - )
- Research Collaborator, Clayton Christensen Institute for Disruptive Innovation (formerly Innosight Institute) (2009 – 2013)
- Research Volunteer, Vermont Law School Environmental Clinic, *Broad v. Omya* (2009)

#### *Reviewer:*

- EcoHealthNet Workshop and Research Exchange (2014 - )
- *EcoHealth* journal (2012 - )
- IAEH EcoHealth Conference abstracts (2012)
- The Dartmouth Institute MPH Thesis (2010)
- The Dartmouth Institute Root Cause Analysis Competition judge (2010)
- VA Quality Scholars project grant applications (2010)

#### *Honors and Awards:*

- 2009 CLARION National Root Cause Analysis Championship – Third Place (team awarded \$2,000)
- 2009 CLARION Dartmouth Root Cause Analysis Championship winning team
- Inducted into the beta beta beta National (U.S.) Biological Honor Society

### **Peer-Reviewed Publications**

Machalaba C. and Karesh W.B. "Envisioning a World without Emerging Disease Outbreaks". *Solutions*. 2015: 6(2): 63-71. <http://thesolutionsjournal.org/node/237327>

Machalaba C.C., Elwood S., Forcella S., Smith K.M., Hamilton K., Ben Jebara K., Swayne D.,

Webby R.J., Mumford E., Mazet J., Gaidet N., Daszak P., Karesh W.B. “Global Avian Influenza Surveillance in Wild Birds: A Strategy to Capture Viral Diversity”. *Emerging Infectious Diseases*. 2015: 21(4).

Karesh W.B., Dobson A., Lloyd-Smith J., Lubroth J., Dixon M.A., Bennett M., Aldrich S., Harrington T., Formenty P., Loh L., Machalaba C.C., Thomas M.J., Heymann D.L. “The Ecology of Zoonoses: Their Natural and Unnatural Histories”. *The Lancet*. 2012: 380: 1936-45.

Machalaba C. and Karesh W.B. “Other Relevant International Standards to the Control of Rabies”. Rabies Control- Towards Sustainable Prevention at the Source. *Compendium of the OIE Global Conference on Rabies Control*. 2012.

Vora N.M., Smith K.M, Machalaba C.C., Karesh W.B. “Reducing the risk of reptile- and amphibian-associated salmonellosis within child-care centers”. *Emerging Infectious Diseases*. 2012: 18(12).

Karesh W., Loh L. and Machalaba C. “Food Safety: A View from the Wild Side.” *Institute of Medicine summary report of the workshop on “Improving Food Safety Through One Health”* (December 13-14, 2011). 2012.

#### **Other Recent Publications, Blogs and Infographics**

Allen A., Burge C., Chame dos Santos M., Daszak P., Genovesi P., Fletcher J, Formenty P., Harvell D., Karesh W.B., Kock R., Loh E.H., Lubroth J., Machalaba C., Prieur-Richard A.-H., Smith K.M., Stoett P.J., and Young H.S. Chapter 7: Infectious diseases. IN: Connecting global priorities: biodiversity and human health: a state of knowledge review. World Health Organization and Secretariat of the Convention on Biological Diversity. 2015.

Machalaba C., Loh E.H., Daszak P., and Karesh W.B. “Emerging Diseases from Animals”. State of the World 2015: Confronting Hidden Threats to Sustainability. Worldwatch Institute. 2015.

Machalaba C., Daszak P., Karesh W.B., Romanelli C. “Anthropogenic Drivers of Emerging Diseases”. Brief for GSDR 2015. United Nations Sustainable Development Knowledge Platform.

Stoett P., Machalaba C., and Romanelli C. “Did Environmental Decline Help the Spread of Ebola?” Op-Ed, *The Toronto Star*. October 19, 2014.

Machalaba C. “Preventing Ebola Outbreaks – The Benefit of Conservation Science.” *IUCN Blog*. October 11, 2014.

Machalaba C. “Ebola and Other Emerging Diseases: Losing the trees before we see the forest’s connection to our health”. *Future Earth Blog*. September 9, 2014. Featured in the New York Times.

Machalaba C. and Karesh W.B. “Ebola is Just One of Many”. *Huffington Post Blog*. Infographic: ‘Humans, Animals and the Environment: Our Shared Health’. August 18, 2014.

Machalaba C. and Hwang J. “An Innovative Framework to Target Barriers to Health.” Delivered to IBM February 2014. White paper of The Clayton Christensen Center for Innovative Disruption (funded by IBM).

Prieur-Richard A.-H., Payet-Lebourges K., Machalaba C., and the DIVERSITAS Scientific Committee. “Contribution of Biodiversity to Sustainable Development Goals”. A contribution of DIVERSITAS (international programme of biodiversity science) and ICSU (International Council for Science).  
<http://sustainabledevelopment.un.org/index.php?page=view&nr=100&type=6&menu=1562&template=846>

Machalaba C. “Why Wildlife Health is Important for Conservation”. *IUCN Blog*. December 3, 2013. <https://portals.iucn.org/blog/2013/12/03/why-wildlife-health-is-important-for-conservation/>

Machalaba C. “An Interview with EcoHealth Alliance’s Catherine Machalaba”. *For Girls in Science Share + Connect Blog (L’ORÉAL)*. September 4, 2013.  
<http://forgirlsinscience.org/an-interview-with-ecohealth-alliances-catherine-machalaba/>

Machalaba C. and Karesh W.B. “7 Common Myths about Pandemics and New Diseases”. *Huffington Post Healthy Living Blog*. June 27, 2013. [http://www.huffingtonpost.com/dr-william-karesh/pandemics-common-myths\\_b\\_3498381.html](http://www.huffingtonpost.com/dr-william-karesh/pandemics-common-myths_b_3498381.html)

Machalaba C., Karesh W.B., Prieur-Richard A.-H. “Integrating health concerns into biodiversity planning”. [*Square Brackets*] Convention on Biological Diversity Newsletter for Civil Society. October 2012(7):17. <http://www.cbd.int/ngo/square-brackets/square-brackets-2012-10-en.pdf>

### **Presentations and Posters**

Olival K.J., Machalaba C., Karesh W.B. “Western Asia Bat Research Network”. CBD S&T Conference, May 13, 2015. St. Louis, MO. Poster Presentation.

Machalaba C., Loh E.H., Daszak P., Karesh W.B. “Emerging Diseases from Animals”. State of the World 2015: Confronting Hidden Threats to Sustainability Launch Event. Worldwatch Institute. April 13, 2015. Washington, D.C. Oral Presentation.

Machalaba C. “Integrated Approaches to Biodiversity, Health and Development Challenges: A Lens through Infectious Diseases”. 6<sup>th</sup> Annual Consortium of Universities for Global Health. March 27, 2015. Boston, Massachusetts. Oral Presentation.

Machalaba C. “Biodiversity and Community Health: Operationalizing Linkages Between Conservation and Development on the Ground”. 12<sup>th</sup> Conference of the Parties, United Nations Environment Program Convention on Biological Diversity. October 9, 2015.

Pyeongchang, South Korea. Panel Presentation.

Machalaba C. “Framing Biodiversity and Health in the Context of the Post-2015 Development Agenda”. 12<sup>th</sup> Conference of the Parties, United Nations Environment Program Convention on Biological Diversity. October 8, 2015. Pyeongchang, South Korea. Panel Presentation.

Machalaba C. “Tackling Common Drivers of Disease and Biodiversity Loss: a One Health Approach”. 12<sup>th</sup> Conference of the Parties, United Nations Environment Program Convention on Biological Diversity. October 7, 2015. Pyeongchang, South Korea. Oral Presentation.

Machalaba C. for EcoHealth Alliance. Testimony statement for the New York State Assembly Committee on Environmental Conservation's public hearing on "The Effectiveness of New York's Restrictions on the Sale of Ivory". January 16, 2014. New York, New York.

Machalaba C. and Daszak P. “ecoHEALTH”. Future Earth Projects Webinar. November 12, 2013. Online Oral Presentation.

Machalaba C., Karesh W.B., Smith K.M. “Best Practices for Predicting and Preventing Pandemics”. American Public Health Association 141st Annual Meeting and Exposition (Boston, MA, USA). November 5, 2013. Oral Presentation.

Machalaba C., Smith K.M., Karesh W.B. “The Wild Side Of Trade”. American Public Health Association 141st Annual Meeting and Exposition (Boston, MA, USA). November 4, 2013. Oral Presentation.

Bueno-Padilla I., Smith K., Travis D.A., Machalaba C., Karesh W.B. “A Tool to Assess the Public Health Risks of Wildlife Importation into the United States: The Case of Rodents from Latin America”. 62<sup>nd</sup> International Conference of the Wildlife Disease Association (Knoxville, TN, USA). July 27 – August 2, 2013. Poster Presentation.

Iyer P., Machalaba C., McLeod N., Parmar K. “Impacts of Disparities in Funding Allocated to Different Genetic Diseases”. Unite for Sight Global Health and Innovation Conference (Yale University, New Haven, CT, USA). April 2009. Poster Presentation.

## **Press**

Machalaba C. with Prieur-Richard A.-H. and Bah E.M. “Press Conference on Ebola”. 12<sup>th</sup> Conference of the Parties, United Nations Environment Program Convention on Biological Diversity. October 10, 2014. Pyeongchang, South Korea.



# Nathan A. Breit

Curriculum Vitae  
Email: [breit@ecohealthalliance.org](mailto:breit@ecohealthalliance.org)

## EDUCATION

2006-2011 University of Washington  
Bachelor of Arts in Computer Science  
Bachelor of Arts in Mathematics

## PROFESSIONAL EXPERIENCE

2014-Present EcoHealth Alliance  
*Software Developer*

2011-2013 University of Washington ICTD Lab  
*Senior Computer Specialist*

2011 Village Reach  
*Intern*

2007 & 2008 City of Bellevue  
*IT Intern*

## SOFTWARE PROJECTS

2015-Present Mantle Prototype, EcoHealth Alliance  
*An application for Ransomware researchers to collaborate and share data, as a prototype of an open source platform for biosurveillance researchers across One Health disciplines.*

2014-Present Emerging Infectious Disease Repository, EcoHealth Alliance  
*A web-based encyclopedia of curated information on emerging infectious disease outbreaks from 1940-2013.*

2014-Present Global Rapid Identification Tool Set, EcoHealth Alliance  
*A biosurveillance application that enables infectious disease analysts to monitor non-traditional information sources for infectious disease threats.*

2013 中文 Garden, Independent Project  
*An android game based on memorizing Chinese words and phrases.*

2012-2013 ODK Survey, University of Washington  
*An android application for rendering offline surveys that can be heavily customized using HTML, CSS and JavaScript.*

2011-2013 ODK Scan, University of Washington & Village Reach  
*An application for scanning paper forms to enable faster digital transcription and automated OMR.*

## **PRESENTATIONS**

Huff, A. G., Slagle, A., Horton, R., Breit, N., & Gold, Z. (2015, March). *Global Rapid Identification Tool Set (GRITS)*. DDD3: Florence, Italy.

Huff, A. G., Slagle, A., Horton, R., Breit, N., & Gold, Z. (2015, March). *Global Rapid Identification Tool Set (GRITS)*. Defense Threats Reduction Agency Technical Interchange Meeting: Washington, D.C.

## **ACADEMIC CV**

### **Personal Data**

Maureen Miller, PhD

Birthplace: New York, NY, USA

Citizenship: US

### **Academic Training**

Columbia University School of General Studies, Bachelor of Arts in Anthropology, 1992

Columbia University School of Public Health, Master of Science in Epidemiology, 1994

Columbia University Graduate School of Arts and Sciences, Doctor of Philosophy in Epidemiology, 1997

Dissertation title: The Impact of Sexual Abuse on HIV Transmission Risk

Sponsor: Sharon Schwartz, PhD

Citation of publication: Miller M. A model to explain the relationship between sexual abuse and HIV risk among women. AIDS Care 1999;11(1):3-20.

### **Traineeships**

Institut National de la Sante et de la Recherche Medicale (INSERM) Post-Doctoral Research Fellow at INSERM Unite 292, 'Sante Publique, Epidemiologie, Reproduction Humaine' (Public Health, Epidemiology and Human Reproduction), Le Kremlin-Bicetre, France. 1998-1999.

### **Professional organizations and societies**

American Public Health Association

Doctors without Borders/Medecins sans Frontieres

National Association of Professional Women

Columbia University Alumni Association

### **Academic appointments**

Adjunct Assistant Professor, Department of Epidemiology, Joseph L Mailman School of Public Health, Columbia University, New York, NY, 2000-2001

Assistant Professor, Department of Epidemiology, Joseph L Mailman School of Public Health, Columbia University, New York, NY, 2001-2005

Adjunct Assistant Professor, Department of Epidemiology, Joseph L Mailman School of Public Health, Columbia University, New York, NY, 2005-2011

Associate Professor, Director, Doctoral Program, Department of Epidemiology and Biostatistics, School of Public Health, New York Medical College, Valhalla, NY, 2006-2009

Adjunct Associate Professor, Department of Epidemiology, Joseph L Mailman School of Public Health, Columbia University, New York, NY, 2011-present

## **Honors**

Graduated magna cum laude, 1992.

Inducted Phi Beta Kappa, 1992.

## **Fellowship and grant support**

### ***Fellowships:***

Centers for Disease Control and Prevention Summer Fellow: Placement at the Georgia Department of Human Resources, Office of Perinatal Epidemiology through the National Center for Prevention Services, Division of STD/HIV Prevention, Atlanta, GA. 1993

National Institute on Drug Abuse (NIDA) Pre-doctoral Research Fellow in the Behavioral Sciences Training Program administered under the auspices of the National Development and Research Institutes, Inc. and the Medical and Health Research Association of New York City, Inc., New York, NY. 1994-1996,

### ***Current grant support:***

10/14-09/19 *Emerging Pandemic Threats PREDICT 2*; \$100,000,000; USAID

Role: Senior Behavioral Surveillance Coordinator

05/14-04/19 *Understanding the Risk of Bat Coronavirus Emergence*; \$2,498,767; NIAID

Role: Epidemiologist/Behavioral Surveillance Coordinator

### ***Past grant support:***

07/95 - 03/04 *Non-Injecting Heroin Users, New Injectors and HIV Risk*; \$2,710,978; NIDA

Role: Co-Investigator

04/97 – 03/04 *Staphylococcal Colonization and Disease in Drug Users*; \$1,132,093; NIDA

Role: Co-Investigator

04/98 – 03/04 *S. Aureus Pathogenesis in HIV Infection and Drug Users*; \$1,741,991; NIDA

Role: Co-Investigator

12/99 - 05/01 *Networks, Resources and Risk Among Women Drug Users*; \$189,906; NIDA

Role: Principal Investigator

01/01 – 05/02 *The Context of Drug Use Initiation Among Women*; \$50,000; Peter F McManus Charitable Trust.

Role: Principal Investigator

05/01 – 04/06 *Women's Risk Networks: Resources, Infection and Change*; \$2,264,094; NIDA

Role: Principal Investigator

09/02 – 08/07 *Social Networks of S. aureus Carriage among Drug Users*; \$1,910,877; NIDA.

Role: Co-Principal Investigator

09/02 – 04/06 *STIs in Women's Risk Networks*; \$325,885; NIDA.

Role: Principal Investigator

01/03 – 12/06 *Injection Initiation and the Social Course of Injection among Young IDUs*; \$2,247,589; NIDA.

Role: Co-Investigator

02/03 – 01/07 *Neighborhoods, New Injector Networks and HCV/HIV Risk*; \$2,118,939; NIDA.

Role: Co-Investigator

09/03 – 08/06 *Applied Research on Antimicrobial Resistance*; \$1,109,878; CDC.

Role: Co-Principal Investigator

05/04 – 04/06 *Evaluation Methods for Community Level HIV Interventions*; \$762,292; NIDA.

Role: Principal Investigator

09/04 – 08/07 *Interdisciplinary Research on Antimicrobial Resistance (CIRAR)*; \$1,841,469, NIH Center Grant.

Role: Executive Committee Member

12/08 – 11/13 *Modeling of S. aureus Transmission in Northern Manhattan*; \$2,225,835; NIAID.

Role: Co-Investigator

### **Departmental and University Committees**

Diversity Committee, Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY. 2001-2005.

Research Committee, Department of Epidemiology and Biostatistics, School of Public Health, New York Medical College, Valhalla, NY. 2006-2009.

Committee on Appointments and Promotions, Department of Epidemiology and Biostatistics, School of Public Health, New York Medical College, Valhalla, NY. 2006-2009.

### **Teaching experience and responsibilities**

Teaching Assistant, Department of Epidemiology, School of Public Health, Columbia University, New York, NY. 1993

Introduction to the Principles of Epidemiology I

Teaching Assistant, Department of Epidemiology, School of Public Health, Columbia University, New York, NY. 1995.

Principles of Epidemiology V (Doctoral level core course)

Adjunct Assistant Professor, Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY. 2000-2001.

Introduction to the Principles of Epidemiology I (Senior Seminar Leader)

Assistant Professor, Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY. 2001-2005.

Developed and taught: Methods in infectious disease epidemiology

Developed and taught: Design of infectious disease studies

Faculty, Robert Wood Johnson Foundation Health & Society Scholars Program at Columbia University, New York, NY. 2003-2005.

Faculty, Columbia-Rockefeller Center for AIDS Research, Columbia University Medical Center, New York, NY. 2004-2005.

Associate Professor, Director, Doctoral Program, Department of Epidemiology and Biostatistics, School of Public Health, New York Medical College, Valhalla, NY. 2006-2009.

Developed and taught: Critical thinking and causality in epidemiology (Doctoral core course)

Developed and taught: Epidemiologic research development and review

Developed and taught: Advanced epidemiology methods II (MPH core course)

Developed and taught: Thesis/culminating experience (MPH core course)

Developed and taught: Infectious disease epidemiology seminar

***Student mentoring: Doctoral dissertation committees***

- Allison Aiello. 'The influence of antibacterial cleaning and hygiene products on levels of resistant bacteria in the home environment.' Defended 2003, Department of Epidemiology, Columbia University.
- Christine Fiorello. 'Disease Ecology of Wild and Domestic Carnivores in the Bolivian Chaco.' Defended 2004, Center for Environmental Research and Conservation (CERC), Columbia University.
- Paul Christos. 'The Influence of Surgical Subspecialty Training, Hospital Volume, and Surgeon Volume on In-Hospital Mortality for Colectomy and Gastrectomy Patients. Chair. Defended 2009, Department of Epidemiology and Biostatistics, New York Medical College.
- Steve Duzsa. 'Study of Nevi in Children (SONIC): Baseline Findings and Public Health Implications.' Defended 2009, Department of Epidemiology and Biostatistics, New York Medical College.
- Anita Verga. 'The Performance of A Single Screening Question To Identify African-Americans With Limited Health Literacy.' Chair. Defended 2009, Department of Epidemiology and Biostatistics, New York Medical College.
- Maureen Kennedy. 'Dyadic analyses to examine S. aureus transmission among drug users in Bedford Stuyvesant, Brooklyn.' In process, Department of Epidemiology and Biostatistics, New York Medical College.
- Justin Knox. 'Household and community level *Staphylococcus aureus* transmission dynamics.' In progress.

***Epidemiology Master of Public Health degree thesis committees at Columbia University***

- Asher Shamam. 'HIV and hepatitis C virus (HCV) risk among women drug users who have sex with women.' Graduated 2003.

- Meghan Wagner. 'Herpes simplex virus-2 (HSV-2) and concurrent sexually transmitted infections (STIs) among Black women who use drugs in an inner city community.' Graduated 2004.
- Rachel Jankolovitz Gordon. 'A Molecular Epidemiologic Analysis of two *Staphylococcus aureus* Clonal Types Colonizing AIDS Patients.' Graduated 2004.
- Kakra Soadwa. 'Neighborhood-Level Stress and HIV Risk Behaviors Among African American Women Who Use Drugs. Graduated 2004.
- Derick Veldman. 'The Association between Alcohol Intake and HIV Prevalence in Women Living in Mangaung, Bloemfontein, South Africa.' Graduated 2004. Fogarty Fellow.
- Heather Cook. 'Prospective Study of NICU Nurses' Hand Flora.' Graduated 2005.
- Nana Pokuaa Mensah. 'Antiretroviral therapy and health care access among African American women who use drugs.' Graduated 2005. IMSD Fellow.
- Holly Anger. 'The Effect of Alcohol Consumption on HIV Treatment Outcomes.' Graduated 2005.
- Debbie Padilla. 'Socioeconomic Determinants of Influenza Incidence across the United States.' Graduated 2013.
- Sharifa Mareli. 'The relationship between contraceptive use and maternal and child health outcomes in Tajikistan.' Graduated 2015.
- Alayna Younger. ': Social networking, mobile technology usage and sexual health risk behaviors in adolescents.' Graduated 2015.

### **Other professional activities**

Senior Research Assistant, Chemical Dependency Institute, Beth Israel Medical Center, New York, NY, 1990-1993.

Graduate Research Assistant, Critical Time Intervention Project for Homeless Mentally Ill Men, Department of Psychiatry, Columbia University, New York, NY, 1993-1994.

Assistant Research Scientist, HIV Center for Clinical and Behavioral Studies, New York State Psychiatric Institute, New York, NY, 1994.

Epidemiologist, Injury Prevention Program, New York City Department of Health, New York, NY, 1995.

Senior Research Analyst, Chemical Dependency Institute, Beth Israel Medical Center, New York, NY, 1995-1996.

Project Director, Institute for AIDS Research, National Development and Research Institutes, Inc., New York, NY, 1996-1998.

Epidemiologist, Centre Européen pour la Surveillance Épidémiologique du SIDA, St-Maurice, France, 1998.

Principal Investigator, Center for Drug Use and HIV Research, National Development and Research Institutes, Inc, New York, NY, 1999-2001.

Peer reviewer for National Institutes of Health Center for Scientific Review and several scientific journals including American Journal of Public Health, American Journal of Epidemiology, New England Journal of Medicine and Medical Anthropology Quarterly, 1999-present.

Epidemiologist, Syringe Exchange Program Research Working Group, Folkehelsa (National Institute of Public Health), Oslo, Norway, 1999-2003.

Public Health and Evaluation Consultant, MMEpidemiology, Inc. [www.mmepi.com](http://www.mmepi.com), 2000-present.

Principal Investigator, Department of Epidemiology, Joseph L Mailman School of Public Health, Columbia University, New York, NY, 2001-2005.

Director of HIV Prevention, Bureau of HIV Prevention and Control (BHIV), New York City Department of Health and Mental Hygiene (DOHMH), New York, NY. 2005-2006.

Senior Scientist, EcoHealth Alliance, New York, NY. 2014-present.

## **Publications**

### **A. Original, peer reviewed articles**

1. Susser E, Valencia E, Miller M, Tsai W-Y, Meyer-Bahlburg H, Conover S. Sexual behavior of homeless mentally ill men at risk for HIV. *American Journal of Psychiatry* 1995;152(4):583-587.
2. Susser E, Miller M, Valencia E, Colson P, Conover S, Roche B. Injection drug use and risk of HIV transmission among homeless men with mental illness. *American Journal of Psychiatry* 1996;153(6):794-798.
3. \*Miller M, Paone D. Social network characteristics as mediators in the relationship between sexual abuse and HIV risk. *Social Science & Medicine* 1998;47(6):765-777.
4. \*Miller M. A model to explain the relationship between sexual abuse and HIV risk among women. *AIDS Care* 1999;11(1):3-20.
5. \*Miller M for the European Study Group on the Natural History of HIV Infection in Women. HIV primary infection and mother-to-child transmission. Correspondence to *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology* 1999;22(2):210-212.
6. \*Miller M, Meyer L, Boufassa F, Persoz A, Sarr A, Robain M, Spira A and the SEROCO Study Group. Sexual behavior changes and protease inhibitor therapy. *AIDS* 2000;14(4):F33-F39.
7. Neaigus A, Miller M, Friedman SR, Hagen DL, Sifaneck SJ, Ildefonso G, Des Jarlais DC. Potential risk factors for transitioning to injecting among non-injecting heroin users: a comparison of former injectors and never injectors. *Addiction* 2001;96(6):847-60.
8. Neaigus A, Miller M, Friedman SR, Des Jarlais DC. Sexual transmission risk among noninjecting heroin users infected with human immunodeficiency virus or hepatitis C virus. *Journal of Infectious Diseases* 2001;184(3):359-63.



9. \*Miller M, Eskild A, Mella I, Moi H, Magnus P. Gender differences in syringe exchange program use patterns in Oslo, Norway. *Addiction* 2001;96(11):1639-51.
10. \*Miller M, Neaigus A. Networks, resources and risk among women who use drugs. *Social Science & Medicine* 2001;52(6):967-978.
11. Gyarmathy VA, Neaigus A, Miller M, Friedman SR, Des Jarlais DC. Risk correlates of prevalent HIV, Hepatitis B virus and Hepatitis C virus infections among non-injecting heroin users. *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology* 2002;30(4):448-56.
12. Quagliarello B, Cespedes C, Miller M, Toro A, Vavagiakis P, Klein RS, Lowy FD. Strains of *Staphylococcus aureus* collected from drug use networks are closely linked. *Clinical Infectious Diseases* 2002;35:671-677.
13. \*Miller M, Neaigus A. Sex partner support, drug use and sex risk among HIV negative non-injecting heroin users. *AIDS Care* 2002;14(6):801-813.
14. Lowy FD, Miller M. *Staphylococcus aureus* disease among drug users: understanding transmission dynamics and pathogenesis. *Lancet Infectious Diseases* 2002;2:605-612.
15. \*Miller M, Neaigus A. An economy of risk: resource acquisition strategies of inner city women who use drugs. *International Journal of Drug Policy* 2002;13(5):399-408.
16. Cespedes C, Miller M, Quagliarello B, Vavagiakis P, Klein RS, Lowy FD. Differences in *Staphylococcus aureus* isolates from medical and nonmedical hospital personnel. *Journal of Clinical Microbiology* 2002;40(7):2594-97.
17. \*Miller M, Mella I, Moi H, Eskild A. HIV and hepatitis C virus risk among new and longer term IDUs in Oslo, Norway. *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology* 2003;33(3):373-379.
18. \*Miller M, Cespedes C, Vavagiakis P, Klein RS, Lowy FL. *Staphylococcus aureus* colonization in a community sample of HIV infected and uninfected drug users. *European Journal of Clinical Microbiology & Infectious Diseases* 2003;22:465-469.
19. \*Miller M. The dynamics of substance use and sex networks in HIV transmission. *Journal of Urban Health* 2003;80(suppl 3):iii88-iii96.
20. Cespedes C, Saïd-Salim B, Miller M, Lo S-H, Kreiswirth B, Gordon R, Vavagiakis P, Klein RS, Lowy FD. The Clonality of *Staphylococcus aureus* Nasal Carriage. *Journal of Infectious Diseases* 2005;191(3):444-452.
21. \*Roche B, Neaigus A, Miller M. 'Street smarts' and urban myths: the functions of storytelling in risk reduction and rationalization. *Medical Anthropology Quarterly* 2005;19(2):149-170.
22. Gordon RJ, Quagliarello B, Cespedes C, Chung M, de Lencastre H, Vavagiakis P, Miller M, Zeller B and Lowy FD. A Molecular Epidemiologic Analysis of Two *Staphylococcus aureus* Clonal Types Colonizing and Infecting AIDS Patients. *Clinical Infectious Diseases*. 2005;40:1028-1036.
23. \*Miller M, Serner M, Wagner M. Sexual diversity among Black men who have sex with men in an inner city community *Journal of Urban Health*. 2005; 19(2): 149-170.
24. Neaigus A, Gyarmathy VA, Miller M, Frajzyngier V, Friedman SR, Des Jarlais DS. Transitions to injecting among non-injecting heroin users: social network influence and individual susceptibility. *Journal of Acquired Immune Deficiency Syndromes*. 2006; 41(4):493-503.

25. Neaigus A, Gyarmathy VA, Zhao M, Miller M, Friedman SR, Jarlais DC. Sexual and other non-injecting risks for HBV and HCV seroconversions among non-injecting heroin users. *Journal of Infectious Diseases*. 2007; 195(7):1052-61.
26. Frajzyngier V, Neaigus A, Gyarmathy VA, Miller M, Friedman SR. Gender differences in injection risk behaviors at the first injection episode. *Drug and Alcohol Dependence*. 2007; 89(2-3):145-52.
27. Neaigus A, Gyarmathy VA, Miller M, Frajzyngier V, Friedman SR, Des Jarlais DS. Injecting and sexual risk correlates of HBV and HCV infections in a low HIV prevalence population of new drug injectors. *Drug and Alcohol Dependence*. 2007; 89(2-3):234-43
28. \*D'Mellow D, Miller M. Community and academic partnerships for HIV prevention in racial and ethnic minority communities. *The Community Psychologist*. 2007; 40(20):54-60.
29. \*Miller M, Cespedes C, Bhat M, Vavagiakis P, Klein RS, Lowy FD. Incidence and persistence of *S. aureus* nasal colonization in a community sample of HIV infected and uninfected drug users. *Clinical Infectious Diseases*. 2007; 45:343-6.
30. Furuya EY, Cook H, Lee MH, Miller M, Larson E, Hyman S, Paisley A, Della-Latta P, Mendonca E, Lowy FD. Community-associated methicillin-resistant *Staphylococcus aureus* prevalence: How common is it? A methodological comparison of prevalence ascertainment. *American Journal of Infection Control*. 2007;35:359-66.
31. \*Miller M, Korves CT, Fernandez T. The social epidemiology of HIV transmission among African American women who use drugs and their social network members. *AIDS Care*. 2007;19(7):858-65.
32. \*Miller M, Liao Y, Manchikanti-Gomez A, Gaydos CA, D'Mellow D. Prevalence and incidence rates of *Trichomonas vaginalis* among African American women who use drugs in New York City: Associations and co-infections. *Journal of Infectious Disease*. 2008;197:503-9.
33. \*Miller M, Liao Y, Wagner M, Corves K. HIV, the clustering of sexually transmitted infections (STIs) and sex risk among African American women who use drugs. *Sexually Transmitted Diseases*. 2008; 35(7):696-702.
34. Bhat M, Dumortier C, Taylor B, Miller M, Vasquez G, Yunen J, Brudney K, Sánchez JE, Rodriguez-Taveras C, Rojas R, Leon P, Lowy FD. Detection of *Staphylococcus aureus* ST398 in Northern Manhattan and the Dominican Republic. *Emerging Infectious Diseases*. 2009; 15(2):285-7.
35. \*Miller M, Cook HA, Furuya EY, Bhat M, Lee MH, Vavagiakis P, Visintainer P, Vasquez G, Larson E, Lowy FL. *Staphylococcus aureus* in the Community: Colonization Versus Infection. *PLoS ONE*. 2009;4(8):e6708. doi:10.1371/journal.pone.0006708.
36. Neaigus A, Miller M, Gyarmathy VA, Lin J, Friedman SR. HIV sexual risk from injecting drug users among HIV uninfected non-injecting heroin users. *Substance Use and Misuse*, 2011;46:208-17.
37. Uhlemann AC, Knox J, Miller M, Hafer C, Vasquez G, Ryan M, Vavagiakis P, Shi Q, Lowy FL. Identification of the environment as an unrecognized reservoir for epidemic community-associated methicillin resistant *Staphylococcus aureus* USA300. *PLoS ONE* 2011; 6: e22407.
38. Gwizdala RA, Miller M, Bhat M, Vavagiakis P, Henry C, Neaigus A, Shi Q and Lowy FD. *Staphylococcus aureus* Among Drug Users: Identification of Hidden Networks. *American Journal of Public Health*. 2011;101:1268-7.

39. Knox J, Uhlemann AC, Miller M, Hafer C, Vasquez G, Vavagiakis P, Shi Q, Lowy FD. Environmental Contamination as a Risk Factor for Intra-Household *Staphylococcus aureus* Transmission. *PLoS ONE* 2012;7(11): e49900. doi:10.1371/journal.pone.0049900.
40. Knox J, van Rijen M, Uhlemann A-C, Miller M, Hafer C, Vavagiakis P, Shi Q, Johnson PDR, Coombs G, Kluytmans - van den Bergh M, Kluytmans J, Bennett CM, Lowy FD. Community-Associated Methicillin Resistant *Staphylococcus aureus* Transmission among Households of Infected Cases: a Pooled Analysis of Primary Data from Three Studies across International Settings. *Epidemiology and Infection*. 2014; 24:1-12.

#### **B. Case reports**

None.

#### **C. Books**

None.

#### **D. Reviews, chapters and editorials**

1. Neaigus A, Atillasoy A, Friedman SR, Andrade X, Miller M, Ildefonso G, & Des Jarlais DC. (1998). Trends in the non-injected use of heroin and factors associated with the transition to injecting. In Inciardi J (ed), *Heroin in the age of crack cocaine*. Newbury Park, CA: Sage Publications, pp131-159.
2. \*Miller M. L'influence des caractéristiques des réseaux sociaux dans la dynamique de la transmission du VIH. Invited review of Rothenberg RB, Potterat JJ, Woodhouse DE, Muth SQ, Darrow WW, Klovdahl AS. Social network dynamics and HIV transmission, *AIDS* 1998;12:1529-1536. *Transcriptase* 1999;72:23-25.
3. \*Miller M. (2003). Environmental factors as barriers to implementing HIV preventive interventions. NIDA Proceedings of the May 6-7, 2002, Working Meeting, "Strategies to Improve the Replicability, Sustainability, and Durability of HIV Prevention Interventions for Drug Users." Bethesda, MD: National Institutes of Health, pp 75-80.
4. Roche B, Neaigus A & \*Miller M. (2012). Street Smarts and Urban Myths: Women, Sex Work, and the Role of Storytelling in Risk Reduction and Rationalization. In Pogrebin MR (ed), *About Criminals: A View of the Offender's World, Second Edition*. Newbury Park, CA: Sage Publications, pp80-93.

#### **E. Abstracts**

1. Paone D, Chavkin W, Miller M. Integrating drug treatment into a homeless family shelter. Presented at the 120<sup>th</sup> Annual American Public Health Association Meeting, Washington, DC, November 9, 1992.
2. Susser E, Valencia E, Saez H, Miller M, Gounis K, Conover S. HIV sexual risk behavior of homeless mentally ill men in a New York City shelter. Presented at AIDS Impact: Biopsychosocial aspects of HIV Infection, Brighton, UK, July 8, 1994. (Abstract S5.3)

3. \*Miller M, Susser E. Drug use among homeless mentally ill men. Presented at the 122nd Annual American Public Health Association Meeting, Washington, DC, November 2, 1994. (Abstract 3253)
4. \*Miller M, Susser E, Roche B. Risk of HIV transmission among homeless men with mental illness. Presented at the Sixth Annual Conference on Social Research, New York, NY, November 11, 1994.
5. Paone D, Friedmann P, Miller M. Sexual abuse as a risk factor for HIV infection. Presented at the HIV Infection in Women Conference, Washington, DC, February 23, 1995.
6. Paone D, Miller M, Friedmann P. Sexual violence may predict HIV seropositivity. Presented at the College on Problems of Drug Dependence, Inc. 57<sup>th</sup> Annual Scientific Meeting, "AIDS and Drug Abuse" satellite conference, Scottsdale, AZ, June 9, 1995.
7. \*Miller M, Paone D, Friedmann P. Sexual violence and drug use severity among women opiate users. Presented at the 37<sup>th</sup> International Congress on Alcohol and Drug Dependence, San Diego, CA, August 22, 1995. (Abstract 2201.4)
8. \*Miller M, Paone D, Friedmann P. The impact of sexual abuse on drug treatment. In LS Harris (ed), *Problems of Drug Dependence 1995. National Institute on Drug Abuse Research Monograph 162*. Rockville, MD:US Department of Health and Human Services, 1996.
9. Berkman A, Susser E, Valencia E, Miller M. Injection drug use and risk of HIV transmission among homeless men with mental illness. Presented at the XI International Conference on AIDS, Vancouver, Canada, July 9, 1996 (Abstract Tu.C.2543).
10. Paone D, Miller M, Shi Q, Des Jarlais D. Sexual abuse and HIV risk. Presented at the XI International Conference on AIDS, Vancouver, Canada, July 9, 1996 (Abstract Tu.C.2468).
11. \*Miller M, Paone D, Shi Q, Des Jarlais D. Sexual abuse and HIV risk network membership. Presented at the XI International Conference on AIDS, Vancouver, Canada, July 9, 1996 (Abstract Tu.C.2465).
12. Paone D, Miller M, Des Jarlais D. Sexual abuse, sex trading, and drug use behaviors. Presented at the First National Harm Reduction Conference, Oakland, CA, September 20, 1996.
13. \*Miller M, Paone D, Shi Q, Des Jarlais D. Social networks and HIV risk among women. Presented at the First National Harm Reduction Conference, Oakland, CA, September 19, 1996.
14. \*Miller M, Paone D, Shi Q, Des Jarlais D. Sexual abuse, social networks and HIV risk. Presented at the 124<sup>th</sup> Annual American Public Health Association Meeting, New York, NY, November 19, 1996 (Abstract 2087.4).
15. Neaigus A, Miller M, Friedman SR, Ildefonso G, Atilasoy A, Andrade X, Des Jarlais DC. Non-injecting users of heroin have substantial rates of infection with Hepatitis B and Hepatitis C. Presented at the 8<sup>th</sup> International Conference on the Reduction of Drug Related Harm, Paris, France, March 24, 1997.
16. \*Miller M. Broadening the HIV preventive focus for women from the individual to the social level: social networks, social support, and social isolation. Presented at the 8<sup>th</sup> International Conference on the Reduction of Drug Related Harm, Paris, France, March 24, 1997.

17. \*Miller M, Neaigus A, Friedman SR, Des Jarlais DC. Do drug use patterns affect sex risk among non-injecting heroin users? Presented at the 125<sup>th</sup> Annual American Public Health Association Meeting, Indianapolis, IN, November 11, 1997.
18. Neaigus A, Miller M, Friedman SR, Andrade X, Atillasoy A, Ildefonso G, Des Jarlais DC. Gender differences in recent crack use and HIV risk among non-injecting users of heroin. In LS Harris (ed), *Problems of Drug Dependence 1997. National Institute on Drug Abuse Research Monograph*. Rockville, MD:US Department of Health and Human Services, 1998.
19. \*Miller M, Neaigus A, Friedman SR, Andrade X, Atillasoy A, Ildefonso G, Des Jarlais DC. Gender differences in heroin use severity among non-injecting heroin users. In LS Harris (ed), *Problems of Drug Dependence 1997. National Institute on Drug Abuse Research Monograph*. Rockville, MD:US Department of Health and Human Services, 1998.
20. Neaigus A, Friedman SR, Miller M, Des Jarlais DC. Sexual risk networks and HIV risk among non-injecting heroin users. Presented at the 18<sup>th</sup> International Social Network Analysis Conference and the Fifth European International Social Networks Conference, Sitges, Spain, May 28 - 31, 1998.
21. Adam P, Moreau-Gruet F, Miller M, Hamers F, Delmas MC, Brunet J-B, Dubois-Arbre F. HIV/AIDS preventive attitudes and behavior of French and Swiss gay men in the era of new treatments: a comparison of two national surveys. Presented at the 12<sup>th</sup> World AIDS Conference, Geneva, Switzerland, June 28-July 3, 1998.
22. Delmas M-C, Miller M for the European working group on the natural history of HIV infection in women. Incidence and outcomes of pregnancies in HIV infected women. Presented at the 12<sup>th</sup> World AIDS Conference, Geneva, Switzerland, June 28-July 3, 1998.
23. Neaigus A, Miller M, Friedman SR, Des Jarlais DC. Transitions to injecting and seroconversions for HIV, hepatitis B and hepatitis C among a cohort of non-injecting heroin users. Presented at the 12<sup>th</sup> World AIDS Conference, Geneva, Switzerland, June 28-July 3, 1998.
24. Adam P, Miller M. The new role of the couple in gay lifestyles. The French case. Presented at the American Sociological Association Annual Meeting, San Francisco, CA, August 24, 1998.
25. Neaigus A, Friedman SR, Miller M, Des Jarlais DC. Transitions to injecting drug use among non-injecting heroin users. Presented at the 126<sup>th</sup> Annual Public Health Association Meeting, Washington, DC, November 15-19, 1998.
26. Adam P, LaPorte A, Miller M, Meyer L. Circonstances de la contamination et comportements préventifs ultérieurs des patients de la cohorte PRIMO. Journées d'animation scientifique de l'ANRS: Gestion du risque chez les personnes atteintes, Paris, FRANCE, November 19-20, 1998.
27. Adam P, Miller M, Hamers F, Brunet J-B. Attitudes et comportements préventifs des homosexuels masculins à l'époque des nouveaux traitements antirétroviraux. Résultats de l'enquête press gaie 1997. Journées d'animation scientifique de l'ANRS: Gestion du risque chez les personnes atteintes, Paris, FRANCE, November 19-20, 1998.
28. Neaigus A, Friedman SR, Hagen DL, Miller M, Des Jarlais D. Sexual transmission risk and transitions to injecting among non-injecting heroin users infected with HIV and/or

- HCV. Presented at the 127<sup>th</sup> Annual Public Health Association Meeting, Chicago, IL, November 8, 1999.
29. \*Miller M, Neaigus A. Networks, resources and risk among women who use drugs. The College on Problems of Drug Dependence, Inc. 59<sup>th</sup> Annual Scientific Meeting, San Juan, PR, June 19, 2000.
  30. Neaigus A, Miller M, Friedman SR, Hagen DL, Des Jarlais DC. HIV sexual risk among HIV seronegative non-injecting heroin users. 13<sup>th</sup> International AIDS Conference, Durban, South Africa, July 11, 2000.
  31. Neaigus A, Miller M, Friedman SR. Injecting history and transitions to injecting by non-injecting heroin users. 3<sup>rd</sup> National Harm Reduction Conference, Miami-Dade County, FL, October 23, 2000.
  32. \*Miller M, Neaigus A. Women who use drugs: resources, networks, and risk. 3<sup>rd</sup> National Harm Reduction Conference, Miami-Dade County, FL, October 25, 2000.
  33. Neaigus A, Miller M, Persaud M. HCV transmission probability in HCV discordant partnerships among new injectors. Sunbelt XXI International Sunbelt Social Network Conference, Budapest, Hungary, April 25, 2001.
  34. \*Miller M, Neaigus A. The process of sex partnership formation and HIV risk among low income women who use drugs. Sunbelt XXI International Sunbelt Social Network Conference, Budapest, Hungary, April 25, 2001.
  35. Neaigus A, Miller M, Gyarmathy VA, Friedman SR, Des Jarlais DC. Age mixing patterns and HIV, HBV, and HCV infection among new injectors. 2001 National HIV Prevention Conference, Atlanta, GA, August 13, 2001.
  36. \*Miller M, Neaigus A. Resource acquisition strategies and HIV sex risk. 2001 National HIV Prevention Conference, Atlanta, GA, August 14, 2001.
  37. Neaigus A, Friedman S, Miller M. Network theory and HIV risk among injecting and non-injecting drug users. 96<sup>th</sup> Annual Meeting of the American Sociological Association. August 2001.
  38. Neaigus A, Miller M, Friedman SR, Persaud M, Des Jarlais DC. Age mixing patterns in the injecting networks of hepatitis C infected new injectors. Presented at the 129<sup>th</sup> Annual Public Health Association Meeting, Atlanta, GA, October 23, 2001.
  39. Gyarmathy VA, Neaigus A, Miller M. Sexual risk behaviors and risk networks of new injecting drug users. XIV International AIDS Conference, Barcelona, Spain, July 8, 2002. (Abstract MoPeC3398).
  40. Neaigus A, Gyarmathy VA, Miller M, Friedman SR, Des Jarlais DC. Sexual risk and HIV, HBV and HCV seroconversions among non-injecting heroin users. XIV International AIDS Conference, Barcelona, Spain, July 8, 2002. (Abstract MoPeC3528).
  41. \*Miller M, Neaigus A, Serner M, Godfrey C. 'Nobody knows but me and God.' HIV infection disclosure in an African American community. XIV International AIDS Conference, Barcelona, Spain, July 10, 2002. (Abstract WePeE6451).
  42. Jankolovits R, Quagliarello B, Miller M, Cespedes C, Zeller B, Chung M, De Lancastre H, Justman J, Lowy F. Two clonal types of Staphylococcus aureus dominate infection and nasal colonization in a NYC AIDS and drug treatment facility. Interscience Conference on Antimicrobial Agents and Chemotherapy. San Diego, CA, September 27, 2002.
  43. Gyarmathy VA, Neaigus A, Miller M, Friedman SR, Des Jarlais DC. Gender differences in the sex risk of HIV and other infections among new injecting drug users who do not

- trade sex. Presented at the 130<sup>th</sup> Annual Public Health Association Meeting, Philadelphia, PA, November 12, 2002.
44. Neaigus A, Gyarmathy VA, Miller M, Friedman SR, Des Jarlais DC. Injecting equipment sharing and higher-risk networks among new injecting drug users. Presented at the 130<sup>th</sup> Annual Public Health Association Meeting, Philadelphia, PA, November 11, 2002.
  45. \*Miller M, Neaigus A, Fernandez T. African American women's serostatus and risk network characteristics. Presented at the Sunbelt XXIII International Social Network Conference, Cancun, Mexico, February 14, 2003.
  46. Neaigus A, Gyarmathy VA, Miller M. The prevalence and correlates of HIV, HBV, and HCV infection among new IDUs. AIDS Impact Conference, Milan, Italy, July 2003.
  47. \*Miller M, Aral S, Neaigus A, Fernandez T. Sexual mixing patterns and HIV infection status among women drug users in New York City. International Society for Sexually Transmitted Disease Research Congress, Ottawa, Canada, July 29, 2003.
  48. Neaigus A, Gyarmathy VA, Miller M. Injecting and sex risk correlates of HIV, HBV and HCV infection among male and female new IDUs. 131<sup>st</sup> Annual Public Health Association Meeting, San Francisco, CA, November 16, 2003.
  49. \*Fuld J & Miller M. 'I can't just go and clean myself up': Experiences of women who use drugs to care for their children. 131<sup>st</sup> Annual Public Health Association Meeting, San Francisco, CA, November 18, 2003.
  50. \*Miller M, Fernandez T, Neaigus A. Hepatitis B virus prevalence among drug using women and their risk network members in an inner city community. 131<sup>st</sup> Annual Public Health Association Meeting, San Francisco, CA, November 17, 2003.
  51. \*Hardick J, Gaydos CA, Wagner ME, Hardick A, Wood BJ, Miller M. High prevalence of *Trichomonas vaginalis* among women who use drugs in New York City. 2004 National STD Prevention Conference, Philadelphia, PA, March 10, 2004.
  52. \*Miller M, Wagner ME, Fernandez T. Coinfections and transmission risk among HIV+ women in a Black Community. National STD Prevention Conference, Philadelphia, PA, March 10, 2004.
  53. \*Miller M, Wagner ME, Neaigus A, Fernandez T. HIV spread networks and the clustering of sexually transmitted infections (STIs) among women drug users. XV International AIDS Conference, Bangkok, Thailand, July 15, 2004.
  54. Neaigus A, Gyarmathy VA, Miller M, Frajzyngier V, Friedman SR, Des Jarlais DS. Temporal trends in injecting and sex HIV-related infection risk among young injecting drug users in New York City before and after the introduction of pharmacy based syringe sales. Presented at the 132nd Annual Public Health Association Meeting, Washington, DC, November 6-10, 2004.
  55. D'Mellow D, Miller M. Community-Academic Partnerships for HIV Prevention in Racial and Ethnic Minority Communities. Presented at the 2005 National HIV Prevention Conference, Atlanta, GA, June 12-15, 2005.
  56. Neaigus A, Frajzyngier V, Miller M, Gyarmathy VA. A comparison of sex risk for HIV/STI infection among young injecting and non-injecting heroin users. Presented at the 133rd Annual Public Health Association Meeting, Philadelphia, PA, December 10-14, 2005.
  57. Frajzyngier V, Neaigus A, Gyarmathy VA, Miller M. Gender differences in injection risk behaviors at the first injection episode (initiation). Presented at the 133rd Annual Public Health Association Meeting, Philadelphia, PA, December 10-14, 2005.

58. \*Korves C, Miller M. HIV serostatus concordance between African American women drug users and their risk network members. Presented at the 45<sup>th</sup> Interscience Conference on Antimicrobial Agents and Chemotherapy [ICAAC], Washington, DC, December 16-19, 2005.
59. Miller M, Gwizdala R, Henry C, Vavagiakis P, Cespedes C, Ergas R, Bhat M, Lee M, Lowy FD. Social Network and Molecular Epidemiologic Analysis of *S. aureus* Carriage Among Drug Users. Presented at the 45<sup>th</sup> Interscience Conference on Antimicrobial Agents and Chemotherapy [ICAAC], Washington, DC, December 16-19, 2005.
60. Furuya EY, Cook H, Hyman S, Lee MH, Miller M, Larson E, Della-Latta P, Mendonca E, Lowy FD. Prevalence of Community-Associated Methicillin-Resistant *Staphylococcus aureus*: Methodology-Based Disparities. Presented at the 45<sup>th</sup> Interscience Conference on Antimicrobial Agents and Chemotherapy [ICAAC], Washington, DC, December 16-19, 2005.
61. \*Korves C, Miller M. Characteristics of concurrent partnerships facilitating transmission of HIV and STIs. Presented at the Sunbelt XXVI International Social Network Conference, Vancouver, Canada, April 24-30, 2006.
62. \*Miller M, Korves C, Liao Y. HIV serostatus mixing patterns in sex partnerships in a high HIV prevalence African American community. Presented at the Sunbelt XXVI International Social Network Conference, Vancouver, Canada, April 24-30, 2006.
63. Cook HA, Vasquez G, Lee MH, Bhat M, Vavagiakis P, Furuya EY, Miller M, Larson E, Della-Latta P, Lowy FD. Transmission of *S. aureus* within Households in Northern Manhattan. Presented at the 106<sup>th</sup> General Meeting of the American Society for Microbiology, Orlando, FL May 21-25, 2006.
64. Uhlemann A-C, Ryan M, Vasquez G, Vavagiakis P, Dolgoarshinnikh D, Miller M and Lowy FD. Environmental Contamination as Source of Community-associated MRSA Infections. Presented at the Gordon Research Conferences on Staphylococcal disease. Waterville Valley, New Hampshire, 2009.
65. Knox J, Uhlemann AC, Miller M, Hafer C, Vasquez G, Ryan M, Vavagiakis P, Shi Q & Lowy FD. Household transmission of *Staphylococcus aureus*. Presented at the 51<sup>st</sup> Interscience Conference on Antimicrobial Agents and Chemotherapy, Chicago, IL September 2011.
66. Miko B, Uhlemann AC, Gelman A, Lee C, Hafer C, Sullivan S, Miller M, Zenilman J, Lowy F. High Prevalence of Genital Colonization with *Staphylococcus aureus* USA300 Clone. Presented at the 51<sup>st</sup> Interscience Conference on Antimicrobial Agents and Chemotherapy, Chicago, IL, September 2011.
67. Knox J, Van Rijen M, Uhlemann AC, Miller M, Hafer C, Vasquez G, Vavagiakis P, Shi Q Johnson PDR, Coombs G, Kluytmans-Vandenbergh MFQ, Kluytmans J, Bennett CM, & Lowy FD. Community-associated methicillin-resistant *Staphylococcus aureus* transmission among households of infected cases: a pooled analysis of primary data from 3 studies across international settings. Presented at the Infectious Disease Week, San Francisco, CA October 2013.
68. Miller M. Creating research infrastructure at CBOs. American Public Health Association Annual Meeting, New Orleans, LA, November 2014.



**Carlos Martin Zambrana-Torrelío**

EcoHealth Alliance, 460 W. 34<sup>th</sup> St. New York, NY 10001

E-mail: [zambrana@ecohealthalliance.org](mailto:zambrana@ecohealthalliance.org)

**Professional Preparation**

Univ. Mayor de San Andres	Biology	Licenciature	2004
Univ. of Puerto Rico	Ecol., Evol. and Systematics	MSc	2009
Sapienza Univ. of Rome	Env. and Evol. Biology	PhD	Pending

**Appointments**

Senior Research Scientist, EcoHealth Alliance	2015 - present
Research Scientist, EcoHealth Alliance	2010 - 2014
Research Associate, Institute of Molecular Biology and Biotechnology, Bolivia	2008 - present
Visiting Scientist, Missouri Botanical Garden	2006
Researcher, NatureServe	2006
Research Associate, Bolivian Bat Conservation Program	2003 - present
Researcher, Wildlife Conservation Society	2002 - 2003
Research Associate, Centro de Analisis Espacial - Bolivia	1999 - 2002

**Publications**

Loh EL, Zambrana-Torrelío C, Olival K, Bogich T, Johnson CK, Mazet J, Karesh W, Daszak P. Targeting Transmission Pathways for Emerging Zoonotic Disease Surveillance and Control. 2015. Vector-Borne and Zoonotic Diseases 15:5.

Suzán, Gerardo, Gabriel E. García-Peña, Ivan Castro-Arellano, Oscar Rico, André V. Rubio, María J. Tolsá, Benjamin Roche Parvies R Hosseini, Annapaola Rizzoli, Kris A Murray, Carlos Zambrana-Torrelío. (2015). Metacommunity and phylogenetic structure determine wildlife and zoonotic infectious disease patterns in time and space." *Ecology and evolution* 5, no. 4 (2015): 865-873.

Rico Chávez, Rafael Ojeda Flores, Jesús Sotomayor Bonilla, Carlos Zambrana-Torrelío, Elizabeth Loza Rubio, A. Alonso Aguirre, Gerardo Suzán Azpiri. (2015). Viral diversity of bat communities in human-dominated landscapes in Mexico. *Veterinaria México OA*.

Springborn, M. R., Keller, R. P., Elwood, S., Romagosa, C. M., Zambrana-Torrelío, C., & Daszak, P. (2015). Integrating invasion and disease in the risk assessment of live bird trade. *Diversity and Distributions*, 21(1), 101-110.

Smith, K. M., Loh, E. H., Rostal, M. K., Zambrana-Torrelío, C. M., Mendiola, L., & Daszak, P. (2013). Pathogens, pests, and economics: Drivers of honey bee colony declines and losses. *EcoHealth*, 10(4), 434-445.

Epstein, J. H., Baker, M. L., Zambrana-Torrelío, C., Middleton, D., Barr, J. A., DuBovi, E., ... & Daszak, P. (2013). Duration of maternal antibodies against canine distemper virus and Hendra virus in pteropid bats. *PloS one*, 8(6).

Daszak P, Zambrana-Torrelío C, Bogich TL, Fernández M, Epstein JH, Murray KA, Hamilton H. (2013). Interdisciplinary approaches to understanding disease emergence: The past, present, and future drivers of Nipah virus emergence. *PNAS*. 110:3681-3688.

- Loh EH, Murray K, Zambrana-Torrelío C, Hosseini P, Rostal MK, Karesh WB, Daszak P (2013) Ecological approaches to studying wildlife diseases. **One Health: People, Animals, and the Environment**. R. Atlas and R. Malay (Eds.) ASM Press.
- Anthony SJ, Epstein JH, Murray KA, Navarrete-Macias I, Zambrana-Torrelío C, et al. (2013). A strategy to estimate unknown viral diversity in mammals. **mBio** 4(5): e00598-13. doi:10.1128/mBio.00598-13.
- Anthony SJ, Ojeda-Flores R, Rico-Chavez O, Navarrete-Macias I, Zambrana-Torrelío C, et al. (2013). Coronaviruses in bats from Mexico. **Journal of General Virology**. doi:10.1099/vir.0.049759-0
- Quan PL, Firth C, Conte JM, Williams SH, Zambrana-Torrelío C, et al. (2013). Bats are a major natural reservoir for hepaciviruses and pegiviruses. **PNAS**. doi: 10.1073/pnas.1303037110.
- Morse SS, Mazet JA, Woolhouse M, Parrish CR, Carroll D, Karesh WB, Zambrana-Torrelío C, Lipkin WI, Daszak P. (2012). Prediction and prevention of the next pandemic zoonosis. **The Lancet** 380:1956–1965.
- Bogich TL, Olival JK, Hosseini PR, Zambrana-Torrelío C, Loh E, et al. (2012). Using Mathematical Models in a Unified Approach to Predicting the Next Emerging Infectious Disease. **New Directions in Conservation Medicine: Applied Cases of Ecological Health**. Oxford University Press, Oxford. Pp. 195-212.
- Agnarsson I, Zambrana-Torrelío C, Flores-Saldana P, May-Collado L. (2011). A time-calibrated species-level phylogeny of bats (Chiroptera, Mammalia). **Plos Currents: Tree of Life** 3:RRN1212.

### **Publications in review:**

The global biogeography of human infectious diseases: a novel source of prior information for health research and management. **PNAS**

Non-Random Patterns in Viral Diversity. **Nature Communications**

### **Synergistic Activities**

- Grant reviewer: Universidad Mayor de San Andres – Bolivia for research in Natural and modified biological systems-Total 2013 funding allocation of 1.5USD million
- Journal reviewer: Ecologia en Bolivia, EcoHealth, Ecological Modelling, Biosphere (ESA), PLoS One
- Professional associations: International Biogeography Society, Society for Conservation Biology, Botanical Society of America, Asociacion Boliviana de Ecologia, Programa para la Conservacion de los Murcielagos de Bolivia
- Worked with international (Wildlife Conservation Society, NatureServe) and Bolivian local (BIOTA, TROPICO) NGOs to identify priority species and areas for conservation
- Member of the Ecosystems Red List Initiative ([www.iucnredlistofecosystems.org/](http://www.iucnredlistofecosystems.org/)); Member of CESAB working group; BIODIS: Disentangling the linkages between biodiversity and emerging infectious diseases

### **Collaborators**

I Agnarsson (University of Vermont); LF Aguirre (Universidad Mayor de San Simon-Bolivia); MT Aide (University of Puerto Rico); T Bogich (Princeton University); A Domic (Saint Louis University); M Fernandez (UC Berkeley); I Gomez (Instituto de Ecologia - Bolivia); H Hamilton (NatureServe); A Izquierdo (CONICET-Argentina); D Keith (Melbourne University); M Levy (Columbia University); LJ May-Collado (University of Vermont); K Naoki (Universidad Mayor de San Andres - Bolivia); JP Rodriguez (Instituto Venezolano de Investigaciones); G Suzan (National University of Mexico); B Young (NatureServe).

**Graduate Advisors and Postdoctoral Sponsors**

Bette Loiselle (University of Florida); Mitchell T. Aide (University of Puerto Rico – Rio Piedras); Jess K. Zimmerman (University of Puerto Rico – Rio Piedras); Tomas Hrbek (Universidade Federal do Amazonas).

**Thesis Advisor and Postgraduate-Scholar Sponsor**

Carlo Rondinini (University of Rome, La Sapienza).

**Jonathan H. Epstein DVM, MPH,  
Cert. International Vet. Med.**  
460 W 34<sup>th</sup> St 17<sup>th</sup> Floor  
New York, NY 10001  
(212) 380-4467  
Epstein@ecohealthalliance.org

**Date of Preparation:** March 2015

**Personal Data:**

Name Jonathan H Epstein  
Date of Birth September 9, 1974  
Birthplace  
Citizenship USA

**Academic Appointments/Work Experience**

06/2003 – Present **EcoHealth Alliance** New York, NY

*Associate Vice President, Conservation Medicine*

2003 – Present **Department of Ecology, Evolution, Env. Biology**  
New York, NY

**Columbia University**  
*Adjunct Professor*

2003 – Present **Department of Infectious Disease & Global Health**  
Grafton, MA

**Cummings School of Vet Medicine at Tufts University**  
*Adjunct Clinical Associate Professor*

2007 – Present **Tufts University School of Medicine**  
Boston, MA

*Adjunct Clinical Associate Professor*

2008 – Present **Department of Medicine, Mt Sinai School of Medicine**  
New York, NY

*Adjunct Associate Professor*

2014 – Present **Center for Health and Global Environment, Harvard University**  
Cambridge, MA

*Scientific Advisor*

2006 – 2011 **Department of Epidemiology, Columbia University**  
New York, NY

*Adjunct Associate Research Scientist*

**Training Experience**

2002 – 2003                      **Ocean State Veterinary Specialist**                      East  
Greenwich, RI  
*Intern/Staff Doctor, 24-hr emergency and referral hospital*

2002                                  **Centers for Disease Control and Prevention: NCID**  
Atlanta, GA  
**Viral and Rickettsial Diseases Department**  
*Extern*

## **Education**

Present                              **Kingston University, Biology Sciences**  
United Kingdom  
Candidate, PhD Disease Ecology

2006 – 2011                      **Columbia University, Center for Infection and Immunity**  
New York, NY  
Post-doctoral research fellowship, molecular virology

2002                                  **Tufts University School of Veterinary Medicine**  
North Grafton, MA  
DVM, Certificate in International Veterinary Medicine

2002                                  **Tufts University School of Medicine**  
Boston, MA  
Master of Public Health

1996                                  **Brandeis University**  
Waltham, MA  
Bachelor of Arts in Biology

06/1995 – 12/1995      **University of Queensland**  
Queensland, Australia  
Dept. of Veterinary Science, Dept. of Zoology

## **Honors**

2014                              **Commencement speaker**, Tufts University Medical School Graduate Programs  
in Public Health

2013                              Names one of the ten “**Distinguished Alumni**” by Tufts University School of  
Medicine

2012                              **Young Alumni Achievement Award**, Tufts University

2007                              **Outstanding Alumnus Award**, Tufts Cummings School of Veterinary Medicine

10/2006                      **Delta Omega Honor Society**, Tufts University School of Medicine Alpha Rho  
Chapter

2002                              Graduate Programs in Public Health (1<sup>st</sup> alumni inductee; 1<sup>st</sup> keynote speaker)  
**Certificate in International Veterinary Medicine**, Tufts University School of  
Veterinary Medicine (1<sup>st</sup> recipient)

- 2002        **Sylvia Mainzer Public Health Award**  
For outstanding achievement in the field of public health
- 2002        **Hill's "Buddy" Award** for Excellence in Clinical Nutrition  
For excellence in clinical veterinary nutrition

### **Professional Organizations, Societies and Service**

- 1998 – Present Member: American Veterinary Medicinal Association, American Association of Zoo Vets, Wildlife Disease Association, New York Academy of Sciences,
- 2003 – Present Appointed Member, **IUCN Animal Health Specialist Group**
- 2004        *Invited speaker*, WHO, Emerging Zoonotic Diseases Working Group meeting; Merieux Foundation Conference on Emerging Viral Respiratory Pathogens; Swiss Re Executive Roundtable on Emerging Diseases; Royal Swedish Academy of Forestry and Agriculture: Ecology of Henipaviruses; Swedish University of Agricultural Sciences: Disease Emergence
- 2006 – Present **Research Fellow**, Center for Infection and Immunity (Lipkin lab), Columbia University; **Member, IUCN Bat Specialist Group**; Advisory committee, Suffolk County Board of Public Health; **Delta Omega Public Health Honors Society**, International Assoc. Ecology and Health
- 2007 – Present Leader, Vertebrate Health Task Force, Smithsonian Institution Geological Earth Observatory Program
- 2007 – Present Veterinary consultant, Busch Gardens, Tampa, FL
- 2008        Invited speaker, University of Malaysia, Sarawak – Emerging zoonoses
- 2008 – Present Review Editor - *EcoHealth*
- 2008 – Present Scientific Program Committee and Scholarship Review Committee, International Ecohealth Forum, 2008 conference, Merida, Mexico
- 2008        Invited lecturer, Mt. Sinai Medical College, NY; U. Minn. Sch. Pub Health, Minneapolis, MN.
- 2008        Testified, **Institute of Medicine** / Nat'l Research Council Committee on Global Surveillance of Emerging Zoonoses
- 2008        Invited speaker, University Malaya Nipah virus colloquium, Oct 2008 Malaysia; Nipah virus symposium, Amer. Soc. Trop. Med. & Hyg.
- 2009        Invited, WHO/OIE/FAO joint workshop on Nipah, Hendra, and Ebola Reston viruses, Maroochydore, Aus.
- 2010        Invited Speaker, International Bat Research Conference, Prague, Czech Republic; Wuhan Institute of Virology, Wuhan China; Amer. Soc. Trop. Med & Hygiene, Atlanta, GA.
- 2011        Member, Admissions & Curriculum Committee, Masters in Conservation Medicine, Tufts; Testified at Congressional briefing for National Wildlife Health Center
- 2012        Member, **Scientific Advisory Board**, Lubee Bat Conservancy; Member, **Executive Board**, International Association for Ecology and Health
- 2013        Invited speaker: Georgetown Symposium on emerging Zoonoses; **Planning Committee**, ASM Microbial Threats 2014; Invited speaker **IOM forum on Microbial Threats** (MERS CoV); NIAID meeting on MERS; Cold Spring Harbor Laboratory President's Council Program, New York, National One Health

Meeting, Bangladesh; Public health consultation: San Antonio, TX, City Dept. of Health

2014 Co-Chair, ASM Microbial Threats Plenary session on viral encephalitides; Treasurer: International Association of Ecology and Health; Science Advisor: Center for Health and the Global Environment, Harvard University

### **Departmental & University Committees**

- Admissions Committee, Tufts University Masters in Conservation Medicine program
- Scientific Planning Board, ASM Microbial Threats

### **Fellowship and Grant Support**

2005 New York Community Trust: Health implications of the US Trade in wildlife (Co-PI). **\$60,000**

2005 NIH Loan Repayment award (Nipah virus research) 2005-2012. (PI): **\$156,000**

2007 – 2011 NIH NIAID Mentored Clinical Scientist Award (K08AI067549) (PI) 07/1/07 – 07/30/11. **\$523,800**

2006 Conservation, Food & Health Foundation (Daszak). Preventing food-borne Nipah virus infection in Bangladesh. (Co-PI) **\$25,000**

2007 Zoonotic Emergence Network, Malaysia (subcontract from NIH Pioneer Award DP1-OD00370; N. Wolfe, UCLA.) **\$150,000**

2008 Conservation Food and Health (PI) **\$25,500**

NIH NIAID 5R01AI079231 (Daszak). Non-Biodefense EIDs: Risk of viral emergence from bats. 09/18/08 – 08/31/13 (Co-PI) **\$2,687,394**

NIH/NSF 2R01TW005869 (Daszak). Ecology of Infectious Diseases: Ecology, emergence and pandemic potential of Nipah virus in Bangladesh (Daszak). 09/01/08 – 06/30/14 (Co-PI) **\$2,498,829**

UCLA: subcontract from Nathan Wolfe's Director's Pioneer Award NIH DP1-OD00370) for wildlife hunter viral discovery in China and Malaysia. **\$225,179** (Co-PI)

Rockefeller Foundation: Viral discovery in Bangladesh and India (Daszak, PI) (Co-PI) **\$349,910**

2009 USAID Emerging Pandemic Threats: PREDICT GHN-A-00-09-00010-00 (Morse, PI) (Senior Personnel, EHA Asia Regional Coordinator) **\$75,000,000** (**\$18,000,000** subaward to EHA from UC Davis) 10/1/09-09/30/14

- 2010 NSF Research Coordination Network, EcoHealthNet #0955897 (Daszak). 07/01/10-06/30/15. (Co-PI, Program Director) **\$499,000**
- 2012 USFWS F12AP01117. Development of a Great Ape Health Unit in Sabah, Malaysia 09/13/12 - 09/13/14. (PI) **\$44,000**
- USFWS 4500036150. Characterization of Climatic Parameters within Bat Hibernacula, their Influence on Environmental Loads of *Geomyces destructans*, and Implications for the Migration of White-Nose Syndrome in Bats. 09/15/12 - 09/14/14 (PI) **\$137,475**
- 2013 USAID Infectious Disease Emergence and Economics of Altered Landscapes (IDEEAL) 10/1/2013 – 9/30/2016 (Daszak, PI) (Senior Personnel: Stakeholder Coordination Lead). **\$2,000,000**
- 2014 USAID Emerging Pandemic Threats: PREDICT2 (Mazet, PI) 10/1/14-09/30/19. **\$100,000,000 (\$20,000,000 subaward to EHA from UC Davis)** (Senior Personnel, EHA Outbreak Coordinator)
- NIH NIAID 1R01AI110964. Understanding the Risk of Bat Coronavirus Emergence 06/01/2014 – 05/31/2019. (Daszak PI). \$3,086,735. (Co-PI)

#### Teaching Experience and Responsibilities

- Lecturer, (Harvard Univ., Columbia Univ., Brown Univ., Tufts Univ., Mt. Sinai School of Medicine)
- Train/Build capacity of foreign graduate students, collaborators, and labs

#### Publications

##### In review

Molecular evidence of Ebola Reston virus infection in Philippine bats. Sarah Jayme, Hume E. Field, Carol de Jong, Kevin J. Olival, Glenn Marsh, Anson Tagtag, Tom Hughes, Anthony Bucad, Jennifer Barr, Rachel Azul, Lilia Retes, Adam Foord, Meng Yu, Magdalena Cruz, Imelda Santos, Davinio Catbagan, Mundita Lim, Carolyn Benigno, Jonathan H. Epstein, Lin-Fa Wang, Peter Daszak and Scott Newman. *PLoS Pathogens*

***Macacine Herpesvirus 1 (B virus) in Wild-caught Long-Tailed Macaques (Macaca fascicularis) Following Capture and Transport in Malaysia.*** Mei-Ho Lee, Melinda K. Rostal, Tom Hughes, , Frankie Sitam, Chee-Yen Lee, Jeffrine Japning, Mallory E. Harden, Anthony Griffiths, Mislihah Basir, Nathan Wolfe, Jonathan H. Epstein\*, and Peter Daszak. *Emerging Infectious Diseases*

##### In Press

**Serological evidence of *Coxiella burnetii* infection in cattle and goats in Bangladesh.** **Najmul Haider**, Md. Shafiqur Rahman, M. Salah Uddin Khan, Andrea Mikolon, Muzaffor Goni Osmani, Emily S. Gurley, Ireen Sultana Shanta, Suman Kumer Paul, Laura Macfarlane-Berry, Ariful Islam, Ausraful Islam, James Desmond, Jonathan H. Epstein, Peter Daszak,



Rachael A. Priestley, Gilbert J. Kersh, Stephen P Luby, Mohammed Ziaur Rahman, Robert F. Massung, Nord Zeidner. *EcoHealth*

Published (includes high impact journals *Science, Nature, Cell, PNAS* and *PLoS Pathogens*)

1. Mandl Judith N, Ahmed R, Barreiro Luis B, Daszak P, Epstein Jonathan H, Virgin Herbert W, et al. Reservoir Host Immune Responses to Emerging Zoonotic Viruses. ***Cell***. 160(1):20-35. 10.1016/j.cell.2014.12.003
2. Chowdhury S, Khan SU, Crameri G, Epstein JH, Broder CC, et al. (2014) Serological Evidence of Henipavirus Exposure in Cattle, Goats and Pigs in Bangladesh. ***PLoS Negl Trop Dis***. 8(11): e3302. doi:10.1371/journal.pntd.0003302
3. Plowright, Raina; Eby, Peggy; Hudson, Peter; Smith, Ina; Westcott, David; Bryden, Wayne; Middleton, Deborah; Reid, Peter; McFarlane, Rosemary; Martin, Gerardo; Tabor, Gary; Skerratt, Lee; Anderson, Dale; Crameri, Gary; Quammen, David; Jordan, David; Freeman, Paul; Wang, Lin-Fa; Epstein, Jonathan; Marsh, Glenn; Kung, N.; McCallum, Hamish. Ecological Dynamics of Bat Virus Spillover. ***Proc. R. Soc. B*** 282: 20142124. <http://dx.doi.org/10.1098/rspb.2014.2124>
4. Ben Hu, Aleksei A. Chmura, Jialu Li, Guangjian Zhu, James S. Desmond, Yunzhi Zhang, Wei Zhang, Jonathan H. Epstein, Peter Daszak, and Zhengli Shi. Detection of diverse novel astroviruses from small mammals in China ***J. Gen. Virol.*** 2014 : vir.0.067686-0v1-vir.0.067686-0.
5. Jessica S Schwind, Tracey Goldstein, Kate Thomas, Jonna AK Mazet, Woutrina A Smith\* and PREDICT Consortium. Capacity building efforts and perceptions for wildlife surveillance to detect zoonotic pathogens: comparing stakeholder perspectives. 2014. ***BMC Public Health*** 14:684.
6. Alagaili AN, Brieese T, Mishra N, Kapoor V, Sameroff SC, de Wit E, Munster VJ, Hensley LE, Zalmout IS, Kapoor A, Epstein JH, Karesh WB, Daszak P, Mohammed OB, Lipkin WI. 2014. Middle East respiratory syndrome coronavirus infection in dromedary camels in Saudi Arabia. ***mBio*** 5(2):e00884-14. doi:10.1128/mBio.00884-14.
7. Haider, N., Rahman, M. S., Khan, S. U., Mikolon, A., Gurley, E. S., Osmani, M. G., Shanta, I. S., Paul, S. K., Macfarlane-Berry, L., Islam, A., Desmond, J., Epstein, J. H., Daszak, P., Azim, T., Luby, S. P., Zeidner, N. and Rahman, M. Z. (2014), Identification and Epidemiology of a Rare HoBi-Like Pestivirus Strain in Bangladesh. ***Transboundary and Emerging Diseases***, 61: 193–198. doi: 10.1111/tbed.12218
8. Yuan, L.; Li, M.; Li, L.; Monagin, C.; Chmura, A.A.; Schneider, B.S.; Epstein, J.H.; Mei, X.; Shi, Z.; Daszak, P.; Chen, J. Evidence for Retrovirus and Paramyxovirus Infection of Multiple Bat Species in China. ***Viruses*** 2014, 6, 2138-2154.

9. Hahn, M. B., Epstein, J. H.\*, Gurley, E. S., Islam, M. S., Luby, S. P., Daszak, P. & Patz, J. A. Roosting behaviour and habitat selection of *Pteropus giganteus* reveals potential links to Nipah virus epidemiology. ***Journal of Applied Ecology***. doi:10.1111/1365-2664.12212 (2013).
10. Micah B. Hahn, Emily S. Gurley, Jonathan H. Epstein, Mohammad S. Islam, Jonathan A. Patz, Peter Daszak, and Stephen P. Luby. The role of landscape composition and configuration on *Pteropus giganteus* roosting ecology and Nipah virus spillover risk in Bangladesh. 2013 ***Amer. J Trop Med & Hyg.***
11. 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, Crameri G, Zhang S-Y, Wang L-F, Daszak P, Shi Z-L. (2013). First isolation and characterization of bat SARS-like Coronaviruses that use the ACE2 receptor. ***Nature*** doi:10.1038/nature12711
12. Carol de Jong, Hume Field, Anson Tagtag, Tom Hughes, Dina Dechmann, Sarah Jayme, Jonathan H. Epstein, Craig Smith, Imelda Santos, Davinio Catbagan, Mundita Lim, Carolyn Benigno, Peter Daszak, and Scott Newman. Foraging behaviour and landscape utilisation by the endangered Golden-crowned Flying fox (*Acerodon jubatus*), The Philippines. 2013. ***PLoS One*** DOI: 10.1371/journal.pone.0079665
13. Ausraful Islam, Andrea Mikolon, Matthew Mikoleit, Dilruba Ahmed, Salah Uddin Khan, M. A. Yushuf Sharker, Jahangir Hossain, Ariful Islam, Jonathan H. Epstein, and Stephen P. Luby. Isolation of Salmonella Virchow from a Fruit Bat (*Pteropus giganteus*). ***EcoHealth*** DOI: 10.1007/s10393-013-0866-y
14. Memish ZA, Mishra N, Olival KJ, Fagbo SF, Kapoor V, Epstein JH, et al. Middle East respiratory syndrome coronavirus in bats, Saudi Arabia. ***Emerg Infect Dis*** . 2013 Nov [date cited]. <http://dx.doi.org/10.3201/eid1911.131172> DOI:10.3201/eid1911.131172
15. Anthony SJ, Epstein JH, Murray KA, Navarrete-Macias I, Zambrana-Torrel CM, Solovyov A, Ojeda-Flores R, Arrigo NC, Islam A, Ali Khan S, Hosseini P, Bogich TL, Olival KJ, Sanchez-Leon MD, Karesh WB, Goldstein T, Luby SP, Morse SS, Mazet JAK, Daszak P, Lipkin WI. 2013. A strategy to estimate unknown viral diversity in mammals. ***mBio*** 4(5):e00598-13. doi:10.1128/mBio.00598-13.
16. Epstein JH, Baker ML, Zambrana-Torrel C, Middleton D, Barr JA, et al. (2013) Duration of Maternal Antibodies against Canine Distemper Virus and Hendra Virus in Pteropid Bats. ***PLoS ONE*** 8(6): e67584. doi:10.1371/journal.pone.0067584
17. Wacharapluesadee S, Sintunawa C, Kaewpom T, 10 Khongnomnan K, Olival KJ, Epstein JH, et al. Group C betacoronavirus from bat guano 11 fertilizer, Thailand. ***Emerg Infect Dis*** [Internet]. 2013 Aug [date cited]. 12 <http://dx.doi.org/10.3201/eid1908.130119>

18. Quan, Phenix-Lan, Firth, C, Conte, J M, Williams, S.H., Zambrana-Torrelío, C.M., Anthony, S.J., Ellison, James A., Gilbert, A.T., Kuzmin, I.V., Niezgoda, M., Osinubi, M.O. V., Recuenco, S., Markotter, W., Breiman, R.F., Kalemba, L., Malekani, J., Lindblade, K.A., Rostal, M.K., Ojeda-Flores, R., Suzan, G., D., Lora B., Blau, D.M., Ogunkoya, A.B., Alvarez C., Danilo A., Moran, D., Ngam, S., Akaibe, D., Agwanda, B., Brieze, T., Epstein, J.H., Daszak, P., Rupprecht, C.E., Holmes, E.C., and Lipkin, W.I. Bats are a major natural reservoir for hepaciviruses and pegiviruses. ***PNAS*** doi:10.1073/pnas.1303037110
19. Levinson J, Bogich TL, Olival KJ, Epstein JH, Johnson CK, Karesh W, et al. Targeting surveillance for zoonotic virus discovery. ***Emerg Infect Dis***. 2013. May. DOI: 10.3201/eid1905.121042
20. Anthony, S.J, Ojeda-Flores, R; Rico-Chávez, O; Navarrete-Macias, I; Zambrana-Torrelío, C.M; Rostal, M.K; Epstein, J.H; Tipps, T; Liang, E; Sanchez-Leon, M; Sotomayor-Bonilla, J; Aguirre, A.A; Ávila, R; Medellín, R.A; Goldstein, T; Suzán, G; Daszak, P; Lipkin, W.I. Coronaviruses in bats from Mexico. ***J. Gen Virol*** doi:10.1099/vir.0.049759-0
21. Tiffany L. Bogich, Sebastian Funk, Trent R. Malcolm, Nok Chhun, Jonathan H. Epstein, Aleksei A. Chmura, A. Marm Kilpatrick, John S. Brownstein, O. Clyde Hutchison, Catherine Doyle-Capitman, Robert Deaville, Stephen S. Morse, Andrew A. Cunningham, and Peter Daszak. Using network theory to identify the causes of disease outbreaks of unknown origin. 2013. ***J R Soc Interface*** 10: 20120904. <http://dx.doi.org/10.1098/rsif.2012.090>
22. Olival KJ, Islam A, Yu M, Anthony SJ, Epstein JH, Khan SA, et al. Ebola virus antibodies in fruit bats, Bangladesh. ***Emerg Infect Dis***. 2013 Feb. <http://dx.doi.org/10.3201/eid1902.120524>
23. Rahman SA, Hassan L, Epstein JH, Hassan SS, Arshad S, Hughes T, et al. Risk factors for Nipah virus infection among pteropid bats, Peninsular Malaysia. ***Emerg Infect Dis***. 2013 Jan. <http://dx.doi.org/10.3201/eid1901.120221>
24. James L.N. Wood, Melissa Leach, Linda Waldman, Hayley MacGregor, Anthony R. Fooks, Kate Jones, Olivier Restif, Dina Dechmann, David T.S. Hayman, Kate S. Baker, Alison J. Peel, Alexandra O. Kamins, Yaa Ntiamoa-Baidu, Richard Suu-Ire, Rob Breiman, Jonathan H. Epstein, Andrew A. Cunningham. A framework for the study of zoonotic disease emergence and its drivers: spillover of bat pathogens as a case study. ***Phil. Trans. R. Soc. B*** October 19, 2012 367 2881-2892; doi:10.1098/rstb.2012.0228
25. Peter Daszak, Carlos Zambrana-Torrelío, Tiffany L Bogich, Miguel Fernandez, Jonathan H. Epstein, Kris A. Murray, and Healy Hamilton. Interdisciplinary approaches to understanding disease emergence: The past, present and future drivers of Nipah virus emergence. 2012. ***PNAS*** doi:10.1073/pnas.1201243109

26. Kristine M. Smith, Simon J. Anthony, William M. Switzer, Jonathan H. Epstein, Tracie Seimon, Hongwei Jia, Maria D. Sanchez, Thanh Thao Huynh, G. Gale Galland, Sheryl E. Shapiro, Jonathan M. Sleeman, Denise McAloose, Margot Stuchin, George Amato, Sergios-Orestis Kolokotronis, W. Ian Lipkin, MD, William B. Karesh, Peter Daszak, and Nina Marano. (2011). Zoonotic Viruses Associated with Illegally Imported Wildlife Products. *PLoS ONE* 7(1): e29505. doi:10.1371/journal.pone.0029505
27. **Epstein JH\***, Zambriski JA, Rostal MK, Heard DJ, Daszak P. (2011) Comparison of Intravenous Medetomidine and Medetomidine/Ketamine for Immobilization of Free-Ranging Variable Flying Foxes (*Pteropus hypomelanus*). *PLoS ONE* 6(10): e25361. doi:10.1371/journal.pone.0025361
28. Pulliam JR, Epstein JH, Dushoff J, Rahman SA, Meehan G, Bunning M, HERG, Jamaluddin AA, Hyatt AD, Field HE, Dobson AP & Daszak P. Agricultural intensification, priming for persistence, and the emergence of Nipah virus: a lethal bat-borne zoonoses. *Journal of the Royal Society, Interface*. 2011. Doi:10.1098/rsif.2011.0223 (**journal's most cited article in 2012**)
29. R. Sohayati, L. Hassan, S. H. Sharifah, K. Lazarus, C. M. Zaini, J. H. Epstein, N. Shamsyul Naim, H. E. Field, S. S. Arshad, J. Abdul Aziz and P. Daszak (2011). Evidence for Nipah virus recrudescence and serological patterns of captive *Pteropus vampyrus*. *Epidemiology and Infection*. 139, pp 1570-1579 doi:10.1017/S0950268811000550
30. Kim Halpin, Alex D. Hyatt, Rhys Fogarty, Deborah Middleton, John Bingham, Jonathan H. Epstein, Sohayati Abdul Rahman, Tom Hughes, Craig Smith, Hume E. Field, Peter Daszak and the Henipavirus Ecology Research Group. Pteropid Bats are Confirmed as the Reservoir Hosts of Henipaviruses: A Comprehensive Experimental Study of Virus Transmission. *Am J Trop Med Hyg* 2011 85:946-951; doi:10.4269/ajtmh.2011.10-0567
31. Vandegrift, K.J.; Wale, N.; **Epstein, J.H.\*** (2011). An Ecological and Conservation Perspective on Advances in the Applied Virology of Zoonoses. *Viruses* 3:379-397.
32. Smith CS, **Epstein JH**, Breed AC, Plowright RK, Olival KJ, et al. (2011) Satellite Telemetry and Long-Range Bat Movements. *PLoS ONE* 6(2): e14696. doi:10.1371/journal.pone.0014696
33. Khan, S.A, Hassan, M.M., Uddin, M.B., Rahman, Z.M.M., Yasin, G., and **Epstein, J.H.** Caesarean of Lion (*Panthera leo*) at Dulahajra Safari Park, Bangladesh. (2011) *Open Vet. J.* (1): 10-12.
34. Sohayati A. Rahman, Hassan,S.S, Olival, K.J., Mohamed, M., Chang, L-Y., Hassan, L., Suri, A.S., Saad, N.M., Shohaimi, S.A., Mamat, Z.C., **Epstein, J.H.**, Field, H.E., Daszak, P., and HERG. (2010) Genetic characterization of Nipah virus isolated from naturally infected *Pteropus vampyrus* in Malaysia. *Emer. Infect. Dis.* 16(12). DOI: 10.3201/eid1612.091790

35. **Epstein JH\***, Quan P-L, Briese T, Street C, Jabado O, et al. (2010) Identification of GBV-D, a Novel GB-like Flavivirus from Old World Frugivorous Bats (*Pteropus giganteus*) in Bangladesh. *PLoS Pathogens* 6(7): e1000972. doi:10.1371/journal.ppat.1000972
36. N. Homaira, M. Rahman, M. J. Hossain, J. H. Epstein, R. Sultana, M.S.U Khan, G. Podder, K. Nahar, E. S. Gurley, P. Daszak, W. I. Lipkin, P. E. Rollin, J. A. Comer, T. G. Ksiazek, S. P. Luby. Nipah outbreak with person-to-person transmission in Thakurgaon, Bangladesh 2007. *Epidemiology and Infection* (Journal of Epidemiology and Infection). 2010 *Epidemiol. Infect.*, 138 (11) 1630-6.
37. **Epstein, J.H.\*** and J. Price. The Significant but Understudied Impact of Pathogen Transmission from Humans to Animals. *Mt Sinai J Med.* 2009; 76(5):448-55.
38. **Epstein J.H.\***, Olival KJ, Pulliam JRC, Smith C, Westrum J, Hughes T, et al. *Pteropus vampyrus*, a hunted migratory species with a multinational home-range and a need for regional management. *Journal of Applied Ecology*. 2009 Oct;46(5):991-1002.
39. M M Hassan, S A Khan, Jonathan H. Epstein, M M M Chowdhury and S K M A Islam. (2009). Clinico-pathological findings of a Royal Bengal tiger (*Panthera tigris*)- A Case report. *Intas Polivet*. Vol. 10, No. I: 111-112.
40. Kaufman, G.E., **J.H. Epstein**, J Paul-Murphy, and J.D. Modrall. Designing graduate training programs in conservation medicine - producing the right professionals with the right tools. 2008. *EcoHealth* vol 5. Pp. 519-27
41. Sohayati, A.R., Latifah, H., Zaini, C.M., Epstein, J.H., Daszak, P., and Sharifah, S.H. Ketamine and Xylazine combination for short-term immobilization of wild variable flying fox (*Pteropus hypomelanus*). *J. Zoo and Wildl. Med.* 2008. 39(4). 674-6.
42. **Epstein, J.H.**, Prakash, V., Smith, CS., Daszak, P., McLaughlin, AB., Meehan, G., Field, HE., and Cunningham, AA. Evidence for Henipavirus infection in Indian *Pteropus giganteus* (Chiroptera; Pteropodidae) fruit bats 2008. *Emer. Infect. Dis.* 20(8).
43. Shirai J, Sohayati AL, Daszak P, Epstein JH, Field HE, Westrum JP, Mohamed Ali AL, Suriani MN, Taniguchi T, and Sharifah SH (2007). Nipah virus survey of flying foxes in Malaysia. **JARQ - Japan Agricultural Research Quarterly** 41:69-78 See Corrigendum: *JARQ - Japan Agricultural Research Quarterly* (2008) 42:77
44. Daszak, P., **Epstein, J.H.**, Kilpatrick, A.M., Aguirre, A.A., Karesh, W.B. & Cunningham, A.A. Collaborative research approaches to the role of wildlife in zoonotic disease emergence. In: *Wildlife and Emerging Zoonotic Diseases: The Biology, Circumstances, and Consequences of Cross-Species Transmission*. Eds. Childs, J.E., J.S. MacKenzie and J.A. Richt. *Current Topics in Microbiology and Immunology*. 2007. Pp. 463 – 475.

45. Field, H.E., Wang, L.F., Zhang, S., Daszak, P., Smith, C.S., Epstein, J.H., Shi, Z.  
Searching for the natural reservoir of the SARS virus. *Preventive Veterinary Medicine*.  
81(1-3): 216-216 Sp. Issue. SI, Sep 14, 2007.
46. McLaughlin, A.B., **Epstein, J.H.\***, Prakash, V., Smith, C.S., Daszak, P., Field, H.E., and  
Cunningham, A.A. Plasma Biochemistry and hematologic values for wild-caught flying  
foxes (*Pteropus giganteus*) in India. *Journal of Zoo and Wildlife Medicine*. 2007. 38  
(3). Pp. 446-452.
47. Halpin, K., Hyatt, A.D., Plowright, R.K., Epstein, J.H., Daszak, P., Field, H.E., Wang,  
L., Daniels, P., and the Henipavirus Ecology Research Group. Emerging viruses –  
coming in on a wrinkled wing and a prayer. *Journal of Clinical Infectious Diseases*.  
2007;44. p711-717.
48. **Epstein, J.H\*.**, McKee, J., Shaw, P, Hicks, V, Micalizzi, G, Daszak, P., Kilpatrick, A.  
M., and Kaufman, G. The Australian white ibis (*Threskiornis Molucca*) as a reservoir of  
zoonotic and livestock pathogens. *Ecohealth* 3 (4): 290-298 DEC 2006
49. **Epstein, J.H.\***, Rahman, S.A., Zambriski, J.A., Halpin, K., Meehan, G., Jamaluddin,  
A.A., Hassan, S.S., Field, H.E., Hyatt, A.D., Daszak, P. & HERG. Feral cats (*Felis  
catus*) are a low risk for zoonotic transmission of Nipah Virus. *Emer. Infect Dis* vol 12.  
No. 7. July, 2006.
50. Breed A., Field, H., **Epstein, J.**, Plowright, R.K., and Daszak, P. Emerging  
henipaviruses and flying foxes – conservation and management perspectives. *Biological  
Conservation*. 131 (2006) 211-220.
51. **Epstein, J.H.\***, Field, H.E., Luby, S., Pulliam, J.R.C. & Daszak, P. Nipah Virus: Impact,  
Origins and Causes of Emergence. *Current Infectious Disease Reports* 2006. 8(1). pp.  
59-65.
52. Newman SH, Epstein JH, Schloegel LM. The nature of emerging zoonotic diseases:  
ecology, prediction, and prevention. *Medical Laboratory Observer*. 2005 Jul;37(7):10-1,  
14-6, 18-9.
53. Pulliam, JRC, Field, HE., Olival, KJ., and the Henipavirus Ecology Research Group  
(**Epstein**). Nipah virus strain variation. *Emer. Infect. Dis*. 11(12), 1978-1979, Dec.  
2005.
54. Li, W., Shi, Z., Yu, M., Ren, W., Smith, C.S., **Epstein, J.H.**, Wang, H., Crameri, G., Hu,  
Z., Zhang, H., Jianhong, Z., McEachern, J., Field, H.E., Daszak, P., Zhang, S., Eaton,  
B.T. & Wang, L.-F. (2005). Bats are natural reservoirs of SARS-like coronaviruses.  
*Science*, 2005 310:676-679.

55. Daszak, P., Tabor, G.M., Kilpatrick, A.M., **Epstein, J.** & Plowright, R. (2004). Conservation Medicine and a new agenda for emerging diseases. *Annals of the New York Academy of Science* 1026: 1-11.
56. Gretchen E. Kaufman, James Else, Kristin Bowen, Molly Anderson, Jonathan Epstein Conservation Medicine in the Veterinary Curriculum. *Ecohealth*. Vol. 1. Suppl. 1. 2004. 43-49.
57. Jonathan A Patz, Peter Daszak, Gary M Tabor, A. Alonso Aguirre, Mary Pearl, Jonathan Epstein, Nathan D. Wolfe, Johannes Foufopoulos, David Molyneux, David J. Bradley, and Members of the *Working Group Land Use Change and Disease Emergence*. *Environmental Health Perspectives*. Vol. 112., No.10, July 2004. 1092-1098.
58. McCall Bradley J, Epstein Jonathan H, Neill Annette. Potential Human Exposure to Australian Bat Lyssavirus, Queensland, 1996-1999. *Emer Infect Dis*. Vol. 6, No.3, 259-264, May-Jun, 2000.

#### **Edited volumes / book chapters**

59. Jonathan Epstein and Hume Field. Anthropogenic epidemics: the ecology of bat-borne viruses and our role in their emergence. In: Bats and Viruses: From pathogen discovery to host genomics. L-F Wang, Ed. *In Review*
60. E. Loh, M. Rostal, **J. Epstein**, B. Karesh, and P. Daszak. Ecological approaches to studying wildlife diseases. In *One Health: People, Animals, and the Environment*. R. Atlas and R. Malay (Eds.) ASM Press.
61. Witt CJ, Pinzon JE, Manibusan PA, Pavlin JA, Gibbons RV, Myers TE, Richards AL, Daszak P, Luby SP, Epstein JH, Hossain MJ, Gurley ES, Pulliam JRC, Zaye A, Abdel-Dayem MS, Collacicco-Mayhugh MG. (2013) Emerging and re-emerging diseases. In: Environmental Tracking for Public Health Surveillance Volume 11, Eds. Morain SA & Budge AM. Publ: CRC Press, Boca Raton, USA, pp. 187-226.
62. Investigating the role of bats in emerging zoonoses: Balancing ecology, conservation, and public health interests. Edited by S.H. Newman, H.E. Field, **J.H. Epstein**, and C. de Jong. FAO 2012
63. Olival, KJ, **JH Epstein**, LF Wang, HE Field and P Daszak (2012). Are bats unique viral reservoirs? New Directions in Conservation Medicine: Applied cases of ecological health. Edited by, A.A. Aguirre, R.S. Ostfeld and P. Daszak, Oxford University Press.
64. Bogich, T; Olival, KJ, Hosseini, PR, Zambrana-Torrel, C; Loh, E, Funk, S, Brito, IL, **Epstein, JH**, Brownstein, JS, Joly, DO, Levy, MA, Jones, KE, Morse, SS, Aguirre, AA, Karesh, WB, Mazet, JAK and Daszak, P. (2012) Using Mathematical Models in a Unified Approach to Predicting the next emerging Infectious Disease. New Directions in

Conservation Medicine: Applied cases of ecological health. Edited by, A.A. Aguirre, R.S. Ostfeld and P. Daszak, Oxford University Press.

65. Daszak, P., Plowright, R., **Epstein, J.H.**, Pulliam, J., Abdul Rahman, S., Field, H.E., Smith, C.S., Olival, K.J., Luby, S., Halpin, K., Hyatt, A.D. & the Henipavirus Ecology Research Group (HERG). The emergence of Nipah and Hendra virus: pathogen dynamics across a wildlife-livestock-human continuum. In: Collinge, S.K. & Ray, C. (Eds.), *Disease Ecology: Community Structure and Pathogen Dynamics*. Oxford University Press. 2006; pp 186-201
66. ***Sustaining Life: How Human Health Depends on Biodiversity. (2008).*** Chivian and Bernstein (Eds). Oxford Univ. Press. Contributing author – Chapter 7, Nipah virus section.
67. **The Encyclopedia of Mammals. (2006)** David MacDonald (Ed). Contributing Author, Flying Foxes (Bats) section.

## INVITED PRESENTATIONS

68. **An EcoHealth Approach to Disease Surveillance.** Wildlife Disease Association. New Mexico, July 2014
69. **The Ecology of Nipah virus in Bats.** Infectious Diseases of Bats Symposium, Colorado State University June 25-28, 2014
70. **Investigating the ecology and animal origins of MERS-CoV.** Briefing to the Institutes of Medicine (IOM) Forum on Microbial Threats. March 18 2014
71. **Understanding the Ecology of Emerging Zoonoses: How We Can Prevent Global Pandemics.** Cold Spring Harbor Laboratory President's Council Program on Infectious Diseases & Viruses September 27 – 28, 2013
72. **Update: Middle East Respiratory Syndrome.** Briefing to the Institute of Medicine Forum on Microbial Threats. Washington, DC. March 2013.
73. **Understanding the ecology of Nipah virus in frugivorous bats in Bangladesh.** The International Meeting on Emerging Diseases, Vienna, Austria. Feb 2013.
74. **Update: Middle East Respiratory Syndrome.** The International Meeting on Emerging Diseases, Vienna, Austria. Feb 2013.
75. **One Health: Recognizing How Human and Wildlife Health are Connected (Symposium). Understanding How Human Activities Trigger the Emergence of Wildlife Zoonoses.** Society for Conservation Biology July 2012.



76. ***The Human Hand and Disease Emergence: Why Ebola, Nipah and SARS Outbreaks Are Our Fault.*** The Scripps Howard Institute on the Environment and Science at Florida Atlantic University. May 21, 2012.
77. **Using targeted Wildlife surveillance to PREDICT Emerging Zoonoses.** 10<sup>th</sup> ASM Biodefense and Emerging Infectious Diseases Research Meeting, Washington DC. Feb 2012.
78. **Assessing the Impact of Hunting on *Pteropus vampyrus* in Peninsular Malaysia.** Invited presentation. Epstein, Jonathan H<sup>1</sup>, Pulliam, Juliet<sup>2</sup>, and Olival, Kevin. International Bat Research Symposium, Prague, Czech Republic, August, 2010
79. **Using satellite telemetry to assess movement patterns of *Pteropus* spp.** Invited presentation.  
Epstein Jonathan H, Smith Craig S, Breed Andrew, Plowright Raina, Field Hume E, Daszak Peter. International Bat Research Conference, Prague, Czech Republic, August, 2010
80. **Jonathan Epstein. Understanding the Ecology of Nipah Virus.** Invited presentation, Nipah virus Symposium. American Society of Tropical Medicine and Hygiene. Atlanta, GA. Nov, 2010
81. **Understanding the Dynamics of Nipah Virus in Bats.** Invited presentation.  
Jonathan H. Epstein, Sohayati Abdul Rahman, Shahneaz Ali Khan, A. Marm Kilpatrick, Kevin Olival, Hume Field, Stephen Luby, and Peter Daszak. Wuhan Institute of Virology, Wuhan, China. Nov 2010.
82. **Nipah virus ecology in bats in Bangladesh.** WHO/OIE/FAO Joint workshop on Nipah, Hendra, and Ebola Reston viruses. Maroochydhore, Australia. Oct 2009
83. **Nipah virus in Pteropus bats in Malaysia and Bangladesh.** IEDCR Conference on Emerging threats to Bangladesh. Jan 27-28, 2008. Dhaka.
84. **The Ecology of Nipah virus in its natural reservoir, *Pteropus* bats, in Malaysia.** Presented at the University of Malaysia, Sarawak. Jan 2008. Kuching, Malaysia
85. **Understanding the Ecology of Nipah Virus in *Pteropus* Bats.** Presented to veterinary and zoo staff. Busch Gardens, Tampa, FL. Nov. 2007.
86. **Conservation Medicine: A Multidisciplinary Approach to Understanding the Emergence of Infectious Diseases.** 1<sup>st</sup> Inaugural keynote lecture, Delta Omega Honors Society, tufts University (Alpha Rho) Chapter. Oct 12, 2006.
87. **Environmental change an Emerging Zoonotic Diseases,** Suffolk County Dept. of Public Health. May 9, 2006.

88. **Bats as reservoirs for zoonotic diseases: Nipah virus and SARS**, NIH/NSF Ecology of Infectious Disease meeting. Washington, DC. December 16, 2005
89. **Human Health and the Environment: an Ecological Perspective**, Brandeis University. Waltham, MA. 11/7/2005
90. **The veterinarian's role in public health: understanding the emergence of zoonotic diseases**. The Swedish University of Agricultural Sciences. Uppsala, Sweden. November 19<sup>th</sup>, 2004.
91. **Understanding the ecology of emerging zoonotic pathogens**. The Royal Swedish Academy of Agriculture and Forestry. Meeting on Emerging Infectious Diseases. Stockholm, Sweden. November 18, 2004.
92. **Climate change and its role in disease emergence: Nipah virus as a case study**, Ruschlikon Executive Roundtable: "Climate change futures: Health, Ecological and Economic Dimensions" Zurich, Switzerland, June 2-4, 2004
93. **The Complexities and challenges of seeking zoonotic agents in wildlife**, World Health Organization's "Consultation on Emerging Zoonotic Diseases" Geneva, Switzerland, May 2, 2004
94. **Understanding the ecology of Nipah and Hendra viruses: a conservation medicine approach to public health**. Emerson Hospital Grand Rounds (CE). Concord, MA April 27, 2004.

## REPORTS

95. **Report to the City of San Antonio, Texas: Potential Health Risks to People and Animals in a Planned Community near Bracken Cave, Comal County, Texas**.
96. **Climate Change Futures, Health Economic, and Ecological Dimensions: A Project of the Center for Health and the Global Environment, Harvard Medical School**. (contributing author) Edited by Paul Epstein and Evan Mills. Sponsored by the United Nations Development Program and Swiss Re. Sept, 2005.
97. **Epstein, Jonathan**. A feasibility study for the re-introduction of the Mountain Bongo (*Tragelaphus eurycerus isaaci*) to the Mt. Kenya National Forest. Submitted to the Bill Woodley Mount Kenya Wildlife Trust. July 2002.
98. **Epstein, Jonathan**. Ibis Management Program: Special Report - Determining the Health Status of Coastal Wild Ibis and Assessing the Potential for Disease Transmission to People and Other Animals. Submitted to the Ibis Management Coordination Group (IMCG), Queensland, Australia. February, 2001.

## Emily Hagan, MPH, CPH

EcoHealth Alliance

hagan@EcoHealthAlliance.org

460 West 34<sup>th</sup> Street

New York NY 10001

212-380-4491

### Education

Columbia University – Masters of Public Health, Epidemiology – 2013

Boston University – School of Public Health – 2011

Northeastern University – College of Professional Studies – 2009

Hiram College – B.A. Biology and B.A. Biomedical Sciences and Humanities – 2008

### Professional Experience

**EcoHealth Alliance** – New York, NY

*Research Coordinator*

4/2015 -

present

Facilitate coordination with the PREDICT II Behavioral Risk team

Provide support and training to local country teams during implementation and analysis of behavioral and qualitative protocols

Developing partner wide research protocols, guides, and training materials to be implemented across PREDICT II countries

Prepare and follow through with in country IRB and ethical review board approvals for qualitative research and concurrent biological sampling

*Research Assistant and Administrative Assistant*

11/2013 -

4/2015

Contributed to analytical and administrative support for senior science staff investigating the dynamics and spread of pathogens in wildlife, humans, and domestic animals.

Maintained the EHA GAINS database for the PREDICT USAID project

Supporting research focused on Avian Influenza in Bangladesh and China

Coordinated and administrator of interoffice weekly Science Meeting and facilitate post meeting collaborations and discussions

Review editor for the EcoHealth Journal

**Beth Israel Deaconess Medical Center & Harvard Medical School** – Boston, MA

*Research Assistant III and Team Manager* – Dept. of Viral Pathology

9/2008–

7/2012

Trained new technicians and postdoctoral fellows on SOPs, protocols, and equipment

Maintained regulatory records and IUCAC documents for studies

Analyzed, interpreted and presented data and results in meetings with supervisors and collaborators

Managed and organized daily aspects of the lab, including ordering, shipping, and coordinating experimental schedules

Examined influence of FCγ-Receptor polymorphisms on antibody--mediated lymphocyte depletion

Explored the comparison of Simian Immunodeficiency Virus infection in natural and non--natural host

**University of Akron, Polymer Department – Akron, OH**

*NSF Research Intern – Research Experience for Undergraduate*

5/2007–8/2007

Examined the relationship between temperature, humidity, and surface of adhesion in two species of geckos

Applied results from animal studies of natural adhesive to synthetic materials with the goal of mimicking adhesion with carbon polymers

**Hiram College, Organic Chemistry Department – Hiram, OH**

*Teaching Assistant – Professors Fried and Shreiner*

8/2007–5/2008

Prepared and taught the weekly experimental laboratory. Evaluated and graded lab books, assignments, and quizzes. Monitored students' techniques and assisted in proper use of lab equipment. Provided tutoring for class and lab content and held extra lab hours

**Hiram College, Cellular and Molecular Lab – Hiram, OH**

*Researcher – Hiram Genomic Initiative Laboratory*

5/2006 –

11/2007

Determined the metabolic role of enzymes for a soil bacterium and plant pathogen, investigated the relationship of pH and virulence through gene disruptions and mutant screens

**Publications & Presentations**

Behavioral Research Contributions to Emerging Zoonotic Infectious Disease Surveillance. M Miller, **E Hagan**, E Loh, K Saylor, D. Wolking, C Monagin, CK Johnson, J Ida, K Whiting, T Allen, A Chmura, P Daszak. (In preparation)

Mazet, JAK, Wei, Q, Zhao, G, Cummings, D, Desmond, JA, Rosenthal, J, King, CH, Cao, Wuchun, Chmura, A, **Hagan, EA** Zhang, S, Xiao, X, Xu, JA, Zhengli, S, Liu, X, Pan, W, Zhu, GA, Zuo, L, Daszak, P. *EcoHealth. Joint China–US Call for an Interdisciplinary Approach to Emerging Infectious Diseases (Under review)*

Schmitz JE, Ma ZM, **Hagan EA**, Wilks AB, Furr KL, Linde CH, Zahn RC, Brenchley JM, Miller CJ, and Permar SR *J. Virol. October 2012; 86(20):11380---5*  
*Memory CD4+ T lymphocytes in the gastrointestinal tract are a major reservoir of simian immunodeficiency virus in chronic nonpathogenic infection of African green monkeys*

Niewiarowski PH, Lopez S, Ge L, **Hagan E**, Dhinojwala A (2008) *Sticky Gecko Feet: The Role of Temperature and Humidity*. PLoS ONE 3(5): e2192  
doi:10.1371/journal.pone.0002192

**Hagan, E.** "Boundaries of Gecko Adhesion." 4<sup>th</sup> annual Northeast Ohio Undergraduate Research Conference. Symposium conducted at the Ohio Aerospace Institute and NASA Glenn Research Center, Cleveland, OH. August 2007

**Certifications and Associations**

Certified in Public Health

Columbia University Alumni Association  
HIPAA and CITI Human Subjects Protection  
Biological and hazardous goods shipping



# Russell S. Horton

## Curriculum Vitae

Phone: 207 - 370 - 4334 Email: Horton@ecohealthalliance.org

### EDUCATION

- 2010-2012 University of California San Diego, San Diego, California  
Masters of Arts in Linguistics  
Comprehensive paper: *A machine learning approach to the rhythmic classification of languages*  
Advisor: Roger Levy
- 1998-2002 University of Chicago, Chicago, Illinois  
Bachelors of Arts in Linguistics

### PROFESSIONAL EXPERIENCE

- 2014-Present EcoHealth Alliance  
*Senior Data Scientist*
- 2008-2014 Reverb Technologies, Inc.  
*Computational Linguist*
- 1999-2009 The ARTFL Project, The University of Chicago  
*Programmer Analyst*

### SOFTWARE PROJECTS

- 2015-Present Mantle Prototype, EcoHealth Alliance  
*An application for Rانavirus researchers to collaborate and share data, as a prototype of an open source platform for biosurveillance researchers across One Health disciplines.*
- 2014-Present Global Rapid Identification Tool System, EcoHealth Alliance  
*A biosurveillance application that enables infectious disease analysts to monitor non-traditional information sources for infectious disease threats.*
- 2011-2014 Reverb iOS App, Reverb Technologies, Inc.  
*An iPad and iPhone app to provide customized news and entertainment feeds. Worked on entity identification, personalization and recommendation.*
- 2008-2014 Wordnik.com, Wordnik  
*Online dictionary incorporating citations and definitions from a wide variety of sources. Worked on automatically identifying illustrative example sentences for words, corpus acquisition, distributional semantics.*
- 2013-2013 Purchase order tool, Dr Jays

*Maintained and enhanced purchase order creation tool with Angular front-end and Node.js back end.*

- 1999-2008     Philologic, The ARTFL Project  
*Full-text search and retrieval engine providing web interface for online editions of literature, encyclopedias and other scholarly resources. Worked on search indexing, NLP, interface development, online editions, foreign language support.*
- 2007-2008     Philomine, The ARTFL Project  
*Machine learning interface to the Philologic text search engine. Created a web-based interface for defining, running and analyzing machine learning jobs on scholarly texts.*
- 2005-2007     Kanji Alive, The ARTFL Project  
*Web-based Japanese language learning tool. Worked on backend API server, data imports and storage.*
- 2001-2002     Virtual Tour Kiosk, University of Chicago Admissions  
*Kiosk computer with virtual tour of campus. Took panoramic photographs, built QuickTime interactive panoramas, integrated into touch-screen kiosk site.*

## **PEER REVIEWED PUBLICATIONS**

Horton, R., Olsen, M., & Roe, G. (2010). Something Borrowed: Sequence Alignment and the Identification of Similar Passages in Large Text Collections. *Digital Studies / Le Champ numérique* Vol 2, No 1, 2010.

Allen, T., Douard, S., Cooney, C., Horton, R., Morrissey, R., Olsen, M., Roe, G., & Voyer, R. (2010) Plundering Philosophers: Identifying Sources of the Encyclopédie", *Journal of the Association for History and Computing*, vol. 13, no. 1, Spring 2010.

Argamon, S., Cooney, C., Horton, R., Olsen, M., & Stein, S. (2009) Gender, Race, and Nationality in Black Drama, 1850-2000: Mining Differences in Language Use in Authors and their Characters. *Digital Humanities Quarterly*, Spring 2009, Volume 3, Number 2.

Argamon, S., Goulain, J., Horton, R., & Olsen, M. (2009) Vive la Différence! Text Mining Gender Difference in French Literature. *Digital Humanities Quarterly*, Spring 2009, Volume 3, Number 2.

Horton, R., Morrissey, R., Olsen, M., Roe, G., & Voyer, R. (2009) Mining Eighteenth Century Ontologies: Machine Learning and Knowledge Classification in the Encyclopédie. *Digital Humanities Quarterly*, Spring 2009, Volume 3, Number 2.

## **PRESENTATIONS**

Huff, A. G., Slagle, A., Horton, R., Breit, N., & Gold, Z. (2015, March). *Global Rapid Identification Tool Set (GRITS)*. DDD3: Florence, Italy.



- Horton, R. (2011) *'Ever since nineteen, had a perfect rhyme scheme': A corpus study of English rap rhyme*. Networks and Network Analysis for the Humanities: Reunion Conference, The University of California at Los Angeles, Oct 20 - 22 2011.
- Henderson, L. & Horton, R. (2010) *Sequence Alignment and Similarity in Biology and the Humanities*. Digital Humanities and Computer Science 2010, Northwestern University, November 20th 2010
- Horton, R., Olsen, M. (2009) *Sequence Alignment, Shared Services, and Digital Humanities*. Project Bamboo Workshop, Tucson, Arizona, January 2009
- Horton, R., Olsen, M., & Roe, G. (2009) *PAIR: Pairwise Alignment for Intertextual Relations*. Annual Meeting of the Society for Digital Humanities -- Société pour l'étude des médias interactifs - Carleton University, Ottawa, May 25-27, 2009
- Horton, R., Morrissey, R. (2008) *The ARTFL Project: From words to works*. The Dilemmas of Digitization, Oxford University, May 22-24, 2008.
- Cooney, C., Horton, R., Olsen, M., Roe, G., Voyer, R. (2008) *Deconstructing Machine Learning: A Challenge for Digital Humanities*. Digital Humanities 2008, University of Oulu, Oulu, Finland, June 25-29, 2008
- Cooney, C., Horton, R., Olsen, M., Roe, G. & Voyer, R. (2008) *PhiloMine: An Integrated Environment for Humanities Text Mining*. Digital Humanities 2008, University of Oulu, Oulu, Finland, June 25-29, 2008
- Cooney, C., Olsen, M., Roe, G., & Voyer, R. (2008) *Hidden Roads and Twisted Paths: Intertextual Discovery using Clusters, Classifications, and Similarities*. Digital Humanities 2008, University of Oulu, Oulu, Finland, June 25-29, 2008
- Cooney, C., Horton, R., Olsen, M., M., Roe, G., & Voyer, R. (2008) *Feature Creep: Evaluating Feature Sets for Text Mining Literary Corpora*. Digital Humanities 2008, University of Oulu, Oulu, Finland, June 25-29, 2008
- Cooney, C., Horton, R., Morrissey, R., Olsen, M., Roe, G., Voyer, R (2008) *Re-engineering the tree of knowledge: Vector space analysis and centroid-based clustering in the Encyclopédie*. Digital Humanities 2008, University of Oulu, Oulu, Finland, June 25-29, 2008
- Argamon, S., Horton, R., Olsen, M., & Stein, S.(2007) *Gender, Race, and Nationality in Black Drama, 1850-2000: Mining Differences in Language Use in Authors and their Characters*. Digital Humanities 2007, University of Illinois, June 2007

Argamon, S., Goulain, J., Horton, R., Olsen, M. (2007) *Discourse, power and écriture féminine: Text mining gender difference in 18th and 19th century French literature*. Digital Humanities 2007, University of Illinois, June 2007

Horton, R., Morrissey, R., Olsen, M., Roe, G. & Voyer, R. (2007) *Mining Eighteenth Century Ontologies: Machine Learning and Knowledge Classification in the Encyclopédie*. Digital Humanities 2007, University of Illinois, June 2007

Cooney, C., Horton, R., Olsen, M., Roe, G., Voyer, R. (2007) *Extending PhiloLogic*. Digital Humanities 2007, University of Illinois, June 2007

#### **PATENTS**

Horton, R., Mckean, E., Allen, T. *Data Mining for Free Range Definitions*. Pending, United States WORD 1000-1, filed February 3, 2011, Technique for data mining sentences that best illustrate the meaning of candidate words.

#### **SERVICE**

2014 Reviewer for the *Journal of American Folklore*

2012 Reviewer for *Literary and Linguistic Computing*

Jonathan K. Goley

Curriculum Vitae

Cell Phone: 803-767-3375 Email: [jgoley@gmail.com](mailto:jgoley@gmail.com)

## EDUCATION

- 2014      The Iron Yard, Greenville, SC  
            Front End Engineering
- 2000-2005      University of South Carolina, Columbia, SC  
                    Bachelor of Fine Arts, Studio Art, Photography

## PROFESSIONAL EXPERIENCE

- 2014-Present      EcoHealth Alliance  
                        *Front End Developer*
- 2006-2014      Columbia Museum of Art  
                        *Senior Digital Media Manager*  
                        *Digital Media Manager*  
                        *Assistant Preparator & Digital Image Technician*  
                        *Assistant Preparator*

## SOFTWARE PROJECTS

- 2015-Present      Mantle Prototype, EcoHealth Alliance  
                        *An application for Rانavirus researchers to collaborate and share data, as a prototype of an open source platform for biosurveillance researchers across One Health disciplines.*
- 2014-Present      Emerging Infectious Disease Repository, EcoHealth Alliance  
                        *A web-based encyclopedia of curated information on emerging infectious disease outbreaks from 1940-2013.*
- 2014-Present      Pollinate  
                        *A web-based application that connects beekeepers with farmers who need pollination services.*
- 2012-Present      Tap into CMA  
                        *A web-based mobile tour application that enriches the experience of Columbia Museum of Art visitors by offering multimedia content contextually related to exhibition artwork.*

## HONORS AND AWARDS

- 2010      CMA Director's Award (Staff Person of the Year)
- 2009      *Contemporaries' Artist of the Year*
- 1999      *Eagle Scout Award, Boy Scouts of America*

**VOLUNTEER WORK**

2015-Present New York Cares Volunteer  
2012-2015 Habitat for Humanity Volunteer  
2006-2011 Assistant Scout Master

# Noam Ross

621 C St.  
Davis, CA 95616  
+1.646.244.0484  
noam.ross@gmail.com  
<http://www.noamross.net>  
@noamross

---

## EDUCATION

### University of California

*Doctoral Candidate in Ecology*

Davis, CA

Expected Completion Summer 2015

- Dissertation Committee: Alan Hastings (major professor, Ecology), David Rizzo (Plant Pathology), Jim Sanchirico (Natural Resource Economics)
- Dissertation Research: "Managing Emerging Forest Disease Under Uncertainty"

### Brown University

*Bachelor of Science in Environmental Science, Magna Cum Laude*

Providence, RI

May 2006

- Honors Thesis: "Soil Organic Matter in Northern Mongolia: Permafrost and Land-Use interactions"
- Phi Beta Kappa, Sigma Xi, Environmental Science Honors, Rosenberger Prize for Outstanding Service

---

## SCIENTIFIC PUBLICATIONS

- Carl Boettiger\*, **Noam Ross\***, Alan Hastings (2013) *Early Warning Signals: The Charted And Uncharted Territories*. Theoretical Ecology <http://dx.doi.org/10.1007/s12080-013-0192-6>
- Fuller, Kate, David Kling, Kaelin Kroetz, **Noam Ross**, and James N. Sanchirico (2013) *Economics and Ecology of Open-Access Fisheries*. In: Shogren, J.F., (ed.) Encyclopedia of Energy, Natural Resource, and Environmental Economics, Vol. 2 Encyclopedia of Energy, Natural Resource, and Environmental Economics p.39-49. Amsterdam: Elsevier. <http://dx.doi.org/10.1016/B978-0-12-375067-9.00114-5>

### *In preparation*

- **Ross, Noam.** *Comparative dynamics of SI and multi-infection disease models*. To be submitted to Ecology Letters.
- **Ross, Noam.** *CMP: An R package for modeling under-dispersed data*. To be submitted to Methods in Ecology and Evolution.

*\*Co-equal authorship*

---

## POSTERS

- **Ross, Noam.** "Optimal Control of Disease in Space: An Approach Using Individual-based Models," June 1-4, 2014. 12th Annual Conference of Ecology and Evolution of Infectious Disease, Fort Collins, Colorado.
- **Ross, Noam.** "Designing Protective Treatments for Forest Disease Using a Spatial Point Process Model," November 20-21, 2014. California Forest Pest Council Annual Meeting, McClellan, CA.
- **Ross, Noam.** "Optimal Control of Forest Disease Under Changing Community and Spatial Structure," November 4-18, 2013. Sustainable Management of Natural Resources Workshop, Mathematical Biosciences Institute, Columbus, OH.

---

## PRESENTATIONS

- **Ross, Noam**, "Fungal Disease Mortality: Modeling for Management of Sudden Oak Death." Dec 1, 2014 Invited talk at EcoHealth Alliance, New York, NY.
- **Ross, Noam**, "Modeling forest disease using a macroparasite framework ," Agust 13, 2014. 99th Annual Ecological Society of America Meeting, Sacramento, CA.
- Ashander, Jamie, Kelly Gravuer, Megan Kelso, Mary E. Mendoza and **Noam Ross** "Managing River-Floodplains Systems: A Historical and Ecological Perspective" September 14, 2002. Presentation at NSF REACH IGERT Floodplains Workshop

---

## AWARDS + FELLOWSHIPS *(Total received \$225,429)*

- Don Dahlsten Memorial Grant (\$325) California Forest Pest Council, 2012  
*Designing Protective Treatments for Forest Disease Using Spatial Point Process Models*
- NSF IGERT Bridge Fellowship (\$57,500) UC Davis, CA, 2012  
*Managing Emerging Forest Disease Under Uncertainty*
- NSF IGERT Traineeship in Rapid Environmental Change (\$115,00) UC Davis, CA, 2010  
*Modifying River-Floodplain Systems: A Historical and Ecological Approach*
- UC Davis Graduate Group in Ecology Fellowship (\$40,604) UC Davis, CA, 2010
- NSF Research Experience for Undergraduates Fellowship (\$8,000) Acad. of Natural Sciences, PA, 2005
- Undergraduate Research Fellowship (\$4,000) Brown University, RI, 2003

---

## SERVICE + PROJECTS

- **Workshop Instructor**, Software Capentry and Data Carpentry Foundations Jan 2015–Present
- **Student Rep**, UC Davis Graduate Group in Ecology Executive Committee Sep 2013–Present
- **Reviewer: Theoretical Ecology** (4 reviews) Feb 2013–Present
- **Web Developer and Technology Chair**, Ecology Graduate Student Association June 2013–Present  
*Creator + Maintainer of graduate student blog, resources, and news site (egsa.ucdavis.edu)*
- **Founder + Organizer**, Davis R Users' Group Sep 2012–Present  
*Created users group that provides tutoring and seminars to graduate students in 10+ departments*
- **Contributor**, R packages knitr, knitcitations, rcrossref, rethinking 2012–Present
- **Organizer**: NSF REACH IGERT Workshop on Multiple Goals in Floodplain Restoration Sep 2012
- **Organizer**, UC Davis Conference on Ecology and the Business Sector Apr 2011
- **Organizer**, UC Davis Graduate Group in Ecology Symposium May 2010–2011
- **External Reviewer**, World Resources Institute Corporate Ecosystem Services Review Jan 2008
- **External Reviewer**, McKinsey-Clinton Global Initiative Forestry Project Mar 2008
- **Business Stewardship Volunteer**, NY Coastal Marine Resources Center Feb-Apr 2007

---

## OTHER WORK EXPERIENCE

**GreenOrder** New York, NY  
*Analyst, Senior Analyst: Corporate Environmental Strategy + Governance* Sep 2006–Oct 2009

- Conducted environmental performance analysis for products in energy, transportation, and water sectors
- Created green product metrics system R&D stage-gating system for construction products manufacturer
- Managed engagement with equipment rental company to identify growth opportunities in green building
- Performed market and competitive analyses for a wide array of clients in retail, real estate financial and cleantech sectors; prepared and delivered client presentations; managed projects
- Managed analysts performing environmental product certifications and market research
- Developed firm seminar series and analyst training materials; conducted trainings on topics including auditing, statistical analysis, and environmental performance benchmarking
- Audited certifications for environmental products and facility performance

### **Wal-Mart**

Providence, RI

*Contract Researcher/Consultant: Energy Efficient Products Initiative*

May-Sep 2006

- Developed forecasting model for sales of energy-efficient lamps at Wal-Mart stores
- Created guidelines for design of lamp recycling program

### **Brown University Facilities Management**

Providence, RI

*Administrative, Research, + Teaching Assistant: Energy and Design*

Jan 2003–May 2006

- Developed energy-use and financial projections for university energy usage scenarios
- Performed background research and feasibility analysis for university energy efficiency projects
- Provided tutoring, logistical support and web design for two courses in sustainable design
- Responsible for maintenance of energy efficient, low-impact building

### **Hovsgol Lake Global Environmental Facility and Brown University**

Mongolia + Providence, RI

*National Science Foundation REU Fellow, Thesis Research*

June 2005-May 2006

Advisor: Clyde Goulden

- Independent research on climate-land use interactions on permafrost soil carbon storage  
Plant surveys, soil pit excavation, soil physical and chemical analysis, soil microbial process incubations

### **Marine Biological Laboratory Ecosystems Center**

Woods Hole, MA

*Semester in Environmental Science Student*

Aug-Dec 2004

Advisor: Charles Hopkinson

- Examined effects of nitrogen pollution on structure of microplankton food webs
- Microcosm experiments, fluorescence microscopy, dissolved nutrient analysis, planktonic growth incubations

### **Brown Center for Environmental Studies**

Providence, RI

*Undergraduate Research Fellow*

Jun-Aug 2003

Advisor: Steven Hamburg

- Conducted research in biogeochemistry at Hubbard Brook Experimental Forest and surrounding region; oversaw soil pit excavation by undergraduate and graduate field crew

- Plant surveys, forest floor measurements, litter collection, soil pit excavation, soil physical and chemical analysis, GIS analysis in ESRI ArcMap

---

## **PUBLICATIONS IN POPULAR PRESS**

---

- "Extinction Debt,"(Initial author) Wikipedia. Wikimedia Foundation, Inc., February 23, 2011  
[http://en.wikipedia.org/wiki/Extinction\\_debt](http://en.wikipedia.org/wiki/Extinction_debt)
- "If Everyone Moves to the City, What Gets Left Behind?" *Good.is*, January 17, 2011.  
<http://www.good.is/post/if-everyone-moves-to-the-city-what-is-left-behind/>
- "Why the Ethanol Debate Isn't Helping Anyone," *GreenBiz.com*, Jun 3, 2009.  
<http://www.greenbiz.com/blog/2009/06/03/why-ethanol-debate-isnt-helping-anyone>
- "Four Lean, Green Strategies for an Uncertain Economy," (with Andrew Shapiro) *Harvard Business Review's Leading Green*, Oct 29, 2008. <http://blogs.hbr.org/2008/10/4-lean-green-strategies-for-an/>
- "What a Silent Spring Means for Business Risk," *GreenBiz.com*, Mar 6, 2007.  
<http://www.greenbiz.com/blog/2007/03/05/what-silent-spring-means-business-risk>



Allison White  
(828) 333-0693 · [allisonmwhite@gmail.com](mailto:allisonmwhite@gmail.com)  
461 Lorimer Street Apt. 1 Brooklyn, NY 11206

## **EDUCATION**

**Rollins School of Public Health, Emory University, Atlanta, GA**

May 2014

Master of Public Health in Global Epidemiology

Certificate in Global Complex Humanitarian Emergencies

Paul D. Coverdell Peace Corps Fellow

Master's Thesis: Relationships among Microbial Indicators of Fecal Contamination on Produce Farms

**Johns Hopkins University, Baltimore, MD**

May

2007

Bachelor of Arts in Public Health Studies, with Honors

Focal Areas in Psychology and Political Science

Senior Thesis: Analysis of Baseline Data from Sahwira HIV Prevention Program

## **EXPERIENCE**

**EcoHealth Alliance, New York, NY**

September

2014-present

*Geospatial Analysis Technician*

- Analyze geospatial data, develop spatial visualizations, and statistically assess spatial and temporal trends in the emergence of infectious diseases and evaluate the impact of demographic, land-use, climatic and other factors on the emergence and distribution of infectious diseases
- Develop tools to communicate scientific findings to partners and stakeholders and create trainings on utilizing communication tools
- Maintain and create databases used for analysis and implement quality control of datasets

**Center for Global Safe Water, Emory University, Atlanta, GA**

September 2013-May

2014

*Graduate Research Assistant, Project Clean Greens*

- Analyzed data collected from produce farms for indicators of fecal contamination using linear and logistic regression and other statistical methods in SAS
- Created tables and figures, and drafted sections of manuscripts for publication
- Prepared educational materials and presentations on produce safety for the agricultural community including the GA Department of Agriculture

**Rollins School of Public Health, Emory University, Atlanta, Georgia**

August 2012-

May 2014

*Graduate Assistant, Paul D. Coverdell Fellowship*

- Developed and implemented monitoring and evaluation for Rollins' Master's International program, including formalized evaluation tools with qualitative and quantitative measures, Gantt chart, and log frame
- Directed program communications including weekly event communications, group Facebook pages and calendars, and alumni LinkedIn group for Rollins Community-Engaged Learning Program

- Facilitated bi-weekly community-engaged learning seminars linking participatory classroom learning with community service in refugee and immigrant communities
- Managed and supervised volunteers with the Center for Pan Asian Community Services' after-school tutoring program

**Rollins School of Public Health, Emory University, Atlanta, GA**  
December 2013

August 2013-

*Teaching Assistant, Case Studies in Infectious Disease*

**Centers for Disease Control & Prevention, Pretoria, South Africa**  
August 2013

May 2013-

*Graduate Research Assistant, International Emergency Preparedness Team*

- Partnered with South Africa National Department of Health (NDOH) to create a National Risk Communication Framework to be used in health communications response nationally and at the provincial level
- Organized and facilitated Risk Communication Framework review with NDOH and its stakeholders and partners
- Coordinated and developed supporting materials for strategic planning US tour for the national public health institute of South Africa

**US Peace Corps, Maun, Botswana**  
2012

July 2011-March

*Peace Corps Volunteer Leader*

- Supported Peace Corps Volunteers and Trainees with proposal development, including creating M&E project plans and reporting using appropriate goals and indicators
- Collaborated with Peace Corps staff on project development, design and implementation of trainings, and identification and development of sites for volunteers
- Represented Peace Corps Botswana across 3 districts, strengthened relationships with local authorities, and served as Regional Emergency Response Team representative
- Coordinated skills and marketing trainings for support groups and local NGOs; assisted groups in income-generation activities and in accessing greater markets
- Trained community educators on participatory teaching and health education at Dukwi Refugee Camp

**Department of Geography, Pennsylvania State University, Etsha 6, Botswana**  
July 2011

May 2011-

*Research Assistant*

- Conducted 20 qualitative interviews for a 3-year National Science Foundation-funded study on the impact of environmental variability and natural resource change on people's livelihoods and health
- Summarized interview data and entered it into program template for project analysis

**US Peace Corps, Etsha 6 Clinic, Etsha 6, Botswana**  
2009-July 2011

April

*Community Capacity Building Health Volunteer*

- Revised District HIV/AIDS activity proposals to include monitoring and evaluation components, to ensure all funded projects contained M&E plans
- Collaborated with District-level officials to create the Comprehensive District HIV/AIDS plans
- Strengthened Etsha 6 Clinic services by developing an Adherence Counseling questionnaire, creating interactive and visual teaching aids, and training lay counselors on effective teaching techniques.
- Assisted Etsha 6 Clinic with monthly reporting and data management, including working with the ARV clinic to record and visually represent progress
- Assisted the Ngamiland Basket Weavers Trust in implementing a year-long EU-funded business development and environmental sustainability grant
- Developed a curriculum to train facilitators for GLOW (Guys and Girls Leading our World) Clubs at Junior schools; organized and taught GLOW Facilitator Trainings of teachers and community members at district schools
- Organized and co-facilitated the first annual Regional Camp GLOW, a district-wide life skills, gender and youth empowerment camp for 38 Junior School students

**The Health Adventure (Health & Science Museum), Asheville, NC**  
March 2009

October 2007-

*Guest Services Associate*

- Adapted school lesson plans into educational demonstrations for museum guests
- Trained and supervised museum volunteers; established and wrote Volunteer Training Guide

**LEADERSHIP**

**Student Outbreak Response Team (SORT), Rollins School of Public Health**  
2012-2014

*Outreach & Alumni Coordinator*

- Provided support to CDC and DeKalb County, Georgia in outbreak response and surveillance
- Conducted alumni outreach and managed social media presence via LinkedIn group and biannual newsletters

**Gender Action Committee, US Peace Corps**  
2011-2012

*Founding Member*

- Coordinated with PC Staff to integrate gender and development into programming

**Volunteer Advisory Council, US Peace Corps**  
2009-2011

*Elected member*

- Assisted with the revision of the PC Botswana Project Framework, the mandate—including goals and indicators—under which PC Botswana operates
- Communicated policy, administrative and other changes to volunteers, and represented volunteers at quarterly meetings

**Johns Hopkins University Student Global AIDS Campaign**

2004-2007

*Co-chair/Member*

**SKILLS**

Software: SAS, STATA, R, Epi Info, GIS

Proficient Setswana, Conversational French, Basic Spanish and Thimbukushu

Microsoft Office and ProVenue (ticketing software)

Mediation (Certification in Community Mediation through The Mediation Center of Asheville)

NIMS (National Incident Management System) 100.b, 700.a, 800.b, 200.b, 235.b, and 808

Certified

Federico Rosario

Curriculum Vitae

Cell Phone: 305-851-2925 Email: [rosario@ecohealthalliance.org](mailto:rosario@ecohealthalliance.org)

## PROFESSIONAL EXPERIENCE

2015-Present	EcoHealth Alliance <i>DevOps Engineer</i>
2014-2015	Nowsecure Inc (Formerly ViaForensics LLC) <i>DevOps Engineer</i>
2013-2014	Teksystems Inc <i>Systems Analyst</i>
2011-2013	Riptide Software Inc <i>Systems Engineer</i>
2010-2011	Korrelate Inc (Formerly Ad Summos Inc) <i>Infrastructure Engineer</i>
2010-2010	Poiu.com Inc <i>Senior Software Developer</i>
2009-2010	Woods Hole Research Center <i>Linux/Unix Systems Administrator</i>
2008-2009	Athena Health Inc <i>Linux Systems Administrator</i>
2006-2008	Google Inc <i>Datacenter Technician</i>
2006-2006	SmartSource Inc <i>PC Staging and Deployment Technician</i>
2001-2005	United States Air Force <i>A.W.A.C.S. Aircraft Crew Chief</i>

## Projects

2014	Continuous Delivery software platform, Nowsecure Inc <i>An application delivery platform that begins the moment a developer commits a new feature into source control. Automated processes test and deploy updates directly to users</i>
------	---

2014	Continuous Integration system, Teksystems Inc <i>System to automatically test, and report on various infrastructure services.</i>
2013 allows an human	Infrastructure orchestration system, Teksystems Inc <i>System that captures all server configurations into source control. This method entire virtual network to be provisioned/configured automatically with minimal intervention.</i>
2012 a could	Riptide Wave, Riptide Software Inc <i>A low cost solution for VPN access to Amazon Virtual Private Clouds. Wave used combination of open source components to create a virtual appliance customers leverage instead of expensive dedicated hardware.</i>
2011 project analytics	Greenplum distributed datastore, Korrelate Inc <i>This is a commercial off-the-shelf massively parallel processing database. The involved installing this database, and importing massive datasets to support research</i>
2010 and	POIU marketplace, Poiu.com <i>A business to business (B2B) e-commerce platform to facilitate the trade of goods services amongst several local businesses.</i>
2009 goal of	Pantropical National Level Carbon Stock Dataset, Woods Hole Research Center <i>Provided infrastructure and systems support to advance the research project. The the project was to map surface levels of carbon and biomass across the planet's pantropical region.</i>
2008	Google Puerto Rico traffic analysis, Google Inc <i>Small project with the goal of assessing traffic anomalies related to <a href="http://google.com.pr">http://google.com.pr</a></i>
2007 their	Sir Scans-a-lot, Google Inc <i>A combination of software and hardware used to inventory servers, and correlate physical location to their network node position.</i>
<b>Education</b>	
2008	Google Engineering

Internal engineering courses

2005-2007      Everest University  
Associate of Science in Computer Information Systems

2002            Community College of the Air Force  
Mechanical engineering courses

### **Honors and Awards**

2001-2005      United States Air Force  
AF Basic Military Training Honor Graduate Award  
National Defense Service Medal  
Global War on Terrorism Service Medal  
AF Outstanding Unit Award

### **Volunteer Work**

Present        Open source software contributor: <https://github.com/frosario>

2015            Taught a class on computing concepts to gifted children at Lawton Elementary,  
Oviedo, FL

2012-2014      Substitute Krav Maga instructor at Victory Martial Arts, Oviedo, FL

Amy M. Slagle

Curriculum Vitae

Cell Phone: 857-204-5310 Email: [aslagle@alum.mit.edu](mailto:aslagle@alum.mit.edu)

## EDUCATION

- 2007-2008     Massachusetts Institute of Technology, Cambridge, MA  
Master of Engineering in Electrical Engineering and Computer Science  
Thesis title: Geospatial Phrase Grounding and Disambiguation.  
Advisors: Boris Katz, Michael Cleary
- 2003-2007     Massachusetts Institute of Technology, Cambridge, MA  
Bachelor of Science in Electrical Engineering and Computer Science  
Bachelor of Science in Brain and Cognitive Sciences

## PROFESSIONAL EXPERIENCE

- 2013-Present   EcoHealth Alliance  
*Senior Software Developer*
- 2009-2013     Wireless Generation  
*Senior Software Developer*
- 2007-2008     C. S. Draper Laboratory  
*Draper Fellow*
- 2006           Mars Electronics International  
*Software Engineering Intern*
- 2005           Miller Laboratory at MIT  
*Undergraduate Research Assistant*
- 2004           High-Energy-Density Physics Group at MIT  
*Undergraduate Research Assistant*

## SOFTWARE PROJECTS

- 2015-Present   Mantle Prototype, EcoHealth Alliance  
*An application for Ranavirus researchers to collaborate and share data, as a prototype of an open source platform for biosurveillance researchers across One Health disciplines.*
- 2013-Present   Emerging Infectious Disease Repository, EcoHealth Alliance  
*A web-based encyclopedia of curated information on emerging infectious disease outbreaks from 1940-2013.*



- 2013-Present    Global Rapid Identification Tool Set, EcoHealth Alliance  
*A biosurveillance application that enables infectious disease analysts to monitor non-traditional information sources for infectious disease threats.*
- 2013-Present    Reactive Table, Independent Project  
*An open source software package enabling Meteor web applications to display interactive tables that update in real-time.*
- 2012-2013       Shared Platform Components, Wireless Generation  
*A library of HTML, JavaScript, and CSS components and test frameworks used by other products at the company.*
- 2010-2012       Offline Web Assessment Platform, Wireless Generation  
*A web application used by teachers to assess K-3 students early literacy and math skills on mobile devices, and sync assessment and results data to a central database.*
- 2009-2010       Open Item Bank, Wireless Generation  
*A web application used by teachers to create and share assessments with multiple choice and open response questions.*
- 2009-2010       PK-12 Assessment Platform, Wireless Generation  
*A web application used by teachers to view assessment results for pre-K to high school students, and a plugin for third-party scanning software to score scanned answer sheets and upload the results to the application.*
- 2007-2008       GeoCoder, C. S. Draper Laboratory  
*A system that uses natural language processing, ontologies, and geometric operations to interpret geospatial phrases and display the results in Google Earth.*
- 2006               UML Modeling Plugin, Mars Electronics International  
*A plugin for a UML modeling program to locate and report inconsistencies in UML models.*

## **PRESENTATIONS**

- Huff, A. G., Slagle, A., Horton, R., Breit, N., & Gold, Z. (2015, March). *Global Rapid Identification Tool Set (GRITS)*. DDD3: Florence, Italy.
- Huff, A. G., Slagle, A., Horton, R., Breit, N., & Gold, Z. (2015, March). *Global Rapid Identification Tool Set (GRITS)*. Defense Threats Reduction Agency Technical Interchange Meeting: Washington, D.C.

## **HONORS AND AWARDS**

2003-2007      Eta Kappa Nu Member, Sigma Xi Member, Robert C. Byrd Honors Scholar,  
National Dean's List, National Merit Scholar, National AP Scholar Award

Daniel A. Sullivan

Curriculum Vitae

Cell Phone: 347-416-2325 Email: [danielalexandersullivan@gmail.com](mailto:danielalexandersullivan@gmail.com)

## **EDUCATION**

2009-2013 Wesleyan University, Middletown, CT  
Bachelor of Arts in Computer Science

## **PROFESSIONAL EXPERIENCE**

2015-Present EcoHealth Alliance  
*Software Developer*

2013-2015 Kitchensurfing  
*Software Developer*

2013 Wesleyan University New Media Project  
*Software Developer*

## **TEACHING**

2012-2013 Wesleyan University Department of Computer Science  
*Teaching Assistant*

## **SOFTWARE PROJECTS**

2015-Present Mantle Prototype, EcoHealth Alliance  
*An application for Ranavirus researchers to collaborate and share data, as a prototype of an open source platform for biosurveillance researchers across One Health disciplines.*

2015-Present Emerging Infectious Disease Repository, EcoHealth Alliance  
*A web-based encyclopedia of curated information on emerging infectious disease outbreaks from 1940-2013.*

2015-Present Global Rapid Identification Tool Set, EcoHealth Alliance  
*A biosurveillance application that enables infectious disease analysts to monitor non-traditional information sources for infectious disease threats.*

2015-Present Calmotron, Personal Project  
*A program for semi-randomly generating ambient music according to certain customizable parameters.*

2013-2015 Web app, Kitchensurfing  
*An e-commerce web app used to connect people to private chefs; included front-end and back-end components.*

- 2014-2015      Mobile app, Kitchensurfing  
*An iOS app interface built around an API for Kitchensurfing.*
- 2012            YouTube Tracker, Wesleyan Media Project  
*A script that tracks daily YouTube views for videos with specific tags. Used in the 2012 election to track the popularity of videos related to presidential candidates.*

**Christopher “Toph” Allen**  
(213) 448-4152  
toph.allen@gmail.com  
820 Riverside Dr #4I  
New York NY 10039

## **EDUCATION**

**Columbia University Mailman School of Public Health** **New York, NY**  
***Master of Public Health, Epidemiology*** ***2011–2013***

- Master’s thesis: Statistical model of the global distribution of zoonotic disease emergence and associated socio-economic and ecological predictors.
- Research practicum: gathering and analyzing data on the accuracy of GPS-enabled cellphones for tracking physical activity in urban environments.

**University of Southern California** **Los Angeles, CA**  
***Bachelor of Arts, Sociology*** ***2006–2008***

- Completed qualitative research project for senior thesis; dean’s list *magna cum laude* 2006–2008.

## **PROFESSIONAL EXPERIENCE**

**EcoHealth Alliance** **New York, NY**  
***Data Scientist*** ***June 2015–Present***  
***Research Scientist*** ***October 2013–May 2015***  
***Modeling Research Assistant*** ***May 2013–September 2013***

- Worked on software development projects, including natural language processing data storehouse/interchange tools.
- Produced analysis of disease emergence data for major government funder. Gathered spatiotemporal datasets based on a priori hypotheses and implemented a machine learning algorithm to optimize for predictive power. Showed hypothesized effects which had not been present in earlier models. Based in part on grant’s deliverables, of which this analysis was a part, the funder approved a second five-year round of funding.
- Performed spatial and temporal analyses of canine leptospirosis test results and consulted with colleagues on other analyses, for a project for a private client, and , with colleagues, presented results to client in person. Client subsequently sought EHA’s services for other analytical projects.
- Contributed analyses for many other projects, applying techniques including generalized linear models (incl. logistic and Poisson regression), machine learning algorithms (incl. boosted regression trees, random forest, MaxEnt), time series analysis (incl. seasonal decomposition, Holt-Winters forecasting).
- Drafted manuscripts based on research projects, currently in preparation for submission.
- Authored book chapter on biosurveillance and pandemic prediction, contributed writing and figures to chapter on food production systems and disease emergence.
- Created and taught series of introductory classes on statistical programming language R and scientific computing to scientists and interns. Regularly advised staff on use of R and other computer technologies, such as git.

- Collaborated colleagues at EHA and partners to create data collection methodology for five-year, multidisciplinary research project on disease emergence. Advocated for adoption of new data collection technologies to facilitate future analyses.

**Scientists Without Borders, New York Academy of Sciences**

**New York, NY**

***Vaccines Fellow***

***Summer 2012***

- Managed vaccine vertical with users on crowd-sourcing website, soliciting responses to questions, posting questions and answers, and writing weekly digest blog posts for the Vaccines topic.

**The Leadership LAB at the L.A. Gay & Lesbian Center**

**Los Angeles, CA**

***Field Organizer***

***2009–2011***

- Part of a team authoring report on California's 2008 same-sex marriage ban. Analyzed time-series campaign polling data and developed 60 graphics to illustrate key findings.
- Recruited and led team of volunteers collecting over 1 terabyte of video footage of qualitative interviews with voters on same-sex marriage. Coordinated subsequent storage, editing, and use of footage for analysis and training.
- Performed qualitative interviews with voters collecting data about persuasion on same-sex marriage, and recruited and trained volunteers to do the same.
- Oversaw production and testing of 30-second television ads rebutting anti-LGBT messaging.
- Took part in fundraising, both for the whole organization, and to purchase video and computer equipment.

**PUBLICATIONS – PEER-REVIEWED**

**IN REVIEW**

- Murray K, Preston N, Allen T, Zambrana-Torrel C, Hosseini P, Daszak P. The global biogeography of human infectious diseases: a novel source of prior information for health research and management.

**IN PREPARATION**

- Allen T, Murray K, Zambrana-Torrel C, Morse SS, Daszak P. Global Correlates of Emerging Zoonoses.
- White A, Allen T, Zambrana-Torrel C, Daszak P. Untitled Leptospirosis Manuscript.

**PUBLICATIONS – OTHER**

- Allen T, Murray K, Olival KJ, Daszak P. Eight Critical Questions for Pandemic Prediction. In: Choffnes ER, Mack A, editors. *The Influence of Global Environmental Change on Infectious Disease Dynamics: Workshop Summary*. Washington, DC: National Academies Press (US); 2014. pp. 182–193.
- Murray K, Allen T, Loh E, Machalaba C, Daszak P. Emerging viral zoonoses from wildlife associated with animal-based food systems: risks and opportunities. In: Doyle, Michael P, editor. *Food Microbiology and Food Safety*. New York, NY: Springer; 2015. (In press)

## **VOLUNTEER EXPERIENCE**

### **Riders Alliance**

**New York, NY**

#### ***Data Specialist***

**2015**

- Used publicly available data on demographics and transit in New York City to create visualizations and analysis to advocate in support of the Move NY transit plan.

### **WKCR FM New York**

**New York, NY**

#### ***Intern, News Dept. Programmer***

**2011–2012**

- Trained to operate broadcasting equipment.
- Produced several half-hour radio segments on public health and science topics.

## **SKILLS & CERTIFICATIONS**

### **Computer Skills**

Scientific computing: R, Python, SAS, SQL, etc.; Unix: git, bash, ssh, etc.; misc. specialized software: GIS, BUGS, Stan. Academic publication databases. Productivity/general; OS X, Windows; Microsoft Word, Excel, Powerpoint, Outlook, Apple Pages, Keynote, Numbers, etc.

### **Other**

Certifications: CITI, HIPAA. Languages: basic knowledge of Italian and French.

### **Hobby**

Music production and composition (esp. electronic music production techniques), DAW software, incl. Logic, Ableton Live; piano (intermediate). Other media production software: Photoshop, Final Cut; photography.

**Marjorie P. Pollack, M.D.**  
**Curriculum Vitae**

2057 Clairmeade Way  
 Atlanta, GA 30329  
 U.S.A.

(404) 321-0633

133 Pacific Street  
 Brooklyn, NY 11201

(718) 875-0872

Email: <pollack@promedmail.org>  
 <pollackmp@mindspring.com>

### **Education**

M.D.	Medical College of Pennsylvania	1974
B.A.	New York University	1970
	University College of Arts & Sciences	
	Major in Psychology - Minor in English/French Literature	

### **Post Graduate Education**

<b>Preventive Medicine Resident</b> - CDC, Atlanta, GA	1978 - 1980
<b>Chief Medical Resident (Internal Medicine)</b>	1976 - 1977
<b>Medical Resident (Internal Medicine)</b>	1975 - 1976
Montifiore Hospital and Medical Center - Albert Einstein College of Medicine, New York, NY	
<b>Medical Intern (Internal Medicine)</b>	1974 - 1975
Graduate Hospital of the University of Pennsylvania, Philadelphia, PA	



**Experience****CONSULTANT MEDICAL EPIDEMIOLOGIST**

August 1980 - Present

Have served as a short-term consultant (several days through four months) to International Assistance Agencies as a Medical Epidemiologist. Assignments have involved Survey Design/Implementation/Data Analyses, Development and Implementation of Field Epidemiology Training Programs, Project Designs, Project Assessments and Evaluations, Health Sector Assessments, Training, Seminar/Workshop Design and Implementation, Project Advisory Boards. Have worked extensively in the field of Immunization Programs and in Epidemiological Surveillance and Data Systems. Have also worked on other Child Survival Components such as Diarrheal Disease Control Programs, Malaria Control Programs, and Nutrition Monitoring Programs, and peripherally in Family Planning Program related issues. Agencies for whom consultations performed include The Centers for Disease Control (CDC), Global 2000, United States Agency for International Development (USAID), World Health Organization (WHO), Pan American Health Organization (PAHO), United Nations Children's Fund (UNICEF), the European Economic Community (EEC), the Asian Development Bank (ADB), and the World Bank. Have worked extensively in over 40 developing countries in Latin America, the Caribbean, Africa, Asia and the Western Pacific region.

**PROMED-MAIL -**

March 1999 - Present

Deputy Editor  
Regional Liaison Editor  
Associate Editor  
Moderator  
Rapporteur

October 2008 - Present  
September 2003 – Present  
April 2002- September 2008  
June 2000 – Present  
March 1999-June 2000

As Deputy Editor, continue to function in capacities described below, with the addition of overseeing and developing subregional activities in Africa – ProMED-EAFA, with a focus on Anglophone East Africa, and ProMED-FRA, with a focus on Francophone West Africa, SouthEast Asia ProMED-MBDS with a focus on the Mekong Basin region, ProMED-SoAs with a focus on South Asia and ProMED-MENA with a focus on the Middle East and Asia. Other responsibilities include helping identify and develop grant proposals for In addition, assist the ProMED-mail Editor as needed.

Have developed and implemented training materials on the use of non-traditional information sources as an adjunct to routine disease surveillance for Field Epidemiology Training Programs (FETPs) and use in workshops for TEPHINET conference attendees.

Worked as a consultant on the DTRA funded GRITS project (Global Rapid Identification Tool system) providing feedback on the development of the GRITS tools, assisting with the development of an ontologies for the tool.

Served on the Scientific Program Committee for the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> International Meeting on Emerging Diseases (held in Vienna, February 2007, February 2009, February 2011, February 2013 and October 2014). Involved development of Scientific Program with identification of Keynote speakers and invited Plenary and panelists as well as review of submitted abstracts for oral and poster presentations.

Serve as the Medical Epidemiology and Surveillance Moderator for ProMED-mail, an internet-based early warning system to follow emerging infectious diseases. As moderator responsibilities include; websurfing to identify alternative sources of disease occurrence information, write comments on disease outbreaks and the epidemiologic importance of the events and investigate other sources of information with the goal of improving of timeliness of disease reports and subsequent investigation and implementation of control mechanisms.

As Liaison Editor for subregional project activities: Developed a ProMED-mail like communication network system in collaboration with the Mekong Basin Disease Surveillance (MBDS) project (Thailand, Cambodia, Laos, Vietnam, Myanmar, Yunnan province and Guangxi Autonomous Region of PRC). This has included hiring and training of regional moderators, the identification of networks within the region for collaboration and the identification of region specific needs for project activities. Similar activities are involved in the development of the two African networks. During 2004-2006, worked on the initial phases of investigation of development of a ProMED-mail like communication system in collaboration with the East African Infectious Disease Surveillance Network (EAIDSNet) project (Kenya, Tanzania, Uganda) and discussions with the Mideastern Consortium for Infectious Disease Surveillance (MECIDS). Relevant activities include identification of possible new initiatives and assisting in development of project proposals.

As Associate Editor to ProMED-mail, additional responsibilities included receiving and screening of potential ProMED-mail postings and assigning potential postings to Moderators for review and comment. Editing postings for content, accuracy and format. (<http://www.promedmail.org>) is a key responsibility when on duty. In addition, the implementation and maintenance of posting policies and editorial standards as well as proposing new policies when indicated are responsibilities as well as the day to day oversight of managing a listserv and website while functioning as the associate editor on duty.

#### ATTENDING PHYSICIAN EMERGENCY DEPARTMENT

Harlem Hospital and Medical Center  
New York, New York

February 1999-July 2000

Cabrini Medical Center  
New York, New York

September–December 1999

Bellevue Hospital and Medical Center and  
New York University - University Hospital  
New York, New York

July 1989 - June 1996

Worked as a per-diem attending physician in the Emergency Department. Responsibilities involved primary medical care delivery in the Emergency Room setting and medical student, house officer and physician assistant teaching and supervision.

At New York University/Bellevue Hospitals non-clinical responsibilities included supervision and training of housestaff in epidemiologic methods and research study design as well as assisting in Quality Assurance activities of the Emergency Department. Developed computerized system for monitoring antibiotic sensitivity patterns of ED patient population isolates and identified areas for studies on physician treatment practices in the ED.

## Summary of Consultations

### 2015

Italy – presented rapid fire talk on the EpiCore project at the 3<sup>rd</sup> International DDD conference

### 2014

Dominican Republic – Ran workshop on DDD curriculum at the TEPHINET/Americas Regional scientific conference aimed at FETP trainees and graduates

Nepal – ran workshop on development of regional networks for use of non-traditional information sources in disease surveillance at OHASA meeting

Austria – Developed and ran workshop for ProMED moderators on the EpiCore project

### 2013

USA – Developed and ran workshop on curriculum development for Digital Disease Detection, at the 2<sup>nd</sup> DDD International meeting

USA – CANEPI BSVE project 3 month Demo

USA – CANEPI BSVE project 6 month Demo

VietNam – Ran workshop on DDD curriculum at the joint TEPHINET/SAFETYNET scientific conference aimed at FETP trainees and graduates

Ethiopia – Ran workshop on DDD curriculum at the joint TEPHINET/AFENET scientific conference aimed at FETP trainees and graduates

Morocco – Ran workshop on DDD curriculum at the joint TEPHINET/EMPHNET scientific conference aimed at FETP trainees and graduates

### 2012

USA – Represented ProMED DTRA sponsored Industry Fair on Biosurveillance Ecosystem

Thailand – Prepared and conducted a workshop on Wildlife Diseases for ProMED moderators

Thailand – CoChair, Oral Presentations on Disease Surveillance at the 15<sup>th</sup> International Congress on Infectious Diseases

### 2011

USA –Invited participant at CDC sponsored Editorial Summit

USA – Participant in Federation of American Scientists (FAS) sponsored Biosecurity Center conference on: Taking Biosecurity Networks to the Next Level

Israel – Participant NATO Advanced Research Workshop

Thailand – Development of training module for and implementation of training of Field Epidemiology Training Program – Veterinary Health (FETP-V) trainees in the use of non-traditional information sources as an adjunct to routine disease surveillance activities

Austria CoChair panel session on Hot topics in Immunizations at the 3<sup>rd</sup> International Meeting on Emerging Diseases (IMED).

USA – Member CDC State, Local, Tribal, Territorial working group for development of USA Biosurveillance Strategy

**2010**

South Africa – Workshop on the use of non-traditional information sources as an adjunct to routine disease surveillance activities at the Biannual TEPHINET conference.

Israel – Participation in Data Sharing Workshop at CHORDS workshop (Connecting Health Organizations in Regional Disease Surveillance)

Senegal – ProMED African Network training meeting (EAFR, FRA – Anglophone and Francophone Africa)

Laos – ProMED MBDS Initiative – Mekong Basin Disease Surveillance Group

Thailand – FETP training on use of non-traditional information sources

France – Facilitator at CHORDS meeting

Thailand/Laos – Development of case study on crossborder and intersectoral communications during epidemiologic investigation of 1<sup>st</sup> human case of H5N1 in Laos.

USA – Member CDC State, Local, Tribal, Territorial working group for development of USA Biosurveillance Strategy

**2009**

Costa Rica – Workshop on the use of non-traditional information sources as an adjunct to routine disease surveillance activities for FETP directors in Latin America

Kenya – Workshop on the use of non-traditional information sources as an adjunct to routine disease surveillance activities at AFENET/TEPHINET regional meeting for FETP, with invited plenary presentation

Thailand – Development of pilot training module for FETP courses on use of informal information sources as an adjunct to routine disease surveillance activities

Taiwan – CDC Taiwan – use of informal information sources

China – ProMED-mail MBDS initiative – Mekong Basin Disease Surveillance

Austria CoChair panel session on Hot topics in Immunizations at the 2<sup>nd</sup> IMED

USA – Member CDC State, Local, Tribal, Territorial working group for development of USA Biosurveillance Strategy

**2008**

Thailand – ProMED-MBDS initiative – Mekong Basin Disease Surveillance Group

Cambodia – ProMED-MBDS initiative – Mekong Basin Disease Surveillance Group

USA – Invited panelist, International Conference on Emerging Infectious Diseases (ICEID).

USA – Member CDC State, Local, Tribal, Territorial working group for development of USA Biosurveillance Strategy

**2007**

Laos – Invited speaker and session rapporteur, First Regional GMS Public Health Forum

Thailand – ProMED-MBDS initiative – Mekong Disease Surveillance Group

Austria – Invited speaker and sessions chairperson, International Meeting on Emerging Diseases and Surveillance (IMED)

Thailand – ProMED-MBDS initiative – Mekong Basin Disease Surveillance Group

**2006**

Malaysia – Epidemic Intelligence Program, graduate presentation referee; keynote speaker at National Epidemiology Conference  
Portugal – Invited panelist, International Congress on Infectious Diseases  
Cambodia – ProMED-MBDS initiative – Mekong Basin Disease Surveillance Group  
Thailand – Informal Cross Border Communications for Disease Surveillance Project, Mekong Basin Disease Surveillance Group

**2005**

VietNam –Obstacles to informal cross border communications, Mekong Basin Disease Surveillance Project (MBDS)  
Turkey –Use of the Informal Sector for Disease Surveillance, MidEast Consortium for Infectious Disease Surveillance (MECIDS)  
Washington, DC – NTI, Asia Disease Surveillance Project Strategy Panel  
Israel – Panel member, session chairperson, NATO Advanced Research Workshop  
France – Panel member -- International Conference on Biosafety and Biorisks

**2004**

Tanzania – Development of Informal Cross Border Communications for Disease Surveillance with the East African Infectious Disease Surveillance Network (EAIDSNet)  
Thailand – Presentation of PRO/MBDS at SubRegional WHO EWARS (Early Warning and Response System) conference  
Thailand – Continued Development of Informal Cross Border Communications for Disease Surveillance with the MBDS Group  
China – Development of Plan of Action for neonatal tetanus elimination activities in selected provinces

**2003**

Peru – Interim evaluation of enhanced disease surveillance project  
Washington, DC – Panel member – US Medicine Institute Forum  
Thailand – Development of Information Cross Borders Communication for Disease Surveillance with the Mekong Basin Disease Surveillance Project

**2002**

Washington, DC – Panel member – Post 9/11 Health Concerns in the Americas

**2001**

Mali – Facilitator at Workshop on Neonatal Tetanus Elimination; development of field guidelines for Neonatal Tetanus Elimination  
Peru – Development of Pilot Project on Enhanced Disease Surveillance  
Brazil – Identification of Disease Surveillance Needs

**2000**

Bangladesh – Urban EPI Review  
Egypt – Development of Plan of Action for Neonatal Tetanus Elimination

**1998**

South Africa – TB Control Project Design

**1997**

Congo, Nigeria - Review of Neonatal Tetanus Elimination in the African Region  
Mexico – Site visit, Hospital Clinical Services Project Assessment  
Kosovo, FRY – Site visit, TB and Maternal Child Health Project Assessments  
South Africa – TB Control Project Feasibility Study

**1996**

Morocco - Neonatal Tetanus Elimination Validation Assessment  
Indonesia - Feasibility Study to Strengthen Disease Control Activities, Phase III

**1995**

Indonesia - Feasibility Study to Strengthen Disease Control Activities, Phase I

**1994**

Egypt - Evaluation Cooperative Health Agreement, US Public Health Service  
Benin - Epidemiologic Assistance to Guinea Worm Eradication Effort  
Bangladesh - Surveillance Issues in Neonatal Tetanus Elimination and Measles Elimination  
Thailand - Preparation/Presentation Papers on Surveillance Issues in NNT Elimination in Bangladesh

**1993**

Bangladesh - International EPI Evaluation  
Costa Rica, Honduras, El Salvador, Ecuador - Evaluation of Disaster Preparedness, Mitigation and Prevention Regional Project

**1992**

Nigeria - Project Sustainability Criteria Assessment - Combatting Childhood Communicable Diseases Project (CCCD)

**1991**

Peru - Temporary Advisor, Field Epidemiology Training Program  
Egypt - Development of Field Epidemiology Training Project

**1990**

Peru - Temporary Advisor, Field Epidemiology Training Program  
Zaire - Assessment of Child Survival Strategy/Review of 19 Projects

**1989**

Barbados - Preparation UNICEF Participation Plan, Measles elimination  
Togo - CCCD Project Evaluation  
Trinidad/Tobago, Jamaica, Antigua, Dominica, St. Vincent, St. Lucia, Barbados, Belize, Washington, DC - Preparation of Sub-Regional Plan of Action, Measles elimination, English speaking Caribbean countries  
Mauritania - Rural Health Services Project Evaluation (EPI)  
Washington, DC - HealthCom Project Task Force/Technical Advisory Group (TAG)  
Washington, DC - Child Survival Project Proposal Technical Reviews  
Columbia, MD - Survey Data Analyses (Honduras Surveys)

**1988**

Columbia, MD - Survey Data Analyses (Honduras Surveys)  
 Dominican Republic - Assistance, epidemiologic research design, AIDS/HIV  
 Columbia, MD - Survey Data Analyses  
 Honduras/Guatemala - Child Survival Project Evaluation, EEC  
 Indonesia - Survey Data Analyses/Design of Intervention Strategies  
 Honduras - Family Planning/Child Survival Survey Design-Private Sector  
     Cost-Benefit of Employee Health-Related Services  
 Boston University School Of Public Health - Guest Lecturer, EPI/MCH Seminar  
 Indonesia - Cause Specific Infant Mortality Survey Design

**1987**

Bangladesh - Design of Urban EPI Project  
 Madagascar - Assistance with Development of Provincial EPI Plan  
 Mexico - Design of Child Survival Component to ongoing Family Planning Project  
 Columbia, MD - Survey Data Analyses  
 Washington, DC - Review of Latin American EPI Country Profiles  
 Washington, DC - Review of Detailed Implementation Plans of Private Voluntary  
     Organization EPI Projects in Latin America  
 Bangladesh - International EPI Appraisal  
 Peru - Child Survival Project Design - EPI, Epidemiological Surveillance  
     Strengthening and Project Evaluation Components  
 Ecuador - Multidonor/National EPI Five Year Plan of Action development  
 Washington, DC - Technical Advisory Group (TAG), HealthCom Project

**1986**

Central African Republic - CCCD Project Evaluation  
 Rwanda - CCCD Project Evaluation  
 Ecuador - Survey Design and Data Analyses, Child Survival Knowledge,  
     Attitudes, Practice (KAP) survey  
 Swaziland - CCCD Project Evaluation  
 Washington, DC - EPI training for HealthCom Project field staff  
 Washington, DC - Review of EPI activities in Latin American Countries  
 Niger - Design of EPI and Malaria Control Program Assistance  
 Washington, DC - Development of Guidelines for EPI Evaluations  
 Ecuador - Design of EPI/Cold Chain evaluation instrument  
 Washington, DC - Development of Operational Manual for Polio  
     Eradication in the Americas  
 Mexico - Preparation/Presentation - Working Paper on Surveillance Issues  
     for Poliomyelitis Eradication in the Americas for PAHO/EPI/TAG

**1985**

Washington, DC - Project Proposal/Funding-Polio Eradication in the Americas  
 Brazil - Evaluation of Poliomyelitis Surveillance Issues  
 Washington, DC - Technical Resource for Poliomyelitis Eradication/TAG  
 Guatemala - EPI Project Evaluation Plan Design  
 Washington, DC - Preparation of Regional Plan of Action/Polio Eradication  
 Washington, DC - Preparation of Position Paper/Polio Eradication  
 Washington, DC - Preparation of Detailed Review of Poliomyelitis/Americas  
 Ecuador - Design of EPI Component to Child Survival Project  
 Columbia, MD - Design of Health Component/Demographic Health Survey

**1984**

Mauritania - Design of Epidemiologic Surveillance Project  
Mexico - Design and Coordination of Workshop on Epidemiologic Basis  
for Research in Fertility Regulation  
Peru - Assessment of Ongoing EPI and Diarrheal Disease Control (CDD)  
Programs  
Mexico - Assessment of Ongoing CDD Program Activities  
Nigeria - Assessment of Ongoing EPI and CDD Program Activities  
Peru - Group Coordinator, Latin American EPI Manager's Conference

**1983**

Washington, DC - PRITECH Project Immunization Task Force  
Mexico - Planning/Development-Workshop, Epidemiologic Basis for  
Research in Fertility Regulation  
Pakistan - Design, Coordination, Data Analyses-Baseline Health Status Survey  
Guatemala - EPI Evaluation  
Sri Lanka - Morbidity/Mortality Trend Analysis for Health Sector Assessment  
Washington, DC - Planning/Presentation-Seminar-National Health Problems  
Assessments

**1982**

Honduras - EPI Evaluation  
Belize - Health Sector Assessment  
Peru - Course Facilitator/CDD Program Managers, Latin America  
Geneva - Literature Review, CDD Morbidity Reduction  
Dominican Republic - EPI Evaluation

**1981**

Guyana - Course Facilitator/CDD Program Managers, English Caribbean  
Washington, DC - Contributing Editor, PAHO/EPI Newsletter  
Ecuador - EPI Evaluation  
Colombia - Epidemic Assistance/Poliomyelitis  
Dominican Republic - Epidemiologic Surveillance System Evaluation/  
Coordinator National EPI Mid-Level Manager's Course

**1980**

India - Poliomyelitis/Neonatal Tetanus Survey/Jaipur and Uttar Pradesh  
Brazil - Evaluation of Poliomyelitis Control Program



**Other Appointments****Center for Disease Control (CDC)**

1977 - 1980

**Medical Epidemiologist**

1979 - 1980

Assisted in the modification of a national surveillance system to monitor illnesses potentially related to receipt of vaccines. Staff Member in the preparation of U.S. position paper -- Health for all by the Year 2000. Co-Chairperson of the Scientific Program Committee for the Fifteenth National Immunization Conference. Training of public health advisors working in immunization programs at the state and local level. Participation in the National Childhood Immunization Initiative and the National Measles Elimination Program. Preparation and presentation of background material used in the formulation of National Immunization Recommendations.

**Epidemic Intelligence Service Officer (EIS) CDC**

1977 - 1979

Surveillance of enteric and neurotropic viruses, including viral gastroenteritis, dengue fever, poliomyelitis, non-polio enteric and neurotropic viruses, and Reye's syndrome. Epidemic investigations and training of public health personnel. Numerous presentations at national and international conferences. Editorial Assistant - Morbidity and Mortality Weekly Report (MMWR). Development of computer registry of reported cases of poliomyelitis in the U.S. Initiated epidemiologic studies of HLA typing in individuals with paralytic poliomyelitis.

**Technical Advisor - PAHO**

1980 and 1977

Assisted in response to an epidemic of poliomyelitis in the Dominican Republic, included a cluster sampling survey to ascertain vaccination coverages.

1980

Identification and evaluation of an epidemic of dengue fever in the Bahamas, included household and serologic surveys.

1977

**Faculty** - Epidemiology, Prevention, and Control of Diseases Preventable Through Immunization Training Program - (Denver CO, Philadelphia PA, Indianapolis IN, St. Louis MO).

1978 and 1980

**Faculty** - CDC/EIS - Course on Applied Epidemiology

July 1978

**Faculty** - CDC/Peace Corps Training Program

1978 - 1979

**Tropical Medicine Clerkship**

1974

University of Bahia - Salvador, Bahia, Brazil

**Internal Medicine Clerkship**

1972

University of Queensland - Brisbane, Queensland, Australia

**Professional Associations**

American College of Epidemiology - Member

American College of Physicians - Member

Society for Epidemiologic Research

American Public Health Association

American Society for Tropical Medicine and Hygiene

Global Health Council

American Society of Internal Medicine - Member

Academia Medicina Dominicana - Honorary Member

**Languages**

	<b>Speak</b>	<b>Read</b>	<b>Write</b>
French*	Very Good	Very Good	Good
Spanish*	Very Good	Very Good	Good
Portuguese*	Very Good	Very Good	Good
German	Fair	Fair	Fair
Indonesian	Rudimentary	Rudimentary	Rudimentary

\* Languages worked in

**Licensure**

New York and Georgia

**Personal**

Place of Birth: New York City. U.S. Citizen

**ABSTRACTS AND PRESENTATIONS**

Pollack MP Rapid Fire Talk: Innovative Surveillance, the EpiCore Project. Presented at the 3<sup>rd</sup> International DDD conference, Florence Italy 22 May 2015

Stephens T, Pollack MP, Chital R McGinn T, Jennings D. Invited Panelist on the Use of Email in Public Health Emergencies. Presented at the National Association of County & City Health Officials (NACCHO) Preparedness Summit 17 Apr 2015

Pollack MP MERS-CoV – presentation at IDEV (Dominican Institute for Virologic Studies; Santo Domingo, Dominican Republic 5 Feb 2015

Pollack MP ProMED-mail, A view of a non-traditional One Health approach towards identifying emerging diseases worldwide: Presented at the First International Who's Who in One Health Webinar, 10 Nov 2014

Pollack MP Disease Surveillance Realities in One Health: Presented at the OHASA One Health in South Asia meeting Kathmandu, Nepal 29 May 2014

Pollack MP ProMED Regional Networks: Presented at the OHASA One Health in South Asia meeting Kathmandu, Nepal 29 May 2014

Pollack MP Case studies in Digital Disease Detection Tools for Early Disease Detection; Presented at the Dominican Institute for Virologic Studies; Santo Domingo, Dominican Republic 12 Feb 2014

Pollack MP DDD workshop Presented at the TEPHINET Americas Regional Scientific Conference, Santo Domingo, Dominican Republic 4 Feb 2014,

Pollack MP DDD workshop : Presented at the TEPHINET/EMPHNET Regional Scientific Conference, Marrakesh, Morocco 3 Dec 2013

Pollack MP DDD workshop – Presented at the TEPHINET/AFENET Regional Scientific Conference , Addis Ababa, Ethiopia 17 Nov 2013

Pollack MP DDD workshop – Presented at the TEPHINET/SAFETYNET Regional Scientific Conference, DaNang, VietNam 11 Nov 2013

Pollack MP, The non-traditional niche. Presented at CDC Editorial Summit, Atlanta GA 8 Sep 2011

Pollack MP, Publication tensions and solutions. Presented at CDC Editorial Summit, 8 Sep 2011

Pollack MP. ProMED-mail -- How to contribute to enhanced biosecurity from a simplistic platform or The value of an open sourced non-traditional network for enhancing disease surveillance and contributing to biosecurity. Presented at: Federation of American Scientists (FAS) Biosurveillance Security Center: Taking Biosecurity Networks to the Next Level Conference. 1 Sep 2011

Bodenheimer AE, Pollack MP, Madoff. Evaluation of ProMED-mail's coverage of Neglected Tropical Diseases in Africa since the development of Regional African Networks. Poster presented by Bodenheimer AE at the ISID-NTD (Neglected Tropical Diseases) 2011 Conference • Boston, Massachusetts, USA • 9 July 2011

Pollack MP. Digital Detection of Diseases – Where we are, where we go. Presented at the NATO Advanced Research Workshop, Keynote Speaker. Haifa, Israel, 13 Mar 2011.

Mondor L, Brownstein J, Chan E, Sonricker A, Madoff L, Pollack M, Brewer T. Does source matter? Comparing the timeliness of outbreak reports from governmental and non-governmental sources. Poster presented by Mondor L at the 3<sup>rd</sup> International Meeting on Emerging Diseases (IMED), Vienna, Austria. 6 Feb 2011

Cowen P, Ekue FN, Sonricker A, Mtui-Malamsha N, Babalobi OO, Anaclet G, Estambale B, Coulibaly S, Brownstein J, Chan E, Garland T, Hugh-Jones M, Shimshony A, Bodenheimer A, Madoff L, Pollack M. ProMED-mail early warnings in Africa: Descriptive summaries of 5 years of information dissemination and the development of the African regional networks. Presented by Babalobi OO at the 3<sup>rd</sup> International Meeting on Emerging Diseases (IMED), Vienna, Austria. 6 Feb 2011.

Chan E, Chodena T, Brewer T, Madoff L, Pollack MP, Brownstein J. Forecasting High Priority Surveillance Regions: a Socioeconomic Model. Presented by Chan E. at the International Society of Disease Surveillance Conference, Park City, Utah, 1-2 Dec 2010.

Pollack MP. ProMED-mail's perspective on information exchange. Presented at the CHORDS Data sharing workshop, Jerusalem, Israel, 29 Nov 2010

Gresham L, Pollack MP, Trayner B, Libel M. Case clinics on Cross Border Collaborations for Outbreak investigation, Avian Influenza, Rift Valley Fever, Presented at a Webinar for the International Society on Surveillance, 14 May 2010.

Pollack MP. The use of informal information sources as an adjunct for disease surveillance. Presented at the XIV International Congress on Infectious Diseases, Meet the Expert Session, Miami Florida, 12 Mar 2010

Pollack MP. Informal Information Sources in Emerging Disease Surveillance --The role of an internet based early warning system Invited Plenary speaker at the 5th TEPHINET & 3rd AFENET Regional Scientific Conference 2009 – Mombasa , Kenya 3 Sep 2009

Pollack MP. ProMED East African Initiative --The role of an internet based early warning system a.k.a. "the informal sector". Presented at the 3<sup>rd</sup> East African Community (EAC) Health and Scientific Conference, Nairobi, Kenya 25-27 Mar 2009.

Pollack MP. Informal Information Sources in Emerging Disease Surveillance -- The role of an internet based early warning system. Presented at the Taiwan CDC 2 Mar 2009.

Pollack MP. ProMED East African Initiative. Prepared for presentation at the East African Community Partner States regional Table-Top Simulation exercises on Animal (Avian) and Human Pandemic Influenza Emergency Preparedness and Responses: 16/17 December 2008, Zanzibar, Tanzania.

Pollack, MP. "ProMED and MBDS". Presented at the MBDS Regional Forum. Phnom Penh. 25 August 2008

Pollack, MP. ProMED and MBDS A Sub-Regional internet based early warning system a.k.a. "the informal sector". Presented at the XIII International Congress for Infectious Diseases, Kuala Lumpur, 21 June 2008.

Pollack, MP: "Informal Information Sources in Emerging Disease Surveillance". Presented at the ICEID2008 – (International Conference on Emerging Infectious Diseases), Atlanta, GA, USA 17 March 2008

Pollack, MP: ProMED and MBDS -- PRO/MBDS - an internet based early warning system a.k.a. "the informal sector". Presented at the First Regional GMS (Greater Mekong Subregion) Forum, Vientiane, Laos, 7 November 2007

Pollack, MP: ProMED-mail -- The informal sector and Emerging Disease Detection -- The role of an internet based early warning system. Presented at the First International Meeting on Emerging Diseases and Surveillance (IMED), Vienna, Austria, 24 February 2007

Pollack, MP: ProMED-mail: The role of the informal sector in Global Public Health Surveillance. Presented at the Journal Club, Ministry of Health, Kuala Lumpur, Malaysia, 11 August 2006.

Pollack, MP: ProMED-mail -- The role of the informal sector in Global Public Health Surveillance. Presented at the National Epidemiology Meeting, Keynote speaker, Kuala Lumpur, Malaysia, 7 August 2006

Pollack, MP: ProMED-mail -- Developing a coordinated response to the unexpected. The role of an internet based early warning system a.k.a. "the informal sector". Presented at the XII International Congress for Infectious Diseases, Lisbon, Portugal, 17 June 2006

Pollack, MP: Risk Communication and the Community Response to a Bioterrorist Attack. The role of an internet based early warning system a.k.a. "the informal sector". Presented at the NATO Advanced Research Workshop. Ein Gedi – Israel. 9 June 2005

Pollack, MP: Global Digital Awareness of Disease Outbreaks: The Experience of ProMED (The role of an internet based early warning system a.k.a. "the informal sector"). Presented at the International Conference on Biosafety and Biorisks, Lyon, France. 3 March 2005

Pollack, MP: The role of Media and Unofficial Groups in Emerging Disease Surveillance. Presented at the XI International Congress for Infectious Diseases, Cancun, Mexico. 6 June 2004.

Pollack, MP: From SARS to Bio attack: Developing a coordinated response to the unexpected – the role of an internet based early warning system a.k.a. (also known as) "The informal sector". Presented at a forum sponsored by the US Medicine Institute, Washington DC, USA, 5 September 2003.

Pollack, MP: Identification of High Risk Districts for Development of Neonatal Tetanus Elimination Program Activities. Presented at the West African Regional Immunization Program Review, special sessions on Neonatal Tetanus Elimination, Bamako, Mali 15 March 2001.

Pollack, MP and Hughs-Jones M: Multinational Outbreak of Unexplained Deaths in Heroin Addicts Identified Through an Internet Based Early Warning System. Presented at the International Conference on Emerging Infectious Diseases, Atlanta, GA USA, 18 July 2000.

Pollack, MP et al: DPT1 Screening of Maternal TT Coverages as a Tool for Increasing Maternal TT coverages. Presented at SEARO/WHO First Annual EPI TAG Meeting, Bangkok, Thailand, 23 December 1994.

Pollack, MP et al: Surveillance of Neonatal Tetanus in Bangladesh Using Community Based Family Planning Worker Reporting Data. Presented at SEARO/WHO First Annual EPI TAG Meeting, Bangkok, Thailand, 23 December 1994.

Palacios, AM et al: Cholera in Peru, 1991. Presented at the International Night, Epidemic Intelligence Service (EIS) Conference, Atlanta, GA, USA, 9 April 1991.

Sheppard, D et al: Cost Considerations related to Cold Chain Development for Immunization Programs. Presented by Dr. Sheppard at the Symposium on Economic Constraints for Immunization Programs, 6 April 1987

Pollack MP: Key Issues in Epidemiological Surveillance for the Elimination of Indigenous Transmission of Wild Poliovirus in the Americas. Presented to the Technical Advisory Group (TAG) to the Pan American Health Organization (PAHO) Expanded Program on Immunizations, Mexico City, Mexico, 12 January 1986

Pollack MP: Key Issues in Immunization Programs. Presented to the First Lady of Ecuador, attending a Child Survival briefing at the Academy of Educational Development, Washington, DC, USA, 23 April 1985

Pollack MP: Measles in the Americas; 1971-1980. Presented to the Global Advisory Group (GAG) to the World Health Organization (WHO) Expanded Program on Immunizations, Washington D.C. 22 October 1981

Pollack MP: Poliomyelitis in the Americas; 1971-1980. Presented to the Global Advisory Group (GAG) to the World Health Organization (WHO) Expanded Program on Immunizations, Washington D.C., 22 October 1981

Pollack MP, Hinman AR, et al: Illnesses Following Immunizations. Presented by Hinman AR, at the 108th Annual Meeting of the American Public Health Association, Detroit, Michigan, 20 October 1980

Pollack MP: Poliomyelitis -- An Epidemiologic Approach. Presented to the Dominican Academy of Medicine, Santo Domingo, Dominican Republic, 31 July 1980

Pollack MP: Surveillance of Illnesses Following Immunizations. Presented at the 29th Epidemic Intelligence Service Conference, Atlanta, Georgia, 14 April 1980

Pollack MP: Illnesses Following Immunizations. Presented at the 15th Immunization Conference, Denver, Colorado, 13 March 1980

Pollack MP: IPV-OPV Controversy. Presented at the Immunization Division Seminars: 19 December 1979 (on tape for distribution)

Woodall JP, et al: Dengue in Puerto Rico 1977-1978. Presented at the Commonwealth Caribbean Medical Research Council, Kingston, Jamaica, 26-28 April 1979

Pollack MP: Poliomyelitis in the United States -- Overview 1969-1977. Presented to the Advisory Committee on Immunization Practices, Atlanta, Georgia, 19 January 1979

Pollack MP: Poliomyelitis Netherlands-Canada-1978. Presented to Advisory Committee on Immunization Practices, Atlanta, Georgia, 19 January 1979

Pollack MP: Poliomyelitis in the United States - 1977. Presented at PAHO Working Group on Epidemiology and Control of Poliomyelitis in the Americas, Mexico City, Mexico, 4-8 September 1978

Pollack MP: Clinical Manifestations of Dengue Fever. Presented at PAHO Working Group on Dengue, Montego Bay, Jamaica, 9-11 May 1978

Pollack MP: Poliomyelitis Surveillance - 1977. Presented at the 27th Epidemic Intelligence Service Conference, Atlanta, Georgia, 9 April 1978

Pollack MP: Poliomyelitis - United States. Presented at the Thirteenth Immunization Conference, Louisville, Kentucky, 9 March 1978

## BIBLIOGRAPHY

Petersen E, Pollack MM, Madoff LC. Health-care associate transmission of Middle East Respiratory Syndrome Corona virus, MERS-CoV, in the Kingdom of Saudi Arabia. *Int J Infect Dis.* 2014 Dec;29:299-300. doi: 10.1016/j.ijid.2014.10.001. Epub 2014 Oct 22.

Pollack MP, Pringle C, Madoff LC, Memish ZA. Latest outbreak news from ProMED-mail: novel coronavirus -- Middle East. *Int J Infect Dis.* 2013 Feb;17(2):e143-4. doi: 10.1016/j.ijid.2012.12.001. Epub 2012 Dec 25.

Pollack, MP "Digital Disease Detection", in *Internet-Based Intelligence in Public Health Emergencies, Early Detection and Response in Disease Outbreak Crises*. Edited by Mordini, E., Green, M.. March 2013. IOS Press, Amsterdam, The Netherlands. NATO Science for Peace and Security Series E; Human and Societal Dynamics Vol.105, Based on a NATO Advanced Research Workshop on Internet-Based Intelligence for Public Health Emergencies and Disease Outbreak: Technical, Medical, and Regulatory Issues, Haifa, Israel, March 2011.

Pollack MP, Pringle C, Madoff LC, Memish ZA. Latest outbreak news from ProMED-mail: novel coronavirus -- Middle East. *Int J Infect Dis.* 2013 Feb;17(2):e143-4. Epub 2012 Dec 25.

Chan EH, Scales DA, Brewer TF, Madoff LC, Pollack MP, Hoen AG, Choden T, Brownstein JS. Forecasting high-priority infectious disease surveillance regions: a socioeconomic model. *Clin Infect Dis.* 2013 Feb;56(4):517-24. Epub 2012 Nov 1.

Mondor L, Brownstein JS, Chan E, Madoff LC, Pollack MP, Buckeridge DL, Brewer TF. Timeliness of nongovernmental versus governmental global outbreak communications. *Emerg Infect Dis.* 2012 Jul; [Epub ahead of print]

Chan EH, Brewer TF, Madoff LC, Pollack MP, Sonricker AL, Keller M, Freifeld CC, Blench M, Mawudeku A, Brownstein JS. Global capacity for emerging infectious disease detection. *Proc Natl Acad Sci U S A.* 2010 Dec 14;107(50):21701-6. Epub 2010 Nov 29.

Pollack MP. "The Role of Informal Information Sources as an Adjunct to Routine Disease Surveillance", in *Global Biosecurity. Threats and Responses*. Edited by Katona P, Sullivan JP, Intrilligator MD. 2010. Routledge. New York, NY.

Cowen P, Garland T, Hugh-Jones ME, Shimshony A, Handysides S, Kaye D, Madoff LC, Pollack MP, Woodall J. Evaluation of ProMED-mail as an electronic early warning system for emerging animal diseases: 1996 to 2004. *J Am Vet Med Assoc.* 2006 Oct 1;229(7):1090-9.



Pollack MP: Risk Communication and the Community Response to a Bioterrorist Attack: The Role of an Internet-based Early Warning System a.k.a. "The Informal Sector", in Green et al: Risk Assessment and Risk Communication Strategies in Bioterrorism Preparedness. (NATO Science for Peace and Security Series A: Chemistry and Biology). Proceedings of a NATO Advanced Research Workshop on Risk Assessment and Risk Communication in Bioterrorism. Ein-Gedi, Israel, June 2005. Springer

Kaye D, Handysides S, Madoff L, Pollack M, Woodall J. ProMED-mail, SARS and other breaking reports. Infectious Disease News. 2003.

Ries AA, et al. Cholera in Piura, Peru: A Modern Urban Epidemic. JID 166 (6): 1429-1433; 1992

Swerdlow DL, et al. Transmission of Epidemic Cholera in Trujillo, Peru: Lessons for a continent at risk. Lancet, 340, 28-32; July 4, 1992

Shepard DS, et al: Cost-effectiveness of routine and campaign vaccination strategies in Ecuador. Bulletin of the World Health Organization, 67 (6):649-662, 1989

Pollack MP, Blumen HL, Brandling-Bennett AD, Hinman AR: Center for Disease Control, Surveillance of Illnesses Following Immunization 1978-1979, Proceedings of the Fifteenth Immunization Conference - Denver, Colorado, 1980

Pollack MP, Moore M, Schonberger LB, Gregg M: Center for Disease Control, Neurotropic Diseases Surveillance Poliomyelitis Summary 1969-1978, December 1980

Center for Disease Control: Poliomyelitis Prevention, Health Information for International Travel, 1979 Revision

Nelson DB, et al: Aflatoxin and Reye Syndrome: A Case-Control Study. Pediatrics 66:865-869, 1980

Pollack MP: Poliomyelitis Surveillance in the United States - 1977. Proceeding of the Thirteenth Immunization Conference. Louisville, Kentucky, 1978

Pollack MP: Poliomieltis en Los Estados Unidos - 1977: PAHO Taller Sobre Vigilancia Epidemiologica y Control de Poliomieltis, 4-7 Septiembre 1978, Proceedings, 1979

Charles LJ, Sr, Davis C, Benenson MW, Pollack MP, Giglioli MEC: Notes on the 1977 Outbreak of Dengue Fever in the Bahamas, in Dengue in the Caribbean, 1977, 1979

Schonberger LB, Kappus KD, Pollack MP, Sullivan-Bolyai JZ: Center for Disease Control, Neurotropic Diseases Surveillance. Poliomyelitis Summary 1974-1976, October



**Date prepared:** November 2014

## **CURRICULUM VITAE**

**Name:** Lawrence C. Madoff

**Office Address:** International Society for Infectious Diseases  
9 Babcock Street, unit 3  
Brookline, MA 02446

**Home Address:** 15 Coolidge Street  
Brookline, MA 02446

**E-mail:** lmadoff@promedmail.org

**Place of Birth:** Boston, Massachusetts

**Education:**

1978	B.S. Yale University, New Haven, CT
1982	M.D. Tufts University School of Medicine, Boston, MA

**Post Doctoral Training:**

July 1982-June 1983	Intern, Internal Medicine, The New York Hospital-Cornell Medical Center, New York, NY
July 1983-June 1985	Junior and Senior Assistant Resident, Internal Medicine, The New York Hospital-Cornell Medical Center, New York, NY
July 1985-June 1986	Research Fellow, Division of Infectious Diseases, The New York Hospital-Cornell Medical Center, New York, NY
July 1986-June 1989	Research and Clinical Fellow in Medicine, Division of Infectious Diseases, Beth Israel Hospital and Brigham & Women's Hospital, Boston, MA
July 1986-June 1987	Clinical Fellow in Medicine, Harvard Medical School, Boston, MA
July 1987-June 1989	Research Fellow in Medicine, Harvard Medical School, Boston, MA

**Licensure and Certification:**

1983	New York State License
1983	Diplomate, The National Board of Medical Examiners
1985	Diplomate in Internal Medicine, The American Board of Internal Medicine
1986	Massachusetts State License
1988	Diplomate in Infectious Disease, The American Board of Internal Medicine

#### **Academic Appointments:**

June 1989-July 1993	Instructor in Medicine, Harvard Medical School, Boston, MA
July 1993-Dec 2004	Assistant Professor of Medicine, Harvard Medical School, Boston, MA
Jan 2005-July 2008	Associate Professor of Medicine, Harvard Medical School, Boston, MA
July 2008-	Lecturer on Medicine, Harvard Medical School, Boston, MA
July 2008-	Professor of Medicine, University of Massachusetts Medical School, Worcester, MA

#### **Hospital or Affiliated Institution Appointments:**

July 1989	Associate in Medicine, Beth Israel Deaconess Medical Center, Boston, MA
July 1989	Associate Physician, Brigham and Women's Hospital, Boston, MA
March 2008	Attending Physician, Division of Infectious Diseases and Immunology, University of Massachusetts Memorial Medical Center, Worcester, MA

#### **Major Administrative Responsibilities:**

1981-1982	Vice-President, Alpha Omega Alpha, Tufts University School of Medicine
1984-1986	Representative to the Medical Board, The New York Hospital-Cornell Medical Center
2002-	Editor, ProMED-Mail, Program for Monitoring Emerging Diseases, International Society for Infectious Disease
2008-	Director, Division of Epidemiology & Immunization, Massachusetts Department of Public Health
2008-	Deputy State Epidemiologist, Commonwealth of Massachusetts

2012- 2013	Interim Director, Public Health Laboratory, Bureau of Laboratory Sciences, Massachusetts Department of Public Health
------------	--

**Hospital and Health Care Organization Service Responsibilities:**

1989-1998	Attending Physician, Infectious Disease Consultation Service, Beth Israel Deaconess Medical Center, Boston, MA
1990-1998	Attending Physician, Medical Service, Beth Israel Deaconess Medical Center, Boston, MA
1991-1998	Needlestick Injury Advisor for hospital employees, Beth Israel Deaconess Medical Center, Boston, MA
1996-1998	Attending Physician, Travel Medicine Clinic, Beth Israel Deaconess Medical Center, Boston, MA
1998-2008	Attending Physician, Infectious Disease Service, Brigham and Women's Hospital, Boston, MA
2000-2003	Consultant, Molecular Diagnostics, State Laboratory Institute, Department of Public Health, Boston, MA
2007-2008	Director, Global Travel Health Clinic, Brigham and Women's Hospital
2008-	Associate Director, Infection Control, University of Massachusetts Memorial Medical Center

**Major Committee Assignments:**

1980-1982	Curriculum Committee, Tufts University School of Medicine
1989-1997	Internship Selection Committee, Beth Israel Hospital, Boston, MA
1995-2008	Research Information Computing System Advisory Committee, Brigham and Women's Hospital, Boston, MA
1996-1998	Computer Network Security Task Force, Harvard Medical School
1997-2001	Research Infrastructure Committee, Brigham and Women's Hospital, Boston, MA
1999-2008	Committee on Microbiological Safety, Harvard University
2001-2008	Technology Development and Assessment Committee, Brigham and

Women's Hospital, Boston, MA

2003	NIH Center for Scientific Review, Special Emphasis Panel, Viral and Bacterial Synergy in Pathogenesis
2008-	Tufts University School of Medicine's MPH Program External Advisory Committee
2008-	Infection Control Committee, University of Massachusetts Memorial Medical Center
2008-	Continuing Medical Education Committee, Massachusetts Department of Public Health
2008-2011	Investigational Review Board, Massachusetts Department of Public Health
2010-	CDC Special Emphasis Panel, Emerging Infections Program, Enhancing Epidemiology and Laboratory Capacity

**Professional Societies:**

1987	Infectious Disease Society of America, Fellow
1988	Massachusetts Infectious Disease Society, Member
1989	Lancefield Society, President (Secretary-Treasurer, 1997-2001, President 2002-4)
1991	American Society for Microbiology, Member
1992	American Federation for Clinical Research, Member
1993	Pediatric Infectious Disease Society, Member
2002	International Society for Infectious Diseases, Member
2002	American College of Physicians - American Society of Internal Medicine, Fellow
2008	Massachusetts Medical Society
2008	Council of State and Territorial Epidemiologists

**Editorial Boards:**

1993-1999	Editorial board member, <i>Molecular Biotechnology</i>
1999-2009	Editorial board member, <i>Journal of Clinical Microbiology</i>
2002-	Editor, <i>ProMED-mail</i> (Program for Monitoring Emerging Diseases)

#### **Awards and Honors:**

1978	Magna cum Laude, Yale University
1978	Distinction in Biology, Yale University (Departmental Honors)
1981	Alpha Omega Alpha, Tufts University School of Medicine
1989	Individual National Research Service Award, National Institute of Allergy and Infectious Diseases
1990	Burroughs-Wellcome Fund/National Foundation for Infectious Disease, Young Investigator's Award
1990	Individual Physician Scientist Award, National Institute of Allergy and Infectious Diseases
1998	Elected to Fellow, Infectious Disease Society of America
2004	Elected to Fellow, American College of Physicians
2009	“Top reviewers” <i>Annals of Internal Medicine</i>

#### **Research Funding Information:**

##### Past:

1988-1990	NIH (F32)	PI	Individual National Research Scientist Award “C protein antigens of group B Streptococcus.”
1990-1995	NIH (K08)	PI	Individual Physician Scientist Award “C Proteins in immunity to group B streptococcal infection.”
1998-2000	Rhône-Poulenc Rorer	PI	Open Study of Synercid for Emergency Use (Infections due to resistant bacteria, treatment failure or treatment-intolerant patients.)

1999-2001	NIH/NIAID (R01)	PI	Genetics of alpha C proteins of group B streptococci
1997-2002	NIH (N01)	Investigator	The Streptococcal Initiative (Kasper DL, PI) Vaccine Development/Immunology Reference Lab
2002-2007	NIH (N01)	Investigator	Prevention of Group B Streptococcal Disease (Kasper DL, PI)
1996-2007	NIH (R01)	PI	Group B streptococcal surface proteins in immune evasion
2006-2008	NIH (R56)	PI	Group B streptococcal surface proteins in immune evasion
2000	Microscience Ltd.	PI	Testing of group B streptococcal vaccine candidates in a maternal immunization/neonatal mouse challenge model
2003-2008	NIH (R01)	Investigator	Bacterial Vaccine Antigen Discovery (Paoletti LC, PI)
2004-2008	NIH (U01)	Investigator	Development of a global GBS vaccine (Paoletti, LC, PI)
2007-2012	NIH (R01)	Investigator	Nanoscale Electrostatic Assemblies for Multi-Agent Drug Delivery from Orthopedic Implant Surfaces (Hammond, P, PI)
2008-2010	Brigham & Women's	PI	Clinical Innovation Grant: Global Travel Health
2007-2010	Rockefeller	PI	Enhancing Global Infectious Disease Surveillance: Collaboration between the International Society for Infectious Diseases and Mekong Basin Disease Surveillance Collaboration
2008-2011	Google.org	Co-PI	ProMED and HealthMap: Enhancing Emerging Disease Detection and Surveillance through Collaboration
2010-2011	Gates Foundation	Site PI	Project to Support Public Confidence in Immunization Programs



(Prime Imperial College London)

Current:

2009-2018	Metabiota, Inc	PI Subagreement on USAID PREDICT project; Emerging Pandemic Threats Program
2013-2016	Skoll Global Threats Fund	PI Subagreement to TEPHINET for ProMED. Joint Proposal to Build a Cadre of Highly Qualified Field Epidemiologists to Enhance the Detection and Validation of Emerging Disease Outbreaks

### **Report of Current Research Activities:**

1. Bacterial diseases and pathogenesis
2. Bacterial vaccines
3. Group B streptococcal infections
4. Surveillance and detection of emerging infectious diseases

### **Report of Teaching:**

#### **Local contributions**

1987-96	Pathophysiology of Infectious Diseases, Harvard Medical School, Boston, MA Laboratory and Small Group Instructor Approximately 15 Medical students 20 hours contact time 10 hours preparation time annually
1989-98	Infectious Diseases Course for Fourth Year Medical Students, Harvard Medical School, Boston, MA Lecturer 50 medical students 2 hours contact time 2 hours preparation time annually
1989-98	Infectious Disease Consult Service, Beth Israel Deaconess Medical Center, Harvard Medical School Attending Physician 1-2 Infectious Disease Fellows 1-2 Residents, 1-2 medical students 150 hours contact time 75 hours preparation time annually

1990-91	Longwood Medical Area Combined Infectious Disease Conference Course Director 50 attending physicians, 20 Infectious disease fellows 60 hours contact time, 30 hours preparation time
1990-98	Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School Attending Physician 6-8 Medicine residents 2-3 medical students 35 hours contact time 20 hours preparation time annually
1996-2002	Tutor, Harvard Medical School, Identity, Microbes & Infectious Diseases, (1st year medical school course, HMS IN704.0) 12 students 30 hours contact time 30 hours preparation time
1997-2001	Case Author and Editor, Harvard Medical School, Identity, Microbes & Infectious Diseases, (1st year medical school course, HMS IN704.0) 150 Medical Students 100 hours preparation time annually
1998	Tutorial Director, Harvard Medical School, Identity, Microbes & Infectious Diseases, (1st year medical school course, HMS IN704.0) 150 Medical Students 100 hours preparation time annually
2001	Tutorial case editor, course planner, Harvard Medical School, Identity, Microbes & Infectious Diseases, (1st year medical school course, HMS IN704.0) 150 Medical Students 100 hours preparation time annually
2002	Infectious Disease Coordinator, Tutorial case editor, Tutor, Harvard Medical School, Identity, Microbes & Infectious Diseases, (1st year medical school course, HMS IN704.0) 150 Medical Students 100 hours preparation time annually
1999 -2008	Infectious Disease Consultation Service, Brigham and Women's Hospital Attending Physician (Clinical Infectious Diseases and Microbiology, ME513M.23) 1-2 Infectious Disease Fellows 1-2 Residents, 1-2 medical students 150 hours contact time 75 hours preparation time annually

- 2008- Infectious Disease Consultation Service, University of Massachusetts Medical Center  
Attending Physician  
1-2 Infectious Disease Fellows  
1-2 Residents, 1-2 medical students  
150 hours contact time  
75 hours preparation time annually
- 2009- Lecturer, “How the public health system works,” University of Massachusetts Medical Center  
Annual lecture  
6 Infectious disease fellows  
1 hour contact time  
6 hours preparation time
- 2009- Lecturer, “Streptococcal Diseases”, University of Massachusetts Medical Center  
Annual lecture  
6 Infectious disease fellows  
1 hour contact time  
6 hours preparation time
- 2011 Lecturer, “The Impact of Infectious Diseases on History and Society”, Harvard College Seminar
- 2013- Lecturer, “Infections from Bites and Burns”, University of Massachusetts Medical Center  
Annual lecture  
6 Infectious disease fellows  
1 hour contact time  
6 hours preparation time

#### **Local invited teaching presentations**

- 2004 Lecturer, Boston Bacterial Pathogenesis Seminar Series, Harvard Medical School
- 2004 Lecturer, Boston University School of Medicine, Department of Microbiology Seminar
- 2006 Lecturer, Jonathan Freeman Symposium, Harvard School of Public Health
- 2011 Lecturer, University Seminar on One Health, Tufts University, Medford, MA
- 2011 Discussant, Clinicopathologic Conference, Massachusetts General Hospital, Boston,

MA

- 2012      Lecturer, International Veterinary Forum, Cummings School of Veterinary Medicine, Tufts University, Grafton, MA
- 2012      Lecturer, Northeast Association for Clinical Microbiology and Infectious Disease, Annual Meeting, Boxborough, MA

### **Continuing Medical Education Courses**

- 1997-1999      Faculty, Harvard Medical School Continuing Medical Education Course, HIV Update: Contemporary Issues in Management. Beth Israel Deaconess Medical Center.  
100 physicians  
1 hour contact time  
8 hours preparation time annually
- 2000-2002      Faculty, Harvard Medical School, Brigham & Women's Hospital, Office Practice of Primary Care Medicine, Health Care of Travelers.  
CME course  
100 Physicians, 3 hours contact time, 20 hours preparation time
- 2001-2002      Faculty, Harvard Medical School, Brigham & Women's Hospital, Infectious Disease in Primary Care: Office and Hospital Practice, Lecturer, Travel Medicine.  
CME course  
150 Physicians, 1 hour contact time
- 2006      Faculty, Harvard Medical School, Brigham & Women's Hospital, Infectious Disease in Primary Care: Office and Hospital Practice, Lecturer, Travel Medicine.  
CME course  
150 Physicians, 1 hour contact time
- 2007      Faculty, Harvard Medical School, Brigham & Women's Hospital, Office Practice of Primary Care Medicine, Lecturer, Travel Medicine.  
CME course  
100 Physicians, 2 hour contact time, 20 hours preparation time
- 2008      Faculty, Harvard Medical School, Brigham & Women's Hospital, Office Practice of Primary Care Medicine, Lecturer, Travel Medicine.  
CME course  
100 Physicians, 2 hour contact time, 20 hours preparation time
- 2009      Faculty, Harvard Medical School, Brigham & Women's Hospital, Infectious Disease in Primary Care: Office and Hospital Practice, Lecturer, Travel Medicine.

- CME course  
150 Physicians, 1 hour contact time
- 2009 Faculty, Harvard Medical School, Brigham & Women's Hospital, Office Practice of Primary Care Medicine, Lecturer, Travel Medicine.  
CME course  
100 Physicians, 2 hour contact time, 20 hours preparation time
- 2012- Faculty, "Vaccines for International Travel" Massachusetts Immunization Action Program, 50 participants, 1 hour contact time, 10 hours preparation time

### **Advisory and Supervisory Responsibilities**

- 1992-2008 Laboratory Supervisor for Postdoctoral Fellows, Channing Laboratory, Brigham and Women's Hospital  
1-3 Postdoctoral Fellows, 100 hours contact time per Postdoctoral Fellow
- 1995-98 Housestaff Advisor, Beth Israel Deaconess Medical Center  
1 Medical intern  
10 hours contact time annually
- 2000 Housestaff Research Mentor, Brigham & Women's Hospital.  
1 Resident, 5 months, approx 100 hours contact time
- 2009- Mentor, Graduate School of Biomedical Sciences, University of Massachusetts, Worcester, MA, 1 Graduate Student, 100 hours contact time.

### **Names of advisees and trainees**

Duration of Training	Name	Current Position
1992-1993	Deborah Horensky, MD	Director, New Mexico State Dept of Public Health, Microbiology Laboratory
1993-1996	Claudia Gravekamp, PhD	Assistant Professor of Medicine, University of Texas Health Science Center
1994-1996	Catherine Lachenauer, MD	Assistant Professor of Pediatrics, Children's Hospital, Harvard Medical School
1997-2005	Karen M. Puopolo, MD, PhD	Assistant Professor in Pediatrics, Children's Hospital, Harvard Medical School

1999-2007	Gilles R. Bolduc, PhD	Senior Scientist, Cequent Pharmaceuticals Cambridge, Massachusetts
2001-2008	Miriam J. Baron, MD	Assistant Professor of Medicine, Brigham & Women's Hospital, Harvard Medical School
2004-2007	Sandra Wong, MD	Medical Resident, Cleveland Clinics
2005-2006	Munirih Qualls	Student, Harvard Medical School
2005- 2007	Elizabeth Case	Student, Univ Tennessee College of Medicine
2009- 2013	Hilary Placzek	Epidemiologist, Healthpoint systems, Andover, MA

### **Regional, National, and International Contributions:**

#### **Invited Presentations:**

- 1993, Session Chairman, Lancefield International Society Meeting, St. Petersburg, Russia
- 1999 Lecturer, Medical Grand Rounds, Brigham and Women's Hospital, Boston, MA,
- 2000 Lecturer, Microscience Ltd. London, U.K.
- 2001 Lecturer, Chiron Vaccines, Siena Italy,
- 2001 Session Chairman and Moderator, Infectious Disease Society of America, San Francisco.
- 2003 Lecturer, Mekong Basin Disease Surveillance Group, Vientiane, Lao PDR
- 2004 Session Chairman, International Society for Infectious Diseases, Cancun, Mexico
- 2004 Lecturer, Interscience Conference on Antimicrobial Agents and Chemotherapy, American Society for Microbiology, Washington, DC
- 2004 Lecturer, Meeting of the States Parties to the Biological and Toxin Weapons Convention, United Nations, Geneva, Switzerland
- 2004 Lecturer, Infectious Diseases and Microbiology Conference, Mt. Sinai School of Medicine, New York, NY

- 2005 Lecturer, International Conference on Biosafety and Biorisks, Lyon, France
- 2005 Scientific Program Committee, International Conference on Emerging Infectious Diseases, Centers for Disease Control and Prevention, Atlanta
- 2005 Lecturer, Global Health Leadership Forum, Conference on the Revised International Health Regulations, Taipei, Taiwan
- 2005 Lecturer, Ministry of Public Health, Bangkok, Thailand
- 2006 Session Moderator, International Conference on Emerging Infectious Diseases, Atlanta
- 2006 Session Chair, International Congress on Infectious Diseases, Lisbon, Portugal
- 2006 Lecturer, University of Pierre et Marie Curie, Epidemiology Program Retreat, St. Malo, France.
- 2007 Chair, Scientific Program Committee, International Meeting on Emerging Diseases and Surveillance, Vienna, Austria
- 2007 Scientific Program Committee, International Conference on Emerging Infectious Diseases 2008, Centers for Disease Control and Prevention, Atlanta
- 2007 Lecturer, Cummings Veterinary School of Tufts University, Grafton, Massachusetts, One Health Symposium
- 2007 Lecturer, Annual Meeting of the American Society of Tropical Medicine and Hygiene, Philadelphia
- 2008 Lecturer, Georgetown University, Program in Biohazardous Threat Agents & Emerging Infectious Diseases, Washington, DC
- 2008 Session Chair, Hot Topics in Infectious Disease, 13<sup>th</sup> International Congress on Infectious Diseases, Kuala Lumpur, Malaysia
- 2009 Chair, Scientific Program Committee, International Meeting on Emerging Diseases and Surveillance, Vienna, Austria
- 2009 Medical Grand Rounds, Massachusetts General Hospital, Boston, MA, H1N1 Influenza
- 2009 Cable Television report with Senator Scott Brown, H1N1 Influenza Update.
- 2010 Scientific Program Committee and Session Chair, International Conference on Emerging Infectious Diseases 2010, Centers for Disease Control and Prevention,

Atlanta

- 2010 Lecturer, Georgetown University, Program in Biohazardous Threat Agents & Emerging Infectious Diseases, Washington, DC
- 2011 Chair, Scientific Program Committee, International Meeting on Emerging Diseases and Surveillance, Vienna, Austria
- 2011 American Academy of Microbiology, Symposium on Point of Care Diagnostics, Fondation Merieux, Annecy, France
- 2012 Organizing Committee Member and Invited Speaker, 2012 Harvard International Conference on Digital Disease Detection, Boston, MA
- 2012 ASM International Speaker, International Congress on Infectious Diseases, Bangkok, Thailand
- 2012 Plenary Speaker, Launch of Centre for Infectious Disease Epidemiology Research (CIDER), National University of Singapore
- 2013 Scientific Program Committee Chair; Symposium speaker, Session chair, International Meeting on Emerging Diseases and Surveillance (IMED 2013), Vienna, Austria
- 2013 Panelist/speaker, White House conference on “Big Data”, Washington, DC
- 2014 Scientific Program Committee Chair; Session chair, International Meeting on Emerging Diseases and Surveillance (IMED 2014), Vienna, Austria

## **Report of Clinical Activities**

My current clinical activities include attending on the inpatient Infectious Disease Consult Service at University of Massachusetts Memorial Medical Center. This involves consultation in the management of frequently complex infectious disease issues of medical, surgical and obstetric patients, many of whom are critically ill, as well as the supervision and teaching of Infectious Disease fellows, medical students, and residents. I attend for three to four weeks each academic year. In addition, I see follow-up and new patients in the outpatient Infectious Disease clinic. In addition to general infectious diseases, my special areas of interest include bacterial infections, vaccines, emerging infectious diseases, and travel and geographic medicine.



As the Editor of ProMED-mail (the Program for Monitoring Emerging Diseases) since 2002, I oversee a network of more than 45 health professionals around the world that is dedicated to rapid global dissemination of information on outbreaks of infectious diseases and acute exposures to toxins that affect human health, including those in animals and in plants grown for food or animal feed. Electronic communications enable ProMED-mail to provide up-to-date and reliable news about threats to human, animal, and food plant health around the world, seven days a week. More than 55,000 subscribers in nearly every country, including at every level of the official public health system, depend on ProMED-mail reports.

## BIBLIOGRAPHY

### Original Articles:

1. Squires KE, Murphy W, Madoff L, Murray HW. Interferon gamma and Mycobacterium avium-intracellulare infection. J Infect Dis 1989;159(3):599-600.
2. Madoff LC, Michel JL, Kasper DL. A monoclonal antibody identifies a protective C-protein alpha-antigen epitope in group B streptococci. Infect Immun 1991;59(1):204-210.
3. Michel JL, Madoff LC, Kling DE, Kasper DL, Ausubel FM. Cloned alpha and beta C protein antigens of group B streptococci elicit protective immunity. Infect Immun 1991;59(6):2023-2028.
4. Madoff LC, Hori S, Michel JL, Baker CJ, Kasper DL. Phenotypic diversity in the alpha C protein of group B *Streptococcus*. Infect Immun 1991;59(8):2638-2644.
5. Michel JL, Madoff LC, Olson K, Kling DE, Kasper DL, Ausubel FM. Large identical tandem repeating units in the C protein alpha antigen gene, *bca*, of group B streptococci. Proc Natl Acad Sci USA 1992;89: 10060-10064.
6. Madoff LC, Michel JL, Gong EW, Rodewald AK, Kasper DL. Protection of neonatal mice from group B streptococcal infection by maternal immunization with beta C protein. Infect Immun 1992; 60(12):4989-4994.
7. Hervás JA, González L, Gill J, Paoletti LC, Madoff LC, Benedi VJ. Neonatal group B streptococcal infection in Mallorca, Spain. Clin Infect Dis 1993;16:714-718.
8. Madoff LC, Paoletti LC, Tai JY, Kasper DL. Maternal immunization of mice with group B streptococcal type III polysaccharide-beta C protein conjugate elicits protective antibody to multiple serotypes. J Clin Invest 1994;94:286-292.
9. Madoff LC, Michel JL, Kling D, Gong EW, Kasper DL. Group B streptococci escape host immunity by deletion of tandem repeat elements of the alpha C protein. Proc Natl Acad Sci USA

1996; 93:4131-4136.

10. Gravekamp C, Horensky DS, Michel JL, Madoff LC. Variation in repeat number within the alpha C protein of group B *Streptococcus* alters antigenicity and protective epitopes. *Infect Immun* 1996; 64:3576-3583.
11. Lachenauer CS, Madoff LC. A protective surface protein from type V group B streptococci shares N-terminal sequence homology with the alpha C protein. *Infect Immun* 1996; 64:4255-4260.
12. Kling DE, Gravekamp C, Madoff LC, Michel JL. Characterization of two distinct opsonic and protective epitopes within the alpha C protein of group B *Streptococcus*. *Infect Immun* 1997; 65: 1462-1467.
13. Lachenauer CS, Madoff LC. Cloning and expression in *Escherichia coli* of a protective surface protein from type V group B streptococci. *Adv Exp Med Biol.* 1997; 418:615-8.
14. Gravekamp C, Kasper DL, Madoff LC. Immunization with a single-repeat alpha C protein may prevent escape of lower repeat mutants of group B *Streptococcus*. *Adv Exp Med Biol.* 1997; 418:855-7.
15. Gravekamp C, Kasper DL, Michel JL, Kling DE, Carey V, Madoff LC. Immunogenicity and protective efficacy of the alpha C protein of group B *Streptococcus* are inversely related to repeat number. *Infect Immun* 1997; 65:5216-5221.
16. Gravekamp C, Rosner B, Madoff LC. Deletion of repeats in the alpha C protein enhances pathogenicity of group B streptococci in immune mice. *Infect Immun* 1998; 66:4347-4354.
17. Lachenauer CS, Kasper DL, Shimada J, Ichiman Y, Ohtsuka H, Kaku M, Paoletti LC, Ferrieri P, Madoff LC. Serotypes VI and VIII predominate among group B streptococci isolated from pregnant Japanese women. *J Infect Dis* 1999; 179:1030-1033.
18. Huebner J, Wang Y, Krueger WA, Madoff LC, Matarosian G, Goldmann DA, Kasper DL, Tzianabos AO, Pier GB. Isolation and chemical characterization of a capsular polysaccharide antigen shared by clinical isolates of *Enterococcus faecalis* and vancomycin-resistant *Enterococcus faecium*. *Infect Immun* 1999; 67:1213-1219.

19. Gravekamp C, Kasper DL, Paoletti LC, Madoff LC. Alpha C protein as a carrier protein for the type III group B streptococcal polysaccharide. *Infect Immun* 1999; 67:2491-2496.
20. Kling DE, Madoff LC, Michel JL. Subcellular fractionation of group B *Streptococcus*. *Biotechniques* 1999; 27:24-28.
21. Davies JK, Paoletti LC, McDuffie RS, Madoff LC, Lee S, Eskens J, Gibbs RS. A randomized trial of conjugated Ia group B streptococcal vaccine in a rabbit model of ascending infection. *Am J Obstet Gynecol* 1999; 181:803-8 .
22. Ross RA, Madoff LC, Paoletti LC. Regulation of cell component production by growth rate in group B *Streptococcus*. *J Bacteriol* 1999; 181:5389-94 .
23. Lachenauer C, Creti R, Michel JL, Madoff LC. Mosaicism in the alpha-like protein genes of group B streptococci. *Proc Natl Acad Sci USA* 2000; 97:9630-35.
24. Puopolo KP, Hollingshead SK, Carey VJ, Madoff LC. Tandem repeat deletion in the alpha C protein of group B *Streptococcus* is recA independent. *Infect Immun* 2001; 69:5037-5045.
25. Lachenauer CS, Baker CJ, Baron MJ, Kasper DL, Gravekamp C, Madoff LC. Quantitative determination of IgG to the group B streptococcal beta C protein in human maternal sera. *J Infect Dis* 2002; 185:368-74.
26. Tettelin H, Massignani V, Cieslewicz MJ, Eisen JA, Peterson S, Wessels MR, Paulsen IT, Nelson KE, Margarit I, Read TD, Madoff LC, Wolf AM, Beanan MJ, Brinkac LM, Daugherty SC, DeBoy RT, Durkin AS, Kolonay JF, Madupu R, Lewis MR, Radune D, Fedorova NB, Scanlan D, Khouri H, Mulligan S, Carty HA, Cline RT, Van Aken SE, Gill J, Scarselli M, Mora M, Iacobini ET, Brettoni, C, Galli G, Mariani M, Vegni F, Maione D, Rinaudo D, Rappuoli R, Telford JL, Kasper DL, Grandi G, Fraser CM. Complete genome sequence and comparative genomic analysis of an emerging human pathogen, serotype V *Streptococcus agalactiae*. *Proc Natl Acad Sci USA* 2002; 99:12391-6.

27. Bolduc GR, Baron MJ, Gravekamp C, Lachenauer CS, Madoff LC. The alpha C protein mediates internalization of group B *Streptococcus* within human cervical epithelial cells. *Cell Microbiol*, 2002; 4:751-8.
28. Puopolo KM, Madoff LC. Upstream short sequence repeats regulate expression of the alpha C protein of group B *Streptococcus*. *Molec Micro* 2003; 50: 977-91.
29. Mikamo H, Johri AK, Paoletti LC, Madoff LC, Onderdonk AB. Adherence to, invasion by, and cytokine production in response to serotype VIII group B streptococci. *Infect Immun* 2004; 72:4716-22.
30. Baron MJ, Bolduc GR, Goldberg MB, Auperin TC, Madoff LC. Alpha C protein of group B *Streptococcus* binds host cell surface glycosaminoglycan and enters cells by an actin-dependent mechanism. *J Biol Chem* 2004; 279: 24714-23.
31. Puopolo KM, Madoff LC, Eichenwald EC. Early-onset group B streptococcal disease in the era of maternal screening. *Pediatrics* 2005; 115(5):1240-6.
32. Aupérin TC, Bolduc GR, Baron MJ, Heroux A, Filman DJ, Madoff LC, Hogle JM. Crystal structure of the N-terminal domain of the group B *Streptococcus* alpha C protein. *J Biol Chem* 2005; 280(18):18245-52.
33. Maione D, Margarit I, Rinaudo CD, Massignani V, Mora M, Scarselli M, Tettelin H, Brettoni C, Iacobini ET, Rosini R, D'Agostino N, Miorin L, Buccato S, Mariani M, Galli G, Nogarotto R, Nardi Dei V, Vegni F, Fraser C, Mancuso G, Teti G, Madoff LC, Paoletti LC, Rappuoli R, Kasper DL, Telford JL, Grandi G. Identification of a universal Group B streptococcus vaccine by multiple genome screen. *Science* 2005; 309(5731):148-50.
34. Tettelin H, Massignani V, Cieslewicz MJ, Donati C, Medini D, Ward NL, Angiuoli SV, Crabtree J, Jones AL, Durkin AS, Deboy RT, Davidsen TM, Mora M, Scarselli M, Margarit Y Ros I, Peterson JD, Hauser CR, Sundaram JP, Nelson WC, Madupu R, Brinkac LM,

Dodson RJ, Rosovitz MJ, Sullivan SA, Daugherty SC, Haft DH, Selengut J, Gwinn ML, Zhou L, Zafar N, Khouri H, Radune D, Dimitrov G, Watkins K, O'connor KJ, Smith S, Utterback TR, White O, Rubens CE, Grandi G, Madoff LC, Kasper DL, Telford JL, Wessels MR, Rappuoli R, Fraser CM. Genome analysis of multiple pathogenic isolates of *Streptococcus agalactiae*: Implications for the microbial "pan-genome." *Proc Natl Acad Sci USA* 2005; 102(39):13950-5.

35. Ramaswamy SV, Ferrieri P, Madoff LC, Flores AE, Kumar N, Tettelin H, Paoletti LC. Identification of novel cps locus polymorphisms in nontypeable group B *Streptococcus*. *Journal Med Microbiol*. 2006; 55: 775-83.
36. Cowen P, Garland T, Hugh-Jones ME, Shimshony A, Handysides S, Kaye D, Madoff LC, Pollack MP, Woodall J. Evaluation of ProMED-mail as an electronic early warning system for emerging animal diseases: 1996 to 2004. *J Am Vet Assoc*. 2006; 229(7):1090-9.
37. Pannaraj PS, Kelly JK, Madoff LC, Rench RA, Lachenauer CS, Edwards MS, Baker CJ. Group B *Streptococcal* bacteremia elicits beta C protein-specific IgM and IgG in humans. *J Infect Dis*. 2007; 195(3):353-6.
38. Puopolo KM, Madoff LC. Type IV Neonatal Early-Onset group B streptococcal disease in an United States hospital. *J Clin Microbiol* 2007. 45(4):1360-2.
39. Baron MJ, Filman DJ, Prophete G, Hogle JM, Madoff LC. Identification of a glycosaminoglycan-binding region of the alpha C protein that mediates entry of group B streptococci into host cells. *J Biol Chem* 2007. Apr; 282(14):10526-36.
40. Yang HH, Madoff LC, Guttormsen HK, Liu YD, Paoletti LC. Recombinant group B streptococcal beta C protein and its IgA-binding deleted variant are protective mouse maternal vaccines and effective carriers in conjugate vaccines. *Infect Immun* 2007; 75(7):3455-61.

41. Bolduc GR, Madoff LC. The group B streptococcal alpha C protein binds  $\alpha 1\beta 1$ -integrin through a novel KTD motif that promotes internalization of GBS within human epithelial cells. *Microbiology* 2007; 153(12):3954-3962.
42. Panaraj PS, Kelly JK, Rench MA, Madoff LC, Edwards MS, Baker CJ. Alpha C protein-specific immunity in humans with group B streptococcal colonization and invasive disease. *Vaccine* 2008; 26(4):502-508.
43. Yang H-H, Mascuch S, Madoff LC and LC Paoletti. 2008. Recombinant group B streptococcal alpha-like protein 3 is an effective immunogen and carrier protein. *Clin Vaccine Immunol* 2008; 15 (7) : 1035-41.
44. Kling DE, Cavicchio AJ, Sollinger CA, Madoff LC, Schnitzer JJ, Kinane TB. Lactic acid is a potential virulence factor for group B *Streptococcus*. *Microb Pathog* 2009; 46(1):43-52
45. Baron MJ, Wong SL, Nybakken K, Carey VJ, Madoff LC. Host glycosaminoglycan confers susceptibility to bacterial infection in *drosophila*. *Infect Immun* 2009;77(2):860-6.
46. Klinzing DC, Madoff LC, Puopolo KM. Genomic analysis identifies a transcription-factor binding motif regulating expression of the alpha C protein in group B *Streptococcus*. *Microb Pathog* 2009; *Microb Pathog*. 2009;46(6):315-20.
47. Brownstein JS, Freifield CC, Madoff LC. Digital disease detection — Harnessing the web for public health surveillance. *N Engl J Med* 2009; 360(21):2153-5.
48. Brownstein JS, Freifield CC, Madoff LC. Influenza A (H1N1) virus, 2009--online monitoring. *N Engl J Med* 2009;360(21):2156.
49. Hartley D, Nelson N, Walters R, Arthur R, Yangarber R, Madoff L, Linge J, Mawudeku A, Collier N, Brownstein J, Thinus G, Lightfoot N. The Landscape of International Event-based Biosurveillance. *Emerg Health Threats J*. 2010;3:e3.

50. Madoff LC, Brownstein JS. Rumors of pandemic: Monitoring emerging disease outbreaks on the Internet. In: *The Domestic and International Impacts of the 2009-H1N1 Influenza A Pandemic: Global Challenges, Global Solutions*. National Academies Press. Washington DC, 2010:269-282
51. Mayo L, Dionne-Odom J, Talbot EA, Adamski C, Bean C, Daly ER, Gao F, Gougelet R, Montero J, Morse D, Smith J, Berry R, McGarry F, Wimsatt M, Stamm L, Madoff L, Gauthier C, Nalipinski M, Hoffmaster AR, Shadomy SV, Pesik NT, Smith TL, Rose LJ, Martinez K, Burrer SL, Stauffer K. Gastrointestinal anthrax after an animal-hide drumming event – New Hampshire and Massachusetts, 2009. *MMWR* 2010 (59):872-877.
52. Chan EH, Brewer TF, Madoff LC, Pollack MP, Sonricker AL, Keller M, Freifeld CC, Blench M, Mawudeku A, Brownstein JS. Global capacity for emerging infectious disease detection. *Proc Natl Acad Sci U S A*. 2010 Dec 14;107(50):21701-6.
53. Placzek H, Madoff LC. The use of immunization registry-based data in vaccine effectiveness studies. *Vaccine*. 2011 Jan 10;29(3):399-411.
54. Madoff LC, Fisman DN, Kass-Hout T. A new approach to monitoring dengue activity. *PLoS Negl Trop Dis*. 2011 May;5(5):e1215.
55. Ryan ET, Madoff LC, Ferraro MJ. Case 20-2011: A 30-year-old man with diarrhea after a trip to the Dominican Republic. *Case Records of the Massachusetts General Hospital*. *N Eng J Med*. 2011; 364: 2536-41.
56. Lipsitch M, Finelli L, Heffernan RT, Leung GM, Redd SC; 2009 H1N1 Surveillance Group. (Madoff LC member of H1N1 Surveillance Group). Improving the evidence base for decision making during a pandemic: the example of 2009 influenza A/H1N1. *Biosecur Bioterror*. 2011 Jun;9(2):89-115.



57. Newton AE, Heiman KE, Schmitz A, Török T, Apostolou A, Hanson H, Gounder P, Bohm S, Kurkjian K, Parsons M, Talkington D, Stroika S, Madoff LC, Elson F, Sweat D, Cantu V, Akwari O, Mahon BE, Mintz ED. Cholera in United States associated with epidemic in Hispaniola. *Emerg Infect Dis*. 2011 Nov; [Epub ahead of print]
58. Placzek H, Madoff L. Identification of Influenza Cases During the H1N1 Pandemic in Massachusetts Using Population-Based Hospital Discharge Data. *PLoS Curr*. 2011 Aug 14;3:RRN1256.
59. Fisher M, Henk D, Briggs C, Brownstein J, Madoff L, McCraw S, Gurr S. Emerging fungal threats to animal, plant and ecosystem health. *Nature*. 2012 April 12; 484: 186-194.
60. Mondor L, Brownstein JS, Chan E, Madoff LC, Pollack MP, Buckeridge DL, Brewer TF. Timeliness of nongovernmental versus governmental global outbreak communications. *Emerg Infect Dis*. 2012;18:1184-7.
61. Chan EH, Scales DA, Brewer TF, Madoff LC, Pollack MP, Hoen AS, Chodin T, Brownstein JS. Forecasting high-priority infectious disease surveillance regions: a socioeconomic model. *Clin Infect Dis* 2013 Feb;56(4):517-24.
62. Pollack MP, Pringle C, Madoff LC, Memish ZA. Latest outbreak news from ProMED-mail: Novel coronavirus - Middle East. *Int J Infect Dis* 2013 S1201-9712(12)01310-0.
63. Barboza P, Vaillant L, Mawudeku A, Nelson NP, Hartley DM, Madoff LC, Linge JP, Collier N, Brownstein JS, Yangarber R, Astagneau P. (2013) Evaluation of Epidemic Intelligence Systems Integrated in the Early Alerting and Reporting Project for the Detection of A/H5N1 Influenza Events. *PLoS ONE* 8(3): e57252
64. Larson HJ, Smith DMD, Paterson P, Cumming M, Eckersberger E, Freifeld CC, Ghinai I, Jarrett C, Paushter L, Brownstein JS, Madoff LC. Measuring vaccine confidence: analysis

of data obtained by a media surveillance system used to analyse public concerns about vaccines. *Lancet Infect Dis* 2013;13:606-13.

65. Hartley DM, Nelson NP, Arthur RR, Barboza P, Collier N, Lightfoot N, Linge JP, van der Goot E, Mawudeku A, Madoff LC, Vaillant L, Walters R, Yangarber R, Mantero J, Corley CD, Brownstein JS. An overview of Internet biosurveillance. *Clin Microbiol Infect.* 2013 May 24. doi: 10.1111/1469-0691.12273.
66. Klinzing DC, Nadeeza I, Dunning Hotopp JC, Tettelin H, Shields KR, Madoff LC, Puopolo KM. The two-component response regulator LiaR regulates cell wall stress responses, pili expression and virulence in group B *Streptococcus*. *Microbiology* 2013;159:1521-34.
67. Yih WK, Cocoros NM, Crockett M, Klompas M, Kruskal BA, Kulldorff M, Lazarus R, Madoff LC, Morrison MJ, Smole S, Platt R. Automated influenza-like illness reporting, an efficient adjunct to traditional sentinel surveillance. *Public Health Rep.* 2014 Jan-Feb;129(1):55-63.
68. Placzek H, Madoff LC. Effect of race/ethnicity and socioeconomic status on pandemic H1N1-related outcomes in Massachusetts. *Am J Pub Health* 2014 Jan;104(1)
69. Barboza P, Vaillant L, Le Strat Y, Hartley DM, Nelson NP, Mawudeku A, Madoff LC, Linge JP, Collier N, Brownstein JS, Astagneau P. Factors influencing performance of internet-based biosurveillance systems used in epidemic intelligence for early detection of infectious diseases outbreaks. *PLoS One.* 2014 Mar 5;9(3)
70. Bialek SR, Allen D, Alvarado-Ramy F, Arthur R, Balajee A, Bell D, Best S, Blackmore C, Breakwell L, Cannons A, Brown C, Cetron M, Chea N, Chommanard C, Cohen N, Conover C, Crespo A, Creviston J, Curns AT, Dahl R, Dearth S, DeMaria A, Echols F, Erdman DD, Feikin D, Frias M, Gerber SI, Gulati R, Hale C, Haynes LM, Heberlein-Larson L, Holton K, Ijaz K, Kapoor M, Kohl K, Kuhar DT, Kumar AM, Kundich M, Lippold S, Liu L, Lovchik JC, Madoff L, Martell S, Matthews S, Moore J, Murray LR, Onofrey S, Pallansch MA,

Pesik N, Pham H, Pillai S, Pontones P, Pringle K, Pritchard S, Rasmussen S, Richards S, Sandoval M, Schneider E, Schuchat A, Sheedy K, Sherin K, Swerdlow DL, Tappero JW, Vernon MO, Watkins S, Watson J; First confirmed cases of Middle East respiratory syndrome coronavirus (MERS-CoV) infection in the United States, updated information on the epidemiology of MERS-CoV infection, and guidance for the public, clinicians, and public health authorities - May 2014. *MMWR Morb Mortal Wkly Rep*. 2014 May 16;63(19):431-6.

71. Iroh Tam PY, Madoff LC, Coombes B, Pelton SI. Invasive Pneumococcal Disease After Implementation of 13-Valent Conjugate Vaccine. *Pediatrics*. 2014 Aug;134(2):210-7.
72. Placzek HE, Madoff LC. Association of Age and Comorbidity on 2009 Influenza A Pandemic H1N1-Related Intensive Care Unit Stay in Massachusetts. *Am J Public Health*. 2014 Nov;104(11):e118-25.
73. Iroh Tam PY, Coombes B, Madoff L, Pelton SI. Severity of invasive pneumococcal disease in children caused by susceptible and nonsusceptible isolates. *Pediatr Infect Dis J*. 2014 Nov;33(11):1206-7.
74. Iroh Tam PY, Madoff LC, O'Connell M, Pelton SI. Seasonal Variation in Penicillin Susceptibility and Invasive Pneumococcal Disease. *Pediatr Infect Dis J*. 2014 Nov 5.
75. Petersen E, Pollack MM, Madoff LC. Health-care associate transmission of Middle East Respiratory Syndrome Corona virus, MERS-CoV, in the Kingdom of Saudi Arabia. *Int J Infect Dis*. 2014 Dec;29:299-300.
76. Vayena E, Salathé M, Madoff LC, Brownstein JS. Ethical challenges of big data in public health. *PLoS Comput Biol*. 2015 Feb 9;11(2):e1003904.

#### **Proceedings of Meetings:**

1. Michel JL, Madoff LC, Kling DE, Kasper DL, Ausubel FM. The C proteins of group B *Streptococcus*. In: GM Dunny, PC Cleary, LL McKay, eds. *Streptococcal Genetics-1990*. Washington, D.C.: American Society for Microbiology, 1991; 214-218.
2. Madoff LC, Michel JL, Hori S, Ausubel FM, Kasper DL. The cloned and native beta antigens of the group B streptococcal C protein: role in protective immunity. In: G Orefici, ed. *New Perspectives on Streptococci and Streptococcal Infections*. Zbl. Bakt. Suppl. 22. Stuttgart, New York: Gustav Fisher Verlag, 1992; 363-365.
3. Michel JL, Madoff LC, Kling DE, Kasper DL, Ausubel FM. Characterization of the native and cloned C protein alpha antigens of group B *Streptococcus*. In: G Orefici, ed. *New Perspectives on Streptococci and Streptococcal Infections*. Zbl. Bakt. Suppl. 22. Stuttgart, New York: Gustav Fisher Verlag, 1992; 366-368.
4. Michel JL, Beseth BD, Madoff LC, Olken SK, Kasper DL, Ausubel FM. Two distinct classes of the C protein antigen of group B *Streptococcus* display phenotypic and genotypic diversity. *Infectious Diseases Society of America*, 1993.
5. Michel JL, Beseth BD, Madoff LC, Olken SK, Kasper DL, Ausubel FM. Genotypic diversity and evidence for two distinct classes of the C protein alpha antigen of group B *Streptococcus*. In: A. Tortoliani, ed. *Pathogenic Streptococci: Present and Future. Proceedings of the XIIth International Lancefield Symposium on Streptococci and Streptococcal Diseases*, St. Petersburg, Russia: Lancer Publications, 1994; 331-332.
6. Madoff LC, Paoletti LC, Tai JY, Kasper DL. Mouse maternal immunization with group B streptococcal type III polysaccharide-beta C protein conjugate elicits protective antibody to multiple serotypes. In: A. Tortoliani, ed. *Pathogenic Streptococci: Present and Future. Proceedings of the XIIth International Lancefield Symposium on Streptococci and Streptococcal Diseases*, St. Petersburg, Russia: Lancer Publications, 1994; 320-322.
7. Horensky DS, Michel DL, Ausubel FM, Kasper DL, Madoff LC. Constructs of group B streptococcal alpha C protein containing variable numbers of tandem repeats express immunoreactive protein products. In: A. Tortoliani, ed. *Pathogenic Streptococci: Present and Future. Proceedings of the XIIth International Lancefield Symposium on Streptococci and*

Streptococcal Diseases, St. Petersburg, Russia: Lancer Publications, 1994; 311-313.

8. Michel JL, Beseth BD, Madoff LC, Olken SK, Kasper DL, Ausubel FM. Two distinct classes of the C protein antigen of group B *Streptococcus* display phenotypic and genotypic diversity. Infectious Diseases Society of America, 1993.
9. Kasper DL, Paoletti LC, Madoff LC, Michel JL, Jennings HJ, Wessels MR. Glycoconjugate vaccines for the prevention of group B streptococcal infections. In: Vaccines 94: Modern Approaches to New Vaccines Including Prevention of AIDS. Norrby E, et al., eds. Cold Spring Harbor Laboratory Press, Plainview NY, 1994; 113-117.
10. Madoff LC, Paoletti LC, Michel JL, Gong EW, Kasper DL. Synthesis of a type III polysaccharide-recombinant alpha C protein conjugate vaccine for prevention of group B streptococcal infection. Clin Infect Dis, 1994; 19:602.
11. Baron MJ, Baker CJ, Lachenauer CS, Kasper DL, Madoff LC. Epitope mapping of the beta C protein of group B *Streptococcus*. (Abstract) Clin Infect Dis 2001; 33:1188.
12. Puopolo KM, Madoff LC, Eichenwald EC. Early-Onset Group B Streptococcal Disease in the Era of Maternal Screening. In: Obstet Gynecol Surv; 2005. p. 637-639.
13. Tolentino H, Kamadjeu R, Fontelo P, Liu F, Matters M, Pollack M, Madoff L. Scanning the Emerging Infectious Diseases Horizon - Visualizing ProMED Emails Using EpiSPIDER. Advances in Disease Surveillance 2007; 2:169. URL: <<http://www.isdsjournal.org/article/view/916/655>>

### **Reviews and Educationally Relevant Publications:**

1. Madoff LC. (Case presentation) Infectious Disease Rounds: Headache, fever and periorbital edema. Rev. Infect. Dis. 1987; 9:804-9.
2. Madoff LC. Infectious diseases in surgical patients. In: Handbook of Post-Anesthesia Nursing. Luzcun ME, ed. 1987, Rockville MD, 291-309.
3. Madoff LC, Kasper DL. Group B streptococcal disease. In: Obstetric and Perinatal Infection.

(Handbook of Infectious Diseases). Charles DM, ed. 1993, B.C. Decker, Inc., Philadelphia, 210-224.

4. Madoff LC, Kasper DL. Clinical care guidelines commentary: Prevention strategies for neonatal group B streptococcal infections. *Abst Clin Care Guidelines* 1993; 5:10-11.
5. Madoff LC, Kasper DL. Introduction to infectious disease: host-parasite interaction. In: Harrison's Principles of Internal Medicine, Isselbacher KJ, et al., eds. McGraw Hill, Inc., New York, 1994; 485-9.
6. Madoff LC, Kasper DL. (Ch. 6, 42, 43, 45, 47, 50, 52, 53, 56). In: Isselbacher KJ, Braunwald E, Wilson JD, Martin JB, Fauci AS, Kasper DL, eds. *Harrison's Principles of Internal Medicine*, 13th ed., Companion handbook. New York: McGraw-Hill, 1994.
7. Lachenauer CS, Madoff LC. Group B streptococcal infections in nonpregnant adults. (Editorial) *Infectious Diseases in Clinical Practice*. 1996; 5:560-2.
8. Madoff LC, Kasper DL. Introduction to infectious disease: host-parasite interaction. In: Harrison's Principles of Internal Medicine, Fauci AS, et al., eds. McGraw Hill, Inc., New York, 1997; 749-754.
9. Madoff LC. Infections from bites, scratches and burns. In: Harrison's Principles of Internal Medicine, Fauci AS, et al., eds. McGraw Hill, Inc., New York, 1997; 835-839.
10. Madoff LC. Microbiology and Epidemiology of Group B Streptococcal Infection. In: Rose B, ed. UpToDate in Medicine. CD-ROM, 6:1; 1998.
11. Puopolo KM, Madoff LC. Group B streptococcal infections in neonates and the peripartum period. UpToDate in Medicine. CD-ROM, 7:3; 1999.
12. Paoletti LC, Madoff LC, Kasper DL. Surface structures of group B *Streptococcus* important in human immunity. In Fischetti VA, et al., ed. *Gram-Positive Pathogens*. American Society for Microbiology, Washington, DC, 2000,137-53.
13. Johannsen EC, Sifri CD, Madoff LC. Pyogenic Liver Abscesses. *Infectious Disease Clinics*

of North America. 2000, 14:547-63.

14. Paoletti LC, Madoff LC, Baker CJ. Vaccines for the prevention of group B streptococcal disease. UpToDate in Medicine. CD-ROM, 2001.
15. Madoff LC, Kasper DL. Introduction to infectious diseases: host-parasite interaction. In: Braunwald E, et al., eds. Harrison's Principles of Internal Medicine, New York: McGraw-Hill 2001, 763-767.
16. Madoff LC. Infectious complications of bites and burns. In: Braunwald E, et al., eds., Harrison's Principles of Internal Medicine, 15th ed. McGraw Hill, Inc., New York, 2001, 817-820.
17. Baron M, Madoff LC. Group B streptococcal infections in nonpregnant adults. UpToDate in Medicine. CD-ROM, 2002.
18. Paoletti LC, Madoff LC. Vaccines to prevent neonatal group B streptococcal infection. Seminars in Neonatology. 2002, 7:315-322.
19. Kaye D, Handysides S, Madoff L, Pollack M, Woodall J. ProMED-mail, SARS and other breaking reports. Infectious Disease News. 2003.
20. Madoff LC. Infectious complications of bites and burns. In: Kasper DL, et al., eds., Harrison's Principles of Internal Medicine, 16th ed. McGraw Hill, Inc., New York, 2004; online publication.
21. Madoff LC. ProMED-mail: An Early Warning System for Emerging Diseases. Clin Infect Dis. 2004; 39: 227-32.
22. Madoff LC, Kasper DL. Introduction to infectious disease: host-pathogen interactions. In: Kasper DL, et al., eds. Harrison's Principles of Internal Medicine, 16<sup>th</sup> ed. McGraw Hill, Inc., New York, 2005; 695-699.
23. Kasper DL, Madoff LC. Gas gangrene and other clostridial infections. In: Kasper DL, et al., eds. Harrison's Principles of Internal Medicine, 16<sup>th</sup> ed. McGraw Hill, Inc., New York, 2005;

845-849.

24. Madoff LC, Thaler SJ, Maguire JH. Infectious arthritis. In: Kasper DL, et al., eds. Harrison's Principles of Internal Medicine, 16<sup>th</sup> ed. McGraw Hill, Inc., New York, 2005; 2050-2055.
25. Sifri CD, Madoff LC. Appendicitis. In: Mandell GL, et al., eds. Principles and Practice of Infectious Diseases, 6<sup>th</sup> ed. Elsevier Science, Philadelphia, 2005; 968-971.
26. Sifri CD, Madoff LC. Diverticulitis and typhlitis. In: Mandell GL, et al., eds. Principles and Practice of Infectious Diseases, 6<sup>th</sup> ed. Elsevier Science, Philadelphia, 2005; 971-974.
27. Baron MJ, Madoff LC. Pancreatic infection. In: Mandell GL, et al., eds. Principles and Practice of Infectious Diseases, 6<sup>th</sup> ed. Elsevier Science, Philadelphia, 2005; 959-966.
28. Madoff LC. Splenic abscess. In: Mandell GL, et al., eds. Principles and Practice of Infectious Diseases, 6<sup>th</sup> ed. Elsevier Science, Philadelphia, 2005; 967-968.
29. Johannsen EC, Madoff LC. Infections of the liver and biliary system. In: Mandell GL, et al., eds. Principles and Practice of Infectious Diseases, 6<sup>th</sup> ed. Elsevier Science, Philadelphia, 2005; 951-958.
30. Madoff LC. Immunity to group A streptococcal M proteins: forging a single-edged sword. *Clin Infect Dis* 2005; 41(8):1123-4.
31. Madoff LC, Woodall JP. The Internet and the Global Monitoring of Emerging Diseases: Lessons from the First 10 Years of ProMED-mail. *Arch Med Res* 2005; 36(6): 724-730.
32. Madoff LC, Paoletti LC, Kasper DL. Surface Structures of Group B Streptococci Important in Human Immunity. In Fischetti VA, et al., ed. *Gram-Positive Pathogens*. American Society for Microbiology, Washington, DC, 2006, 169-185.
33. Madoff L. Cooperation between animal and human health sectors is key to the detection, surveillance, and control of emerging disease: IMED 2007 meeting in Vienna, February 2007. *Euro Surveill* 2006;11(12):E061221.4. Available from: <http://www.eurosurveillance.org/ew/2006/061221.asp#4>



34. Puopolo KM, Madoff LC, Baker CJ. Group B streptococcal infection in neonates and young infants. In: UpToDate, Rose, BD (Ed), UpToDate, Waltham, MA, 2008.
35. Madoff LC. Infectious arthritis. In: Fauci AS, et al., eds. Harrison's Principles of Internal Medicine, 17<sup>th</sup> ed. McGraw Hill, Inc., New York, 2008,
36. Kasper DL, Madoff LC. Gas gangrene and other clostridial infections. In: Fauci AS, et al., eds. Harrison's Principles of Internal Medicine, 17<sup>th</sup> ed. McGraw Hill, Inc., New York, 2008,
37. Madoff LC, Kasper DL. Introduction to infectious disease: host-pathogen interactions. In: Fauci AS, et al., eds. Harrison's Principles of Internal Medicine, 16<sup>th</sup> ed. McGraw Hill, Inc., New York, 2008.
38. Madoff LC, Pereyra F. Infectious Complications of Burns and Bites. in AS Fauci, E Braunwald, DL Kasper, SL Hauser, DL Longo, JL Jameson, J Loscaizo (eds), Harrison's Online. Accessed February 1, 2008.  
<http://www.accessmedicine.com/content.aspx?aID=2885387>
39. Sifri CD, Madoff LC. Appendicitis. In: Mandell GL, et al., eds. Principles and Practice of Infectious Diseases, 6<sup>th</sup> ed. Elsevier Science, Philadelphia, 2005; 968-971.
40. Sifri CD, Madoff LC. Diverticulitis and typhlitis. In: Mandell GL, et al., eds. Principles and Practice of Infectious Diseases, 6<sup>th</sup> ed. Elsevier Science, Philadelphia, 2005; 971-974.
41. Baron MJ, Madoff LC. Pancreatic infection. In: Mandell GL, et al., eds. Principles and Practice of Infectious Diseases, 6<sup>th</sup> ed. Elsevier Science, Philadelphia, 2005; 959-966.
42. Madoff LC. Splenic abscess. In: Mandell GL, et al., eds. Principles and Practice of Infectious Diseases, 6<sup>th</sup> ed. Elsevier Science, Philadelphia, 2005; 967-968.
43. Johannsen EC, Madoff LC. Infections of the liver and biliary system. In: Mandell GL, et al., eds. Principles and Practice of Infectious Diseases, 6<sup>th</sup> ed. Elsevier Science, Philadelphia, 2005; 951-958.

44. Baron M, Madoff LC. Group B streptococcal infections in nonpregnant adults. In: UpToDate, Rose, BD (Ed), UpToDate, Waltham, MA, 2011.
45. Puopolo KM, Madoff LC, Baker CJ. Group B streptococcal infection in pregnant women. In: UpToDate, Rose, BD (Ed), UpToDate, Waltham, MA, 2011.
46. Paoletti LC, Madoff LC, Baker CJ. Vaccines for the prevention of group B streptococcal disease. In: UpToDate, Rose, BD (Ed), UpToDate, Waltham, MA, 2011.
47. Madoff LC, Baker CJ. Group B streptococcus: Virulence factors and pathogenic mechanisms. In: UpToDate, Rose, BD (Ed), UpToDate, Waltham, MA, 2011.
48. Madoff LC. Infectious arthritis. In: Longo DL et al., et al., eds. Harrison's Principles of Internal Medicine, 18<sup>th</sup> ed. McGraw Hill, Inc., New York, 2012,
49. Madoff LC, Kasper DL. Introduction to infectious disease: host-pathogen interactions. In: Longo DL, et al., eds. Harrison's Principles of Internal Medicine, 18<sup>th</sup> ed. McGraw Hill, Inc., New York, 2012.
50. Madoff LC, Pereyra F. Infectious Complications of Burns. in Longo DL, et al. (eds), Harrison's Online. Accessed February 1, 2011.  
<http://www.accessmedicine.com/content.aspx?aID=9091927>
51. Madoff LC, Pereyra F. Infectious Complications of Bites. in Longo DL, et al. (eds), Harrison's Online. Accessed February 1, 2011.  
<http://www.accessmedicine.com/content.aspx?aID=9091955>
52. Cariello P. and Madoff LC. Emerging Diseases and Globalization. In LJ da Silva and R Nogueira Anerami Eds., Emerging Diseases. Athenu in press.
53. Madoff LC. "An epidemiologist on 'Contagion': This will almost certainly occur." The Atlantic [film review] 12 Sep 2011. <http://www.theatlantic.com/life/archive/2011/09/an-epidemiologist-on-contagion-this-will-almost-certainly-occur/244916/>
54. Madoff LC "The State of Rabies: Treating a Disease That Often Leads to Death" The

Atlantic. 3 January 2012. <http://www.theatlantic.com/health/archive/2012/01/the-state-of-rabies-treating-a-disease-that-often-leads-to-death/250749/>

## **Patents:**

- 1997 U.S. Patent 5,648,241 “Conjugate Vaccine Against Group B Streptococcus”
- 1998 U.S. Patent 5,820,860 “Conjugate Vaccine Against Group B Streptococcus”
- 1998 European Patent 98302087.6-2116 “A group B Streptococcus vaccine”
- 1998 U.S. Patent 5,843,444 “Conjugate Vaccine Against Group B Streptococcus”
- 1998 U.S. Patent 5,847,081 “Conjugate Vaccine Against Group B Streptococcus”
- 1999 U.S. Patent 5,858,362 “Conjugate Vaccine for Group B Streptococcus”
- 1999 U.S. Patent 5,908,629 “Conjugate Vaccine for Group B Streptococcus”
- 1999 U.S. Patent 5,968,521 “Conjugate Vaccine for Group B Streptococcus”
- 1999 U.S. Patent 5,989,542 “Capsular Polysaccharides from Enterococci”
- 2002 U.S. Patent 6,342,223 “Immunogenic composition for group B Streptococcus”
- 2002 U.S. Patent 6,426,074 “A Group B Streptococcus Vaccine”
- 2004 U.S. Patent 6,772,062 “Capsular Polysaccharides from Enterococci”

**Laura C. Streichert, PhD, MPH**  
27 Wildwood Ave., Newton, MA 02460  
617-893-9880      lstreichert@syndromic.org

## **Summary**

Accomplished executive leader, neuroscientist, and public health specialist who integrates more than 25 years in science, education, and public health to translate ideas into measurable action by cultivating partnerships, advancing knowledge, and building organizational capacity to improve population health. Areas of subject matter expertise in biosurveillance include, but are not limited to, in-depth understanding of public health principles and practices at local, state, national, and global levels; assessment of surveillance capabilities and priorities; electronic syndromic surveillance; informatics; One Health Surveillance; evaluation frameworks; developing standards and interoperability; creating training resources in surveillance practice; and fostering Communities of Practice.

## **Education**

---

Princeton University, BA, Biology ( <i>cum laude</i> )	1981
Stanford University, PhD, Neuroscience	1991
University of Washington, MPH, Health Services	
2005	
University of Washington, Certificate, Administration and Management	
1998	

## **Professional Experience**

---

<b>International Society for Disease Surveillance (ISDS), Brighton, MA</b>	2011-present
--	--------------

### Executive Director

Provides executive leadership for growing 501(c)(3) to further ISDS mission to improve population health by advancing the science and practice of disease surveillance. Responsible for strategic and operations planning, staff team growth and management, revenue generation, financial management, organizational development, implementation of policies, and day-to-day administrative management of the Society.

### **Streichert Strategic Consulting, Seattle, WA and Newton, MA**

2008-2010

### Public Health Consultant

Provided technical and subject matter expertise to public, private, and academic clients to plan, implement, evaluate, and communicate evidence-based strategies for public health and other challenges.

- Partnered with Tacoma-Pierce County WA Health Department to develop the *Community Action Plan for Healthy Communities*; organized community summit; conducted research and evaluation; wrote report.

- Authored research briefs on *Role of Daycare Facilities in Obesity Prevention* for University of Washington, targeting policy makers, practitioners, and the general public; distributed nationwide.

### **Harvard School of Public Health, Boston, MA**

2010

#### **Program Director – Center for Public Health Preparedness**

Provided short-term administrative leadership to grant-supported research center.

- Coordinated submission of complex grants, contracts, and reports to the Massachusetts Department of Health, the Centers for Disease Control and Prevention, and others.

### **University of Washington – School of Public Health, Seattle, WA**

2005-

2008

#### **Assistant Director/Manager of Operations – Center for Obesity Research**

Launched federally funded research center to promote evidence-based policy approaches to obesity prevention; represented and championed center's expertise with stakeholders.

- Directed center administration and operations; provided oversight of \$1.2 million budget, strategic planning, program implementation, and evaluation.
- Administered pilot research study program with goal of fostering innovative research strategies.
- Hired, supervised, and trained staff and mentored graduate students.
- Organized public health forums and symposia; wrote grants, reports, articles, and presentations.

### **Northwest Center for Public Health Practice, Seattle, WA**

2004

Instructor. Developed “Systems Approach to Emergency Preparedness” week-long curriculum and provided cross-agency training for public health practitioners and first responders.

### **Seattle Biomedical Research Institute, Seattle, WA**

2001-

2003

Development Officer. Wrote grant proposals to local and national funders, directly contributing to successful \$6 million capital campaign that enabled construction of new laboratory building, purchase of additional equipment, and progression of research and education efforts in global health.

### **Northwest Association for Biomedical Research, Seattle, WA**

1999-

2001

Outreach Programs Manager. Furthered mission and expanded capacity of nonprofit educational organization to promote public understanding of biomedical research and its ethical conduct; managed foundation and federal grants; expanded volunteer network; created targeted communications and training workshops; developed and managed community outreach initiatives.

**Fred Hutchinson Cancer Research Center, Seattle, WA** 1998-1999

Program Manager – HutchLab. Developed curriculum and taught new inquiry-based science education program for high school students.

**U.S. Peace Corps, Nepal** 1981-1983

Math/Science Teacher. Taught math, science, and health in remote Nepali village; developed health curriculum materials.

### **Volunteer Service**

---

Volunteer, Newton Medical Reserve Corps (MRC) Present	2009-
Board Member, Joint Public Health Informatics Taskforce Present	2011-
Board Member, Access to Healthy Foods Coalition 2009	2008-
Chair, Seattle Public Schools, Nutrition Advisory Committee 2009	2007-

### **Current Professional Affiliations**

---

American Public Health Association  
Massachusetts Public Health Association  
International Society for Disease Surveillance (ISDS)

### **Languages**

---

Spanish and Nepali, conversational.

### **Selected Publications**

---

**Streichert LC**, Soper P, Watson I. (2015) Nonprofit Associations and Cultivating Collaboration to Advance Public Health Surveillance. In: *Transforming Public Health Surveillance. Research and Innovations Guiding Public Health Surveillance in the 21<sup>st</sup> Century*, Thomas Krafft, Eva Pilot, Bidyut K Sarkar, Paige Ryland, Lauren Reeves, Vivek Singh. Elsevier Publication.

Hicks P, Pavlin JA, Baer A, Swenson D, Kite-Powell A, Jayatilleke AU, Evans B, **Streichert LC**. (2015) Preparing for the Impact of the ICD-9/10 Transition on Syndromic Surveillance. Conference Proceedings, 2014 ISDS Annual Conference. *Online J Public Health Inform.* 7(1):e28, 2015.

Reynolds T, Gordon S, Soper P, Buehler J, Hopkins R, **Streichert LC**. (2015) Syndromic Surveillance Practice in the United States 2014: Results from a Nationwide Survey. Conference Proceedings, 2014 ISDS Annual Conference. *Online J Public Health Inform.* (1):e90, 2015.

- Hoferka S, Rennick M, Austin E, Burke A, Ergas R, Fiedler J, **Streichert LC**, Wahnich A. (2015) Community Engagement among the BioSense 2.0 User Group. Conference Proceedings, 2014 ISDS Annual Conference. *Online J Public Health Inform.* (1):e184, 201.
- Streichert LC**, Kite-Powell A, Dasey T, Hopkins R, Corley C, Bennett S. (2014) Novel and Nontraditional Data Streams: Where Do They Fit into Biosurveillance Action? Conference Proceedings, 2013 ISDS Annual Conference. *Online J Public Health Inform.* 6(1):e4, 2014.
- Mirza N, Reynolds TL, Coletta M, Suda K, Soyiri I, Markle A, Leopold H, Lenert L, Samoff E, Siniscalchi A, **Streichert LC**. (2013). Steps to a Sustainable Public Health Surveillance Enterprise. *Online J Public Health Inform.* 2013;5(2).
- Honoré PA, **Streichert LC**. (2013). Disease Surveillance and Achieving Synergy In Public Health Quality Improvement. *Online J Public Health Inform.* 2013; 5(1): e195. PMID: PMC3692848.
- Zwickl R, Ishikawa C, **Streichert L**. (2012). Utility of Syndromic Surveillance Using Novel Clinical Data Sources. Conference Proceedings, 2012 ISDS Annual Conference. *Online J Public Health Inform.* 2013; 5(1): e33. PMID: PMC3692877.
- Reynolds T, I Painter I, **Streichert L**. (2012). Data quality: A systematic review of the biosurveillance literature. Conference Proceedings, 2012 ISDS Annual Conference. *Online J Public Health Inform.* 2013; 5(1): e20. Published online 2013 April 4. PMID: PMC3692854
- Johnson G, Ishikawa C, Zwickl R, T Kass-Hout T, **Streichert L**. (2012). Recommendations for Syndromic Surveillance Using Inpatient and Ambulatory EHR Data. Conference Proceedings, 2012 ISDS Annual Conference. *Online J Public Health Inform.* 2013; 5(1): e53. PMID: PMC3692899.
- Ishikawa C, Day M, Chapman W, **Streichert LC**, Buckeridge D. (2011). Unstructured Free Text Data and Meaningful Use. Special supplement to *Emerging Health Threats Journal*. December 2011.
- Hurvitz PM, Moudon AV, Rehm CD, **Streichert LC**, Drewnowski A. (2009). Arterial roads and area socioeconomic status are predictors of fast food restaurant density in King County, WA. *Int J Behav Nutr Phys Act.* Jul 24; 6:46.
- Streichert LC**, Johnson DB, Drewnowski, A. (2008). Reframing Obesity Prevention. *Northwest Public Health.* 25 (1): 6-7. (Guest editor of special issue: *Preventing Obesity: Moving Beyond Individual Responsibility*).
- Podrabsky M, **Streichert LC**, Levinger D, Johnson DJ. (2007). Campus-Community-School Partnerships to Evaluate a Multi-component Nutrition Intervention. *Public Health Reports.* 122 (4): 566-569.
- Streichert LC**, O'Carroll PW, Gordon PR, Stevermer AC, Turner AM, Nicola RM. (2005). Using problem-based learning as a strategy for cross-discipline emergency preparedness training. *J Public Health Manag Pract.* Nov Suppl: S95-9.

## Edward Trudeau

---

Forward thinking IT professional with 18 plus years of progressive IT and Management experience. Currently leading a team of outstanding developers building world class applications for Federal and Commercial customers. Past experience includes full-lifecycle internet applications developer, software architect, tester, and instructor.

- Application architecture (MVC, Active Record, MVVC)
- Object and data modeling
- Programming
- User Interface/User Experience
- Search Engine Optimization
- Online Advertising
- Email campaign management
- Project management
- Copy writing
- Graphic design
- Server administration
- Information assurance and security
- Policy, training, awareness
- Public speaking, advocacy

Database: MS SQL Server; Oracle; MySQL; MongoDB

Scripting: ColdFusion/CFWheels; HTML/HTML5; CSS/Twitter Bootstrap; JavaScript/jQuery; Python

Application: IIS; Apache; VMWare; BIND; IceWarp (mail)

O/S: Windows Server 2000-2008R2; Debian Linux; Amazon EC2 AMI

Media/Services: Amazon S3; Windows Media Services; FlowPlayer; YouTube/Vimeo; Verity K2; Solr; various Google services and APIs; Twitter live 1% stream

Graphic Design: Photoshop; Fireworks; Flash; Daz3D

### Work Experience

**2013 – Present: Distributed Information Technologies**

**Arlington, VA**

**Director, Software Development**

**2010 – present**

Leader of Custom Development Practice Area, responsible for resource management, professional development, process control, process improvement, and development infrastructure for all development projects.

- Directly Supervise 4 Development Team Leads and oversee a staff of 17 developers, Testers, Report Writers, and Systems Administrators.
- Participates on projects as Technical Architect, SME, and / or Lead Developer as needed.
- Works directly with Project Managers and DIT customers to ensure quality delivery and customer satisfaction
- Responsible for product and technology choice and road mapping for internal and customer projects.
- Heavily involved in business development activities including opportunity identification and proposal generation.



## **Representative work**

*Ultimately responsible for the delivery of over 10 concurrent development projects*

- Served as Architect and Lead Developer on redesign of the Work Order Reporting Kiosk for National Park Service.
- Supported as Technical SME 5 concurrent development projects for the Bureau of Indian Affairs
- Assembled development team and developed road map for 3 DIT product offerings.

*Set up independent test Team to ensure quality*

- Researched and selected testing technology platforms and wrote test team policies and procedures
- Developed onboarding process and hired initial team members.

**2004 – 2013: The Catholic University of America**

**Washington, D.C.**

### **Director, Web Development**

**2010 – present**

*Associate Director, Web Development*

*2009 - 2010*

*Manager, Research and Academic Applications Development*

*2004 - 2009*

Webmaster for the Catholic University of America web sites; chief architect for academic and research applications involving e-learning, interactive web applications, secure Internet transactions, and the use of technology for education.

- Supervises two full time and three part time programmers.
- Upgrades, restructures, and secures the development and production web servers for public web presence, FTP site, online learning servers, Amazon EC2 instances.
- Works directly with students, faculty, deans, and administrators to resolve technology issues and develop and deploy research and pedagogical applications on the Web.
- Works with the Associate Director of Networks and Security to secure internet facing applications, client-server systems, and remote service providers.
- Wrote University's Information Assurance Policy (2010).
- Member of university policy committee; member of incident response team
- Developed and deploy approximately two dozen web applications for data management, workflow, reporting
- Developed specification and original code for web-based RESTful API to internal data services

## **Representative work**

*Manage 250+ Web Properties*

- Designed, developed and manages custom CMS supporting the university's public web presence.
- Troubleshoots issues with site design, navigation, HTML/CSS, media distribution.
- Develops and/or integrates custom controls and widgets to support slideshows, polls, data collection, security, media playback, mobile layouts, syndicated web services, site search, and more into sites as clients' request.

- Developed custom process and scripts to ingest disorganized and poorly formatted HTML files into custom CMS system; corrected file paths; migrated assets; converted 170 sites/30,000 pages over the course of a year.

#### *Online Evaluations System*

- Designed, developed and deployed an online evaluation system for all undergraduate and graduate courses.
- Integrated with Active Directory for authentication; enrollment data pulled directly from PeopleSoft Student System (Oracle) on demand
- Evaluation results fed to separate SQL Server for analysis and web-based reporting.

#### *Various Accreditation Support Sites*

- Course objectives and outcomes self-evaluation system (CFWheels, jQuery, jQuery/UI, SQL 2005).
- Syllabi database (Oracle, ColdFusion, SQL 2005)
- Middles-States Accreditation Evidence Library, including group and individual level access system (ColdFusion, SQL 2005)

#### *Dean of Students Contact Management System*

- Case management system for all student issues seen by Dean of Students office (CFWheels, jQuery, jQuery/UI, SQL 2005).

#### *Various Security and Policy Roles*

- Created initial draft of the University's Center for Planning and Information Technology's three-year strategic plan. The plan subsequently went through very slight editing before being approved by the University. (2005)
- Drafted initial response to the Price-Waterhouse Coopers IT Management Letter. The letter was accepted by the board of trustees after minor editing (2006)
- Worked with the Office of General Counsel to provide an online application assisting technologists and University officials to track and resolve infringements of the DMCA detected by RIAA. (ColdFusion/Oracle)

#### **2003 – Present: Freelance Consulting**

***Washington, DC***

HTML, CSS, ColdFusion programming, design, and development; maintenance of systems including Windows 200e-2008R2, Debian Linux, and Amazon EC2; review and recommendation of SaaS solutions; response to RFPs for development services; assistance with online marketing strategy and execution; security review and risk management recommendations; policy and procedure documentation and recommendation.

#### **Representative work:**

##### *Remote administration of hosting facility at NetAccess Corporation, WinMill Software*

- Manage periodic maintenance schedule for approximately 2 dozen physical and virtual (WMWare) servers
- Manage IceWarp mail server, including policy, account maintenance, and investigation of issues

- Install, configure and manage PRTG for bandwidth usage
- Install, configure and manage Nagios for service availability and outage escalation
- Manage IP allocation across multiple subnets
- Write and maintain job book and procedures for outages, notifications and escalations
- Manage upgrades of custom and off-the-shelf software packages
- Purchase, install, and manage domain names, secure certificates
- Manage services such as IIS, Apache 2, MySQL, PHP, ColdFusion, .NET framework, SQL Server
- Manage server antivirus packages, updates and scans for Symantec and ESET

*Online pricing system for research grants, George Mason University*

- Design and develop system to allow quick estimation of grant costs and disbursements over several years as a preliminary estimate before entering data into Coeus
- Analyze business requirements to account for various personnel schedules, salary escalator, benefits, grant-specific costs, and student researchers
- Provide on-the-fly recalculations in project worksheet using JavaScript
- ColdFusion, Oracle, JavaScript

*Online security review and documentation, NHL Center Ice*

- Review and document analysis of vulnerabilities in NHL Center Ice security pen-test
- Participant in pen-test

**1997 – 2003: WinMill Software ([www.winmill.com](http://www.winmill.com))**

**New York, NY**

**Professional Services Manager II**

**1999 – 2003**

*Professional Services Manager I*

*1998 – 1999*

*Consultant I, II*

*1997 – 1998*

Certified classroom and online learning instructor, project manager and senior developer. Successfully managed a wide variety of Web development projects and opened and managed a branch office in State College, PA from 1999 to 2000. Grew the office from 4 to 20 employees in one year. Managed internal hosting facility and subsequently moved data center to two co-los. Most recently have been involved in the gradual virtualization of the data center using VMWare.

**Representative work:**

*Sports Information Portal, Pennsylvania State University, State College, Pennsylvania*

- Managed the design and development of a portal site for 29 varsity sports, including full maintenance site for content management.
- Helped to design and implement innovative advertising and marketing models to allow the site to pay for itself.
- Designed, conducted and analyzed web-based marketing and user surveys to determine site behavior and impressions, and recommended and implemented design changes based on those results.
- ColdFusion, SQL Server, JavaScript

*Online Education Course System and Various Courses*

- Designed and managed the development of WebCampus™, an online learning platform.
- Developed and deployed online management training for a multinational firm
- Developed and deployed OSHA safety course for multinational industrial firm

*Online and Direct Marketing Service, Consulting Company, New York, New York*

- Designed and managed all aspects of bulk mail and tracking systems for online retail markets.
- Developed list services for managing, de-duplicating, renting, and tracking responsible usage of mailing lists.
- Designed tracking system for email marketing response, click-through and conversion rates.
- Developed reporting portal for clients.
- Managed high-volume SMTP mailers, managed bounce-backs, opt-out lists
- Verified systems were compliant with CAN-SPAM rules and routinely monitored and interacted with AOL, Yahoo, and Microsoft to authorize and release compliant bulk mailings.
- Designed and developed database to provide online and offline analytics processing for reporting on time, click-through rates, site paths, panel effectiveness, and more

*Automated Software Quality Assurance, Data-driven Testing, Big Six Accounting Firm, New York, New York*

- Analyzed requirements, designed test procedures, and built automated tests for a variety of enterprise-wide software packages.
- Development environments included Visual Basic, PeopleSoft financials, Lotus Notes, and Windows kernel library.
- Conducted tests on various databases, including Oracle 7, Sybase Adaptive Server Anywhere and Microsoft Access. Analyzed workflow and business processes and managed test development for integrated testing.
- Communicated with developers, management consulting, end-user instructors, and database administrators to ensure that the applications under test satisfied requirements from all these groups.
- Conducted full, end-to-end automated test of highly customized PeopleSoft Financials system and related subsystems using data-driven testing techniques for Y2K testing.

*Software Development Company, Edison, New Jersey*

- Instructed and mentored QA department of 12 individuals on SQA TeamTest.
- Developed company-wide QA standards and assisted implementation of those standards for quality assurance, client support and enhancement requests.
- Aided QA specialists in transitioning to SQA Robot and development of automated test suites for all PowerBuilder and C++ projects.

Education

2003 – 2004    **The Catholic University of America** (18cr PhD Coursework) Washington, D.C.

2000 – 2003	Franciscan University of Steubenville (MA Theology)	Steubenville, Ohio
1987 – 1991	Harvard University (AB Mathematics)	Cambridge, MA

2012	Introduction to Interactive Programming in Python (with distinction)	Rice, via Coursera.org
2013	Computing for Data Analysis (with distinction)	Johns Hopkins, via Coursera.org
2013	Introduction to Data Science (in progress)	University of Washington via Coursera.org

#### Certifications

2013	ITIL v3 Foundations
2001	Macromedia Certified ColdFusion Instructor
1999,	Allaire Certified ColdFusion Instructor
1997	SQA/Rational TeamTest Instructor

#### Teaching Experience

2010-present	Curriculum Committee, St. Jerome Academy	Hyattsville, MD
2010	Modern Philosophy	Metropolitan School, Catholic University
2004, 05	Critical Thinking	Metropolitan School, Catholic University
2003, 04	Introduction to New Testament (TA)	School of Theology & Relig. Studies, Catholic University
1997-2003	Automated Software Quality Assurance with SQA/Rational Team Test; ColdFusion Web Development, HTML	WinMill Software, New York, Princeton, State College
1994-6	English Conversation	Eiken English Center, Kurashiki, Japan
1992-4	High School Mathematics	CEG I Parakou, Benin (United States Peace Corps)

#### Publications and Papers

Commons, Michael Lamport, Edward James Trudeau, Sharon Anne Stein, Francis Asbury Richards, Sharon R. Krause. "Hierarchical Complexity of Tasks Shows the Existence of Developmental Stages" in *Developmental Review*, v 18, n 3, September 1998, p237-278.

Commons, Michael Lamport, Michael Woodford, Edward James Trudeau. "How Each Reinforcer Contributes to Value: 'Noise' Must Reduce Reinforcer Value Hyperbolically" in *Signal Detection: Mechanisms, Models, and Applications*, ML Commons, et. al., eds. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc., 1991, p139-168.

Commons, Michael Lamport, Eric W. Bing, Charla Griffy, Edward James Trudeau. "Models of Acquisition and Preference." In *Neural Network Models of Conditioning and Action (Quantitative Analysis of Behavior series, vol. 11)*, ML Commons et. al., eds. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc., 1991.

**Patrick M. McGeehan**

## **EDUCATION, CERTIFICATIONS, AND CLEARENCES**

- B.S. Computer Science, Catholic University of America, Washington, DC
- M.B.A Robert H. Smith School of Business University of Maryland
- Multiple Adobe Certification Programs
- Defense Information Systems Agency Systems Administrator Level I Certification
- Active Department of Defense Secret and Top Secret Security Clearances

## **EXPERIENCE**

**VP of Service Delivery:** Distributed Information Technologies (DIT), Arlington VA January 2013 to Present

- Led a team of 3 Directors covering DIT's 3 practice areas: Custom Software Development, Enterprise Asset Management, Cyber Security
- Responsible for building, developing and retaining a team of highly talented IT and Management professionals that will ultimately be responsible for all aspects of technical service delivery
- Work with Practice Area Directors to develop and implement performance standards, tools, policies, and procedures used across the 3 Practice Areas
- Establish and tune product and technology roadmaps to ensure technical teams are using the proper balance of emerging and proven technologies on professional service engagements
- Establish product strategy, roadmap and tactical execution of DIT product offerings
- Work collaboratively across the organization to influence success in a matrix environment, including business development, general management, and account management
- Engage directly with both internal and external stakeholders to identify business problems and opportunities

**Consultant:** Rivermatrix Technologies, Inc December 2011 to Present

- Responsible for a variety of Business Development tasks
- Support for technical discussions, technical direction, and technology decisions

**Manager of Software development:** Distributed Information Technologies (DIT), Arlington VA January 2008 to December 2012

- Manager of a fully matrixed pool of 15 software developers as well as 3 Systems Administrators.
- Responsible for resource management, professional development, process control, process improvement, and development infrastructure.
- Responsible for all new development as well as Operations and Maintenance for existing application.
- Heavily involved in project level system platform architecture decisions.

- Heavily involved in business development activities including proposal generation and teaming.

**Lead Applications Developer and Team Lead:** Distributed Information Technologies (DIT), Arlington VA August 2004 to January 2008

- Led a team of 4 developers on development effort for Department of Defense Software Engineering Support web application.
- Led a team of 2 developers on maintenance and continued development of Financials and Project Management application for the National Park Service.
- Responsible for the redesign and maintenance of the DIT Conference Kiosk program using Visual Basic.
- Lead Developer on the DIT Core Data Browsing API.
- Used a variety of technologies including but not limited to ColdFusion, JAVA, JavaScript, AJAX, XML, Oracle, and MS SQL Server to meet the needs of the clients.
- Interface with clients to gather requirements, deploy and test software, and gather feedback.

**Web & Database Applications Developer:** The Children's Hospital of Philadelphia, Philadelphia, PA

January 1998 – January 2008 (Consultant)

- Designed numerous departmental databases and applications using Microsoft Access and Microsoft Visual Basic.
- Worked both on a team and independently to Web enable several of the above systems using ColdFusion.
- Worked with end users to debug and upgrade all systems.
- Developed training material and trained all users for all systems.
- Converted existing departmental Intranet from basic HTML running on Iplanet to ColdFusion MX running on Microsoft IIS.
- Departmental representative in several major data transformation, data warehousing projects.

**Manager of Research & Academic Applications Development:** The Catholic University of America, Washington, DC January 2003 to August 2004

- Responsible for the upkeep of approximately 8 production web servers as well as 5 development web servers and 2 development database Servers.
- Managed approximately 5 student workers and 1 full time staff member. Responsible for hiring, time keeping, and project management.
- Served as lead developer and project lead on all Enterprise wide projects.
- Conducted internal application testing and quality control.
- Conducted training (when necessary) and support for all applications.

**Lead ColdFusion Developer:** The Catholic University of America, Washington, DC May 2001 to January 2003

- Managed full lifecycle of large-scale and Enterprise wide Internet applications to meet the specifications of the faculty, staff, and students.

- Designed, built and optimized Microsoft SQL Server and Oracle databases for web applications.
- Supported, maintained, and upgraded existing applications.

**Database Designer:** Independence Blue Cross, Philadelphia, PA  
Summer 1997, 1998

- Designed several departmental database applications using Paradox and Microsoft Access.
- Responsible for documentation and presentation for departmental approval.
- Implemented on the IBC network and trained over 10 users.

## **MAJOR ACCOMPLISHMENTS**

- **Distributed Information Technologies (DIT)**
  - Reorganized the Enterprise Asset Management team from an organizationally flat senior laden group of individual consultants to a hierarchal team including technical leads and larger number of junior and mid-level staff
  - Redesigned the hiring process to identify junior staff with growth potential on the Enterprise Asset Management and Cyber Security Teams
  - Spearheaded the establishment of a product group that converted several custom solutions into repeatable product offerings
  - Set the standards for development languages, IDE, code versioning, and frameworks used by the Development Team
  - Wrote the original Web 2.0 library that is used across all DIT projects.
  - Lead the team that designed the Software Engineering Support System (SESS), which supports a Defense Information Systems Agency (DISA) software development effort involving hundreds of developers and numerous contracting companies including Northrop Grumman, SAIC, MITRE, and FGM. SESS has become a system of record within the DISA and the Department of Defense.
- **The Children's Hospital of Philadelphia**
  - Converted existing mostly static departmental Intranet site from basic HTML running on Iplanet to Dynamic web portal written in ColdFusion MX running on Microsoft IIS.
  - Implemented the Unapplied Cash Application to help the Hospital route and apply orphaned payments that otherwise would have required a refund. This application allowed the hospital to post an additional \$1,000,000 in payments
  - Lead role in data transformation and data export from departmental systems to the enterprise level ECHO application
- **Catholic University of America**
  - Reorganization of development server area. This project included an upgrade of all Web Servers, Application Servers and Database Server
  - Author or Co-Author of three web applications registered with the U.S. Copyright Protection Office and possible licensing by Catholic University.



## COMPUTER SKILLS

- **Operating systems:** Windows (all versions) / Linux
- **Project Development:** Visio, ERWin
- **Graphics:** Adobe Photoshop, Macromedia Fireworks
- **Database:** Oracle, Microsoft SQL Server, MYSQL
- **Programming and Scripting languages:** ColdFusion, Java, .Net, JavaScript
- **Web Technology:** Microsoft IIS Web server, Apache Web server, mod\_SSL, open SSL, Apache Tomcat server, WebSphere, WebLogic



## Stephen Matta (continued)

### Summary

Stephen is an experienced computer scientist with eight years of professional experience developing and leading projects in Java, Flex, and ColdFusion for the web. He is flexible and quick to learn new languages, systems, and frameworks, and holds a wealth of practical experience developing mapping solutions, reporting platforms, secure communications, and user interfaces.

### Certifications

---

- Sun Certified Java Programmer (SCJP)

### Skills

---

- Project Management Agile methodologies, Rally Software, CMMI 5
- COTS WebFOCUS, Jenkins, Hudson, CruiseControl, Apache Archiva
- Systems Design UML 2.2
- Programming Java and Java EE 7, JavaFX, Java 3D, ColdFusion 9, Flex 4, Python 3.2
- Databases Oracle 10 & 11, MySQL 5.5, PostgreSQL 9
- Graphics Design AutoCAD 2012, Photoshop CS5, GIMP 2.8
- Operating Systems Solaris 10, OpenIndiana, Linux, Microsoft Windows, Mac OS X
- Web Technologies WebLogic 10, Tomcat 7, Apache HTTP Server, Amazon Web Services, Google Web Toolkit, WebSphere 8
- Security LDAP, CAS, General cryptography, Steganography, Public key encryption and SSL

### Education and Training

---

- Bachelor of Science in Computer Science at the Catholic University of America  
2002-2006, Graduated Cum Laude

### Clearances

---

- DoD Secret

### Professional Experience

---

#### **Distributed Information Technologies, Inc.**

Software Developer

**May 2006 - Present**

Supervisor: Patrick McGeehan, 571-483-2727

*Software Developer, On-Site with DIT Inc., Arlington, VA*

**October 2010 - Present**

As lead developer, designed and led a team to develop a collaborative assessment tool to be used in a variety of applications. Implemented continuous integration and rapid development processes to facilitate an Agile methodology with weekly releases to the product owner. During weekly sprint planning meetings, worked with the product owner to turn high-level user stories into deliverable features with Agile turnaround.



## **Stephen Matta** (continued)

- Java 8, Spring Framework (feat. Spring Boot), Hibernate 4, PostgreSQL 9.4, Liquibase, HTML5/JavaScript/JQuery/Bootstrap, Google Authenticator



## Stephen Matta (continued)

Designed and developed Inspections application for Bureau of Indian Affairs to aid in safety, fire, and physical plant inspections and assessments. Lead developer and team lead on project. Includes an offline application for conduction inspections in remote locations.

- ColdFusion 10, Oracle 11, HTML 5/JavaScript/Bootstrap, Flex 4.5.

Lead developer for a team that enhances and deploys new versions of a contract management application for the National Park Service. This application allows contract creation, management, changes, costing, and many other features throughout the entire contract process.

- Java 1.6, HTML and JavaScript, Google Web Toolkit 2.4, Oracle Database, Tomcat 7

Provides Java application server support and consultation for a number of applications, especially in the realm of security including cryptography, one- and two-way SSL authentication, and identity management.

- WebSphere 8, WebLogic 8, 9, and 10

Led a team of developers creating a site inspection tool for the National Park Service. This tool facilitates the creation and organization of site inspection as well as the collaborative management of data uploaded from the offline companion. The offline desktop companion to the tool allows the updating of asset information, and the creation and management of work orders associated with those assets.

- Flex 4, Adobe AIR, ColdFusion 9, Oracle Database

Developing new features for a Flex map asset management visualization tool.

- Flex 3 and 4, ESRI Flex API

Regularly conducts technical interviews for junior and senior Java/Flex programming candidates to determine their suitability for roles within the company

Converted more than a dozen company projects from CVS version control to Subversion version control. Manages and upgrades the corporate SVN system, including managing statistics for selected projects.

Adapting company projects for continuous integration and testing using Hudson and Maven.

*On-Site Contracted Developer with Northrop Grumman, GCSS-J*      **May 2006 – October 2010**

Developed, integrated, and maintained Java EE enterprise services on a CMMI Maturity Level 5 project, including a web portal application delivering reporting tools, geospatial web capabilities, and web services consolidating more than fifteen authoritative data sources into an overall logistics view.

- Java EE, Spring Framework, Hibernate, ESRI Flex API, ArcGIS Server / WMS, BlazeDS
- Converted project from CVS version control to Subversion and from the Ant build tool to Maven



## **Stephen Matta** (continued)

- Developed and maintained the continuous integration suite using Hudson, Bash, Expect, and Python scripts, and Java

**The Catholic University of America**

**August 2005 – May 2006**

Student: Senior Project

Designed a web-based framework for lightweight multiplayer strategy and prototyped several technologies, including Ajax Push (now known as the Comet approach) for real-time server interaction, synchronizing large numbers of threads, and security components.

- J2EE, Struts framework, Spring IOC, Hibernate, Javascript/Ajax

**The Catholic University of America**

**June 2000 – August 2001**

Software Engineering Intern

Learned about project management and team coordination. Designed presentations and military training software.

- Macromedia Director, Flash, and Fireworks.

**Arun Kothanath**  
Curriculum Vitae

**EDUCATION**

1989-1993      Cochin University of Science and Technology  
Bachelor of Technology in Electronics Engineering

**Senior Security Management Professional**

Accomplished Senior Security Professional with 15+ years of leadership and management experience. Experience in key functional roles like Chief Information Security Officer Security Strategist, Security Technologist, Product manager and other various Lead positions. Proven experience in the field of Security Management, Identity Management and Fraud Management in providing solutions and strategies to institutions in various verticals.

- Certified Information Systems Security Professional
- Deputy CTO, Oracle Corporation (Honorary award)
- Conducted various trainings, awareness programs, seminars and lectures.

**Functional Roles Performed**

**Chief Security Strategist**

- Involved in developing short term and long term strategies
- Developed and lead enterprise risk assessment programs
- Designed and implemented Fraud detection and management programs
- Designed and implemented identity management programs.
- Provided Leadership in crafting security solutions
- Lead various security projects and initiatives
- Provided Advisory services to various leaderships

**Chief Information Security Officer**

- Performed Leadership roles
- Provided "Out Sourced CSO" services
- Led security initiatives including policy, compliance, incident management, data classification and technology decisions
- Provided product and technology development directions
- Developed and Executed a full strategy for Certification and Accreditation programs
- Designed, developed and implemented various security programs.

**Lead Security Technologist**

- Provided technology leadership
- Acted as a link between business and technology in securing the overall solutions
- Crafted various identity and fraud management solutions for high impact customer solutions

#### Chief Technology Architect/Officer

- Provided technology leadership
- Established product and go to market strategy
- Acted as a liaison between technology, business and customers
- Developed various integration and implementation strategies
- Assisted upper management in contract and vendor negotiations

#### Lead Integrator/Architect

- Led integration projects involving various technologies
- Analyzed and evaluated various technologies available
- Developed integration programs

### PROFESSIONAL EXPERIENCE

2004-present	Integral Business Solutions/Clango <i>Chief Security Strategist</i>
2005-2007	Bharosa Inc. <i>Chief Security Officer</i>
2002-2005	Midwave Corporation <i>Lead Security Consultant</i>
2000-2002	Rooster.com <i>Lead Architect</i>
1998-2000	Ulysses Net Solutions <i>Lead Integration Engineer</i>
1996-1998	Sun Microsystems <i>Senior Technical Staff</i>
1996	Hewlett Packard <i>Lead Integration Engineer</i>
1993-1996	National Center for Software Technology <i>Manager – Software Promotion Center</i>

**Kamille White**  
Curriculum Vitae

**EDUCATION**

Ms. White has eighteen years of technology solution envisioning and strategic planning experience. She has been a Principal Consultant for the past twelve years, leading strategic technology management initiatives for several large organizations. She founded the Identity and Access Management Advisory Services Consulting practice, Clango Group, in 2010. Prior to that she established the Information Security practice at Midwave. She has held various leadership positions such as Technology Manager, AVP at Wells Fargo Bank, Director of Software Development for a start-up company and a Product Manager for Diversified Pharmaceuticals. Her responsibilities have included strategic business and IT vision alignment, program management, roadmap structuring, personnel management, IT budget administration, establishing enterprise architectural principles and devising and activating software development lifecycles and methodologies. She excels at determining the appropriate application of technology to meet specific business objectives.

<b>PROFESSIONAL SKILLS</b>	<ul style="list-style-type: none"><li>- Program management for strategic initiatives (communication, financial management and impact analysis)</li><li>- Marketing, communication and promotion of technology solutions to business audiences</li><li>- Management of software development and security teams (business alignment, establishing goals, personnel development, budget administration, coaching)</li><li>- Devised enterprise-wide software architecture for a variety of organizations</li><li>- Implemented and activated methodologies (templates and processes for analysis and design, requirements, testing, configuration management and deployment)</li><li>- Business process re-engineering for multiple, large-scale financial initiatives</li><li>- Developed and facilitated training sessions for a variety of topics such as architecture, methodology, security and management</li><li>- Developed and facilitated presentations at industry conferences; established the Minnesota Identity Management Consortium</li></ul>
<b>BUSINESS AND IT ALIGNMENT</b>	<ul style="list-style-type: none"><li>- IT Performance Assessments: Current-state organization, process and technology capability inventory; gap assessments; business case; roadmap development; executive summary and rationalization to proceed with investment</li><li>- Implemented Enterprise Capability Models and Investment Roadmaps</li><li>- Implemented Business and IT Governance Models and</li></ul>



	<p>Program Management Offices</p> <ul style="list-style-type: none"> <li>- IT Portfolio Management: Service models, financial analysis (TCO, ROI), solution recommendations, architecture blueprinting, on-going health assessments</li> <li>- Experience with aligning Business and Technology Roadmaps</li> <li>- Introduced Business Solutions Architecture and Relationship Management to several large organizations</li> </ul>
<b>TECHNICAL SKILLS</b>	<ul style="list-style-type: none"> <li>- Enterprise software architecture planning and design</li> <li>- Significant software development and architecture experience with distributed technologies including: PowerBuilder, C++, SilverStream, Oracle, Sybase, DB2</li> <li>- Software analysis and methodology experience: Rational Unified Process, OOA&amp;D, RAD, software configuration management, automated testing tools</li> <li>- Identity Management Tools: IBM Tivoli Access and Identity Manager, Oracle Identity and Access Manager 11gR2, and Novell (DirXML certified)</li> </ul>

## PROFFESIONAL EXPERIENCE

2010-present	Clango Group/Clango <i>Founder, Manager Partner</i>
2008-2010	Prime Therapeutics <i>Business Solutions Architect</i>
2006-2007	Independent Consultant
2001-2006	Midwave <i>Practice Manager</i>
1999-2000	Agricultural.com <i>Director of Software Development</i>
1997-1999	Wells Fargo <i>Director of Technology</i>
1995-1997	Diversified Pharmaceuticals <i>Product Manager</i>
1990-1994	Norwest Mortgage <i>Application Architect</i>



**Steven Hawkins**  
Curriculum Vitae

**EDUCATION**

- 2010-2011      University of Minnesota, Minneapolis, Minnesota, USA  
                    Masters of Science in Security Technologies
- 1987-1991      University of Manitoba, Winnipeg, Manitoba, CA  
                    Bachelor of Computer Science, Honors

Steven is a principal with Integral and has over 20 years of IT experience and graduated with his Masters of Science in Security Technologies (MSST) from the University of Minnesota (UofM) in 2011. He now is a member of the faculty at the UofM teaching the Introduction to Cybersecurity class and helps guide the development of new course materials related to cyber security. He has managed large identity and access management projects and policy based fraud management efforts. He often leads the requirements gathering, design, and architecture efforts for enterprise Identity and Access management projects. He also is one of the core team of trainers for the OAAM product suite.

General security	MSST
Application Security	Integral Secure Agile Methodology
General IdM	Directory Design, Workflow analysis, UI Design
Oracle IdM	Oracle 11G, OAM, OID, OUD, OVD, OIF, OIM, OAAM configuration and trainer, BI Publisher
Other IdM	Siteminder Integrations, Active Directory, TIM, TAM
Programming Skills	Java, Javascript, CSS, XML, PHP, C, Pascal
Regulatory	C&A work with FISMA, DITSCAP, DIACAP, HITECH
Tools	Drupal, Eclipse, Apache Directory Studio, SOAPUI

**Recent Project Experience:**

For a large financial institution helped validate and select vendors for a web access management solution to protect and simplify access across hundreds of applications with worldwide access. The solution was risk based and will be deployed across web, mobile, and api tiers.

For a healthcare provider he gathered requirements, executed the design and configuration for an integrated OAM/OIM/OIF solution for a patient healthcare project including a custom integration with EPIC. This included the configuration of the DEV, TEST, and Production environments.

A healthcare organization had a legacy OAAM 10G environment they wanted to upgrade to 11G. He conducted an analysis and review of the existing environment and made recommendations on migrating to 11G. Trained the existing team members on the differences between 10G and 11G and advised on best practices that should be adopted moving forward.

He gathered and documented requirements for an integrated Oracle 11G identity solution. The solution involved a custom authentication application with multi-level authentication and

authorization requirements involving OID and multiple OVD adapters. This higher education solution involved policy-based access management and strong authentication, as well as multiple directory store user provisioning.

He has delivered OAAM training for financial services organizations and consulted on best practices for implementing an enterprise pro-active fraud prevention programs.

## **PROFESSIONAL EXPERIENCE**

**2000-present** Integral Business Solutions/Clango  
*Founder and Principal*

**2014-present** University of Minnesota, Technological Leadership Institute  
*Member of Faculty*

**2011-present** University of Minnesota, Technological Leadership Institute  
*Instructor – Security Technologies*

**2000** Ulysses  
*Project Manager*

**1996-2000** Keane  
*Principal Consultant*

**1994-1996** SHL Systemhouse  
*Consultant*

**1990-1994** Westfair Foods  
*Programmer*

**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.  
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Peter Daszak		POSITION TITLE President & Chief Scientist	
eRA COMMONS USER NAME (credential, e.g., agency login) daszak			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	MM/YY	FIELD OF STUDY
Bangor University (UK)	BSc. (hons)	07/86	Zoology
University of East London (UK)	Ph.D	03/93	Infectious Diseases

**A. Personal Statement**

I am President and Chief Scientist of EcoHealth Alliance, a US-based organization that conducts research and outreach programs on global health, conservation and international development. My 20+ years of research has focused on understanding the causes of disease emergence in wildlife, livestock and people, particularly viral zoonotic diseases. My work has included identifying the bat origin of SARS, the causes of Nipah and Hendra virus emergence, producing the first ever global emerging disease ‘hotspots’ map, identifying the first case of a species extinction due to disease, coining the term ‘pathogen pollution’, and discovering the disease chytridiomycosis as the cause global amphibian declines. I am a member of the IOM’s Forum on Microbial Threats, the NRC Advisory Committee to the USGCRP, the Supervisory Board of the One Health Platform, the One Health Commission Council of Advisors, the NRC Committee to Advise the USGCRP, and the DHS-funded CEEZAD External Advisory Board. I have served on the IOM Committee on global surveillance for emerging zoonoses, the NRC committee on the future of veterinary research, the International Standing Advisory Board of the Australian Biosecurity CRC; and have advised the Director for Medical Preparedness Policy on the White House National Security Staff and the Director of the OST on global health issues. I am the EHA institutional lead for USAID-EPT-PREDICT and PREDICT-2, and serve on the Editorial Board of *Conservation Biology*, *One Health*, and *Transactions of the Royal Society of Tropical Medicine & Hygiene*, and am Editor-in-Chief of *Ecohealth*. I have authored over 200 scientific papers on emerging diseases.

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

1993-8 Senior Faculty Research Scientist, Kingston University  
 1998 Guest Researcher, Centers for Disease Control and Prevention (CDC)  
 1999-2001 Faculty Research Scientist, University of Georgia  
 2001- Adjunct Faculty, Tufts Univ. Sch. Veterinary Med.; Univ. Georgia; Columbia Univ.

2001-9 Executive Director, Consortium for Conservation Medicine, EcoHealth Alliance, New York

2009- President & Chief Scientist, EcoHealth Alliance New York.

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

Keynote speaker Merieux Foundation Conference on Emerging paramyxoviruses, France (2000); UN Millenium Ecosystem Assessment: Lead Author, human infectious diseases (2006); NIH: ad hoc member, ZRG1 IDM-G 90 study section: Virology, Biodefense & Emerg. Diseases (2003-5); Editorial Board, Conservation Biology (Blackwell); Founding Co-Editor *EcoHealth* (Springer) (2004-10); NAS – Committee Member, Future Needs in Veterinary Research (2004-5); DIVERSITAS (UNESCO-ICSU): Member of Scientific Committee (2004-11; Treasurer 2007-11); NIAID: Steering Committee, workshop on virus-host shifts & emergence of new pathogens (2005); Australian Biosecurity Cooperative Research Center: International Standing Advisory Committee (2005-10); NIH: ad hoc member, ZRG1 IRAP-Q study section (infectious diseases, epidemiology) (2005-7); International EcoHealth Association: Founding board of directors, Treasurer (2006-11); CDC: ad hoc member, ZCD1 SGI, 09PAR07-231, R36 Research Dissertation Awards (2007); European CDC: Keynote speaker, future infectious disease threats (2008); NAS-IOM Committee Member, Global capacity for EID surveillance (2008-9); Scientific Advisory Board, NIAID Center of Excellence, avian influenza (CRISAR), UCLA (2008-9); Reviewer IOM report on Infectious Disease Movements in a Borderless World (2009); NIAID: Steering Committee, workshop on viruses from bats (2009); NAS-IOM Participant, workshop on H1N1, Committee on Emerging Microbial Threats (2009); NIH: ZRG1 IRAP-Q Review panel ARRA Challenge grants (2009); Organizing Committee, 1<sup>st</sup> International One Health Symposium, Australia (2010); Member, Council of Advisors One Health Commission (2010-); Editor-in-Chief, *EcoHealth* (2010-); Scientific Advisory Board, Oxford Univ. Clinical Research Unit, Vietnam (2010-); Member of IOM Forum on Microbial Threats (2010-); External Advisory Board, CEEZAD (Center of Excellence for Emerging & Zoonotic Animal Diseases) – Dept. Homeland Security, Science & Technology Center of Excellence, Kansas State Univ. (2010-); Steering Committee, NIAID Workshop on Arboviruses (2011); Organizer IOM Forum on Microbial Threats briefing on MERS-CoV (2013); Chair, Scientific Steering Committee, Future Earth ecoHEALTH project (2014-); Editorial Board, *Transactions of the Royal Society of Tropical Medicine and Hygiene* (2014-); Member NRC Advisory Committee to advise the US Global Change Research Program (USGCRP) (2014-); Supervisory Board, One Health Platform (2015-); Senior Fellow, Center for Development Research (ZEFc), University of Bonn (2015-); NSF/NIH Ecology & Evolution of Infectious Diseases review panel (2015); Editorial Board *One Health* (2015-).

### **Honors**

Meritorious service award, CDC (1999); CSIRO silver medal for collaborative research (2000); Honored by the naming of a new species of centipede, *Cryptops daszaki* (*J Nat Hist* 2002; 36: 76-106) (2002); ISI Fast-breaking paper (2002); CBS 60 Minutes documentary on Nipah virus research; 6<sup>th</sup> Annual Lecturer, Medicine & Humanities, Texas A&M (2003); Editor's choice,

*Science* (2006); Zayed International Prize for the Environment (2<sup>nd</sup>) (2006); Finalist, Director's Pioneer Award (2007); Discovery Channel documentary on Nipah virus research, Bangladesh (2008); Presidential Lecturer, University of Montana (2008) ; Elected member of the Cosmos Club 2012; Honored by the naming of a new species of parasite, *Isospora daszaki* (*Parasitol. Res.* 2013; 111:1463-1466) (2012); Awarded the Hsu-Li Distinguished Lectureship in Epidemiology (2013); Robert Leader Endowed Lecture in Food Safety, Michigan State Univ. (2015).

**C. Peer-reviewed publications** (selected from over 200+); \* = **Corresponding author**

**Most relevant to the current application**

1. **Daszak P**, Cunningham AA, Hyatt AD (2000). Emerging infectious diseases of wildlife - threats to biodiversity and human health. *Science* 287: 443-449
2. Li W, Shi Z, Yu M, Ren W, Smith C, Epstein JH, Wang H, Crameri G, Hu Z, Zhang H, Zhang J, McEachern J, Field H, **Daszak P**, Eaton BT, Zhang S & Wang L-F (2005). Bats are natural reservoirs of SARS-like coronaviruses. *Science* 310: 676-679.
3. Jones KE, Patel NG, Levy MA, Storeygard A, Balk D, Gittleman JL, and **Daszak P\***. (2008). Global trends in emerging infectious diseases. *Nature* 451:990-993
4. Keesing F, Belden LK, **Daszak P**, Dobson A, Harvell CD, Holt RD, Hudson P, Jolles A, Jones KE, Mitchell CE, Myers SS, Bogich T & Ostfeld RS. (2010). Impacts of biodiversity on the emergence and transmission of infectious diseases. *Nature* 468:647-652.
5. Morse SS, Mazet JAK, Woolhouse M, Parrish CR, Carroll D, Karesh WB, Zambrana-Torrel C, Lipkin WI, **Daszak P\*** (2012). Prediction and prevention of the next pandemic zoonosis. *Lancet* 380:1956-1965.
6. Quan P-L, Firth C, Conte JM, Williams SH, Zambrana-Torrel C, Anthony SJ, Ellison JA, Gilbert AT, Kuzmin IV, Niezgoda M, Osinubi MOV, Recuenco S, Markotter W, Breiman R, Kalemba L, Malekani J, Lindblade KA, Rostal MK, Ojeda-Flores R, Suzan G, Davis LB, Blau DM, Ogunkoya AB, Castillo DAA, Moran D, Ngam S, Akaibe D, Agwanda B, Brieseman T, Epstein JH, **Daszak P**, Rupprecht CE, Holmes EC, Lipkin WI. (2013). Bats are a major natural reservoir for hantaviruses and pegiviruses. *PNAS* 110: 8194-8199.
7. Anthony SJ, Ojeda-Flores R, Rico-Chávez O, Navarrete-Macias I, Zambrana-Torrel CM, Rostal MK, Epstein JH, Tipps T, Liang E, Sanchez-Leon M, Sotomayor-Bonilla J, Ávila R, Medellín RA, Goldstein T, Suzán G, **Daszak P**, Lipkin WI. (2013). Coronaviruses in bats from Mexico *J. Gen. Virol.* 94: 1028-1038.
8. Anthony SJ, Epstein JH, Murray KA, Navarrete-Macias I, Zambrana-Torrel CM, Soloviyov A, Ojeda-Flores R, Arrigo NC, Islam A, Ali Khan S, Hosseini P, Bogich TL, Olival KJ, Sanchez-Leon MD, Karesh W, Goldstein T, Luby SP, Morse SS, Mazet JAK, **Daszak P\***, Lipkin WI. (2013). A strategy to estimate unknown viral diversity in mammals. *MBio* 4(5): e00598-13.
9. 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, Crameri 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(7477): 535-538.

**Additional recent publications of importance to the field (from 200+ total)**

1. Cui J, Han N, Streicker D, Li G, Tang X, Shi Z, Hu Z, Zhao G, Fontanet A, Yi G, Wang L, Jones G, Field HE, **Daszak P\*** & Zhang, S. (2007) Evolutionary relationships between bat coronaviruses and their hosts. *EID* 13: 1526-1533
2. Smith KF, Behrens M, Schloegel LM, Marano N, Burgiel S, **Daszak P\***. (2009). Reducing the risks of the wildlife trade. *Science* 324:594-595.
3. Rahman SA, Hassan SS, Olival KJ, Mohamed M, Chang L-Y, Hassan L, Saad NM, Shohaimi SA, Mamat ZC, Naim MS, Epstein JH, Suri AS, Field HE, **Daszak P** & HERG (2010). Characterization of Nipah virus from naturally infected *Pteropus vampyrus* bats, Malaysia. *EID* 16: 1990-1993.
4. Epstein J H, Quan PL, Briese T, Street C, Jabado O, Conlan S, Khan SA, Verdugo D, Hossain MJ, Hutchison SK, Egholm M, Luby SP, **Daszak P\***, Lipkin WI. (2010). Identification of GBV-D, a Novel GB-like Flavivirus from Old World Frugivorous Bats (*Pteropus giganteus*) in Bangladesh. *PLoS Pathogens* 6 (7): e1000972.
5. **Daszak P**, Zambrana-Torellio C, Bogich TL, Fernandez M, Epstein JH, Murray KA, Hamilton H (2013). Interdisciplinary approaches to understanding disease emergence: The past, present and future drivers of Nipah virus emergence. *PNAS* 110: 3681-3688
6. Memish ZA, Mishra N, Olival KJ, Fagbo SF, Kapoor V, Epstein JH, Al Hakeem R, Durosinioun A, Al Asmari M, Islam A, Kapoor A, Briese T, **Daszak P**, Al Rabeeah A, Lipkin WI. (2013). Middle East respiratory syndrome coronavirus in bats, Saudi Arabia. *EID* 19(11): 1819-1823
7. Pernet O, Schneider BS, Beaty SM, LeBreton M, Yun TE, Park A, Zachariah TT, Bowden TA, Hitchens P, Ramirez CM, **Daszak P**, Mazet J, Freiberg AN, Wolfe ND, Lee B. (2014). Evidence for Henipavirus spillover into human populations in Africa. *Nature Communications* 5:5342 doi: <http://dx.doi.org/10.1038/ncomms6342>
8. Pike J, Bogich TL, Elwood, SE, Finnoff DC, **Daszak P**. Economic optimization of a global strategy to address the pandemic threat. (2014). *PNAS* 111:18519-23. <http://www.pnas.org/content/early/2014/12/12/1412661112.full.pdf+html?with-ds=yes>
9. Aligali AN, Briese T, Mishra N, Kapoor V, Sameroff SC, de Wit E, Munster VJ, Hensley LE, Zalmout IS, Kapoor A, Epstein JH, Karesh WB, **Daszak P**, Mohammed OB, Lipkin WI (2014). Middle East respiratory syndrome coronavirus infection in dromedary camels in Saudi Arabia. *mBio* 5(2): e00884-14.
10. Mandl JN, Ahmed R, Barreiro LB, **Daszak P**, Epstein JH, Virgin HW, Feinberg MB. (2015). Reservoir host immune responses to emerging zoonotic viruses. *Cell* 160: 20-35.

## **D. Research Support**

### **Ongoing Research Support**

USAID	EPT PREDICT-2	Mazet (PI)	10/01/14 – 09/30/19
Conducting surveillance for novel pathogens in wildlife, livestock and people; characterizing human risk behavior; modeling risk of novel disease emergence; identifying mitigation strategies			
Amount: \$34 Million subcontract from a \$100 Million award			
Role: PI on Subcontract			
1R01AI110964		Daszak (PI)	06/01/14 – 05/31/19
NIAID: Understanding the Risk of Bat Coronavirus Emergence			



Bat ecological, human risk behavioral and virological studies to understand the risk of bat coronavirus emergence  
Role: PI

NSF DEB 1414374 Perrings (PI) 10/15/14 - 10/14/17  
NSF-NIH-USDA EEID, joint UK BBSRC BB/M008894/1  
US-UK Collab: Risks of Animal and Plant Infectious Diseases through Trade (RAPID Trade)  
Role: Co-Investigator

NSF Daszak (PI) 07/01/10-06/30/15  
EcoHealthNet - a Research Coordination Network  
Funding for student exchange and workshops to fuse veterinary science, ecology and human medical sciences

Role: PI 1R01GM100471 Perrings (PI) 09/15/11-06/30/15  
NIGMS  
Modeling Anthropogenic Effects in the Spread of Infectious Disease  
Role: Co-Investigator

HDTRA1 Huff (PI) 04/15/15 - 04/14/17  
Office of Naval Research, Defense Threat Reduction Agency  
Rapid identification of undiagnosed EID Events  
Role: Co-Investigator

### **Completed Research Support**

USAID EPT PREDICT-1 Mazet (PI) 10/01/09 – 09/30/14  
Modeling hotspots for disease emergence and conducting surveillance in wildlife in hotspots for new emerging zoonoses  
Amount: \$18 million subcontract on a \$75 million award  
Role: PI on Subcontract

2 R01TW005869 Daszak (PI) 09/01/08 – 08/31/13  
NIH Ecology of Infectious Diseases (Fogarty International Center)  
The Ecology, Emergence and Pandemic Potential of Nipah virus in Bangladesh  
To conduct mathematical modeling and fieldwork to understand the dynamics of Nipah virus in Bangladesh  
Role: PI

NSF DEB-1257513 Daszak (PI) 08/15/12-07/31/13  
US-China Ecology and Evolution of Infectious Diseases Collaborative Workshop; Kunming, China - October, 2012  
Role: PI

1 R01AI079231 Daszak (PI) 09/18/08 – 08/31/13  
NIAID Non-Biodefense Emerging Infectious Diseases  
Risk of viral emergence from bats.  
To model hotspots for bat viral diversity, identify & characterize new bat viruses & understand their pathology  
Role: PI

NSF BCS 0826779 Daszak (PI) 10/01/08 – 03/31/12

NSF Human and Social Dynamics

AOC - HSD – Collaborative Research: Human-related factors affecting emerging infectious diseases

To analyze how socio-economic and environmental drivers predict risk of EIDs

Role: PI on lead proposal

R01TW005869 - supplemental Daszak (PI) 09/01/08 – 08/31/11

NIH EID (Fogarty International Center)

Supplemental funding: Predicting the risk of global H5N1 spread

This project will involve mathematical modeling and fieldwork in Bangladesh and China to understand risk of H5N1 spread.

Role: PI

NSF EF-062239 Kilpatrick (PI) 09/01/06 - 08/30/11

NSF/NIH: Ecology & Evolution of Infectious Diseases

Predicting spatial variation in West Nile virus transmission

Study interaction among WNV vector, reservoir host populations across an urban-to-rural gradient.

Role: Co-PI

R01 TW05869 Daszak (PI) 08/01/02 - 05/31/07

NIH/Fogarty International Center

Anthropogenic change & emerging zoonotic paramyxoviruses

To identify the cause of emergence of Nipah and Hendra viruses in Malaysia and Australia.

Role: PI

HSD 0525216 Daszak (PI) 10/15/05 - 10/14/06

National Science Foundation: Human and Social Dynamics

Collaborative Research: Socio-Economic and Environmental Drivers of Emerging Diseases

To analyze patterns of disease emergence globally and produce a broad risk assessment.

Role: PI

# Melinda Rostal

---

75 Liberty Place Weehawken, NJ 07086 ▪ (651) 308-5498 ▪ mrostal@alumni.princeton.edu

## EDUCATION:

### University of Minnesota

*Doctor of Veterinary Medicine*

*Master of Public Health*

*Master Thesis:* An investigation of risks for infection of Rift Valley fever virus during inter-epidemic (August – December 2006) and epidemic (December 2006-January 2007) periods in Garissa, Kenya

St. Paul, MN  
September 2004 - May 2008  
May 2005 - November 2007

### Princeton, University

*A.B., Ecology and Evolutionary Biology Cumme Laude*

*Senior Thesis:* A comparison of the feeding behaviors of equids and cattle: A study of grassland competition between cattle and zebras and donkeys

Princeton, NJ  
September 1999 - May 2003

## OTHER EDUCATIONAL EXPERIENCES:

### Smithsonian Tropical Research Institute

*Ecology and Evolutionary Biology Field Semester*

*Coursework Includes:* Tropical Ecology, Archaeology and Paleo-ecology of Pre-Columbian Panama, Life Histories and Physiologies of Tropical Birds, and Coral Reef Ecology

Gamboa, Panama  
February 2002 - May 2002

### Yale University

*Summer Session*

*Coursework Includes:* Introduction to Archaeology, From Crusade to Enlightenment: Religion and Society in Medieval and Early Modern Europe

New Haven, CT  
June 1998 - August 1998

## VETERINARY WORK EXPERIENCE:

### EcoHealth Alliance

*Senior Research Scientist*

*PREDICT 2 EHA Surveillance Coordinator*

*PREDICT 2 Bangladesh Country Liaison*

*Field Veterinarian*

460 West 34th Street - 17th Floor, New York, NY 10001-2320

New York, NY  
April 2010-present

### Columbia University

*Adjunct Research Scientist*

New York, NY  
December 2010 - present

### Tahoma Veterinary Hospital

*Associate mixed animal practitioner*

3317 224<sup>th</sup> St E Spanaway, WA 98387

Spanaway, WA  
June 2008- March 2010

**4<sup>th</sup> year externships:**

- **Brookfield Zoological Park**  
*Duties Include:* Monitor anesthesia, perform physical exams, venipuncture, write all medical records.  
Brookfield, IL  
February - March 2008
- **Smithsonian National Zoological Park**  
*Duties Include:* Monitor anesthesia, venipuncture from all animals, trained to dart zoo animals.  
Washington DC  
November – December 2007
- **Tufts University Emergency Rotation**  
*Duties Include:* Perform triage, emergency treatments and help plan diagnostics and overnight care.  
Grafton, MA  
October 2007
- **The Raptor Center**  
*Duties Include:* Primary case responsibility, performed orthopedic surgery.  
St. Paul, MN  
June 2007
- **The Marine Mammal Center**  
*Duties Include:* Monitor anesthesia, administer medications, assist with necropsies, venipuncture and restrain marine mammals.  
*Project:* Determine normal hematological and biochemical values for northern fur seals.  
Sausalito, CA  
May - June 2007

**Prior to veterinary school:**

*Rehabilitation intern:*

- **Alaska SeaLife Center**  
Full-time summer intern  
Seward, AK  
Summer  
2001
- **Wildlife Rescue Inc.**  
Part-time summer intern  
Palo Alto, CA  
Summer  
2000

Worked with seals, sea otters, sea birds and songbirds. Tube fed, weaned and restrained seals and sea otters. Performed physical exams and triage.

**RESEARCH EXPERIENCE:**

- **Ecosystem Approach for Biodiversity Monitoring and Conservation**  
*USFW*  
*Principal Investigator: Melinda Rostal, DVM, MPH*  
Working with a team of wildlife biologists, ecologists, pathologists and veterinarians we are developing a workshop to improve One Health understanding and monitoring skills for wildlife workers (rangers) and a more theoretical course for directors and managers of wildlife conservation areas in and around the Janos Biosphere Reserve. The  
Chihuahua, Mexico  
May 2013-present

workshops will be held in March of 2015.

- **Rift Valley Fever Virus**

2010-present  
South Africa

*Principal Investigator: William Karesh, DVM*

As Co-PI: Formed a team of international experts on modeling, predicting and diagnosing Rift Valley fever virus (RVFV). Developed a project that has been funded by DTRA to study RVFV ecology and epidemiology in wildlife, domestic ruminants, mosquitoes and humans, including the effects of climate. We propose to better understand how herd immunity in domestic and wild ruminants may be used to predict or prevent RVFV outbreaks. Initiated climatic and mosquito studies, preparing to initiate ruminant studies. Coordinating work between all partners and regularly have meetings with our field coordinator in South Africa.

- **PREDICT 2**

New York,  
NY  
(Work in 7  
countries)  
September  
2014-present

*USAID*

*Principal Investigator: Jonna Mazet DVM, MPVM, PhD;*

As Surveillance Coordinator for EcoHealth Alliance in PREDICT2: Work with country staff and the EHA Modeling team to develop and execute research programs to better understand the mechanisms of zoonotic spillover by conducting longitudinal studies that include collecting biological and behavioral data on humans, livestock and wildlife. The aims of the project are to 1) Improve the understanding of if and how viruses of interest are co-circulating and/or changing in these populations; 2) Document behaviors and practices at these interfaces that may contributing to spillover, amplification, and spread; and 3) Improve capacity in partner countries to continue sustainable infectious disease surveillance. EHA is working in 11 countries: Bangladesh, China, Egypt, India, Indonesia, Jordan, Liberia, Malaysia, Nepal, South Sudan and Thailand. Other duties include: managing the IACUC and relevant amendments with Dr. Jon Epstein; and Country Liaison for Bangladesh, which involves working with the country coordinator on work plans, quarterly reports, data entry and sample collection among other duties.

- **Herpes B virus**

2011-present  
Madaripur,  
Bangladesh

*Principal Investigator: Jonathan Epstein*

Worked with the PREDICT team in Malaysia and PERHILITAN (the Malaysian Wildlife Department) to conduct a pilot study investigating the prevalence of B-virus shedding in long tailed macaques (*Macaca fascicularis*). Worked with coauthors to prepare a manuscript for publication in Emerging Infectious Diseases. This preliminary work was used to apply for an NIH R21 investigating the shedding rate in free-ranging rhesus macaques (*Macaca mulatta*) and the incidence of B virus in human encephalitis cases in Bangladesh.

- **PREDICT**

New York,

- |   |  |
|---|--|
| <p><i>USAID</i><br/> <i>Principal Investigator: Jonna Mazet DVM, MPVM, PhD; Technical Director: William Karesh, DVM</i><br/>         As Latin American Regional Coordinator for EcoHealth Alliance in PREDICT: Coordinated and completed all research conducted in Mexico, Brazil and Bolivia by working closely with in-country teams; Coordinate the information management for EHA in the GAINS system and training reporting; Managed the training data for EcoHealth's PREDICT activities; Developed training materials and guides with the PREDICT Capacity Team; Trained teams in eight countries in Latin America and South and Southeast Asia; Manage IACUC and relevant amendments with Dr. Jon Epstein; and Country Liaison for Bangladesh, which involves working with the country coordinator on work plans, quarterly reports, GAINS data entry, sample collection and shipment among other duties.</p>           | <p>NY<br/>         (Worked in 10 countries)<br/>         2010-2014</p>     |
| <ul style="list-style-type: none"> <li>• <b>Hotspots for Leptospirosis: Historic, current and future spatiotemporal dynamics of leptospirosis in the US</b><br/> <i>Zoetis</i><br/> <i>Principal Investigator: Peter Daszak PhD</i><br/>         As a Research Scientist: Collaborate with colleagues to achieve the following aims: 1) Identify the hotspots of leptospirosis in the continental USA, to focus research, surveillance and vaccine programs in those areas and provide information to veterinarians in those areas that describes the risk of leptospirosis for their patients; 2) Determine the environmental or socio-economic factors that may identify the canine leptospirosis hotspots; 3) Develop a time series analysis to analyze past occurrence of leptospirosis and forecast future cases in the U.S. based on the environmental or socio-economic factors identified as proposed in 2).</li> </ul> | <p>2014<br/>         New York, NY</p>                                      |
| <ul style="list-style-type: none"> <li>• <b>Development of a Great Ape Health Unit in Sabah, Borneo</b><br/> <i>USFW</i><br/> <i>Principal Investigator: Jonathan Epstein DVM, MPH</i><br/>         In collaboration with the Sabah Wildlife Department we are assembling a mobile Wildlife Health Unit; developing a great ape monitoring and surveillance plan; developing a Stoplight Assessment for releasing or translocating gibbons; screening samples collected from wild and rescued great apes for viral and other pathogens.</li> </ul>  | <p>2012-2014<br/>         Sabah, Malaysia</p>                              |
| <ul style="list-style-type: none"> <li>• <b>Beaver Research</b><br/> <i>National Park Service</i><br/> <i>Supervisors: Tiffany Wolf, DVM, DACZM, Steve Windels, terrestrial ecologist</i><br/>         Monitored anesthesia during intra-peritoneal transmitter placement in beavers.</li> </ul>  | <p>Voyageurs<br/>         National Park, MN<br/>         October, 2007</p> |
| <ul style="list-style-type: none"> <li>• <b>Master's Thesis Research</b></li> </ul>   | <p>Nairobi,</p>  |

- US Centers for Disease Control and Prevention and University of Minnesota School of Public Health*  
*Supervisors: Marguerite Pappaioanou DVM, PhD, M.K. Njenga, BVM, PhD,*  
Set up a human hospital surveillance system for Rift Valley fever virus.  
Analyze risk factors associated with being seropositive for antibodies against Rift Valley fever virus before and during an outbreak.
- Kenya  
Summer 2006
- **Avian Influenza Surveillance**  
*Kenya Wildlife Service*  
*Supervisor: F. Gakuya, BVM*  
Used mist nets to trap birds, took morphometric measurements as well as blood, tracheal and cloacal samples from birds for H5N1 influenza testing.
  - **Carnivore Disease Project**  
*University of Glasgow and University of Minnesota*  
*Supervisors: Sarah Cleaveland, BVM, PhD, Craig Packer, PhD*  
Vaccinated 19,498 dogs for rabies, canine distemper virus and canine parvovirus. Worked in Serengeti National Park trapping and radio-collaring jackals as well as radio-tracking lions, hyenas and jackals. Conducted night wildlife transects.
  - **Chronic Wasting Disease Surveillance**  
*Minnesota Department of Natural Resources*  
*Supervisor: Lou Cornicelli, DNR Big Game Program Coordinator*  
Collected cervical and retropharyngeal lymph nodes from deer that hunters brought to register at the station.
  - **Senior Thesis Research**  
*Princeton University and Mpala Research Center*  
*Supervisor: Dan Rubenstein, PhD*  
Conducted field research to determine how the livestock grazing affects the behavior of zebras. Field experience included radio-tracking collared zebras, and conducting behavioral research.
  - **Ocelot Research**  
*Princeton University, Smithsonian Tropical Research Institute and New York State Museum*  
*Supervisor: Roland Kays PhD, Martin Wilkelski PhD*  
Monitored trap lines, monitored ocelots during anesthesia, radio-tracked ocelots.
- Henderson,  
Minnesota  
November,  
2004
- Serengeti,  
Tanzania  
Summer 2005
- Mpala Kenya  
Summer 2002
- BCI, Panama  
3/2002

## PUBLICATIONS:

Aguirre E, Navarrete-Macias I, Liang E, Aguirre L, Galarza I, Moya I, Zambrana-Torrel C, Rostal MK, Anthony SJ, Iniguez, V. (In Prep) Coronaviruses,

2016\*

- Hantaviruses and Paramyxoviruses in Bats from Bolivia **Journal of Wildlife Diseases** 2016\*
- Murray K, Zambrana C, Loh, EL, Rostal MK, Kreuder-Johnson C, Mazet J, Daszak P (In Prep) A framework for understanding the risk of viral spillover from wildlife to humans due to land-use change **Nature** 2016\*
- Romero-Solorio M, Campos AC, Rostal M, Durigon E (In Prep) First reported case of a hantavirus found in *Saguinus bicolor* in Brazil. **Journal of Wildlife Diseases** 2016\*
- Daszak P, Rostal MK, Ball S, Greenwood A, Lepoz J, Jeggo D, Robert N, Allchurch A, Chhun N, Thomasson A. (In Prep) Atoxoplasmosis or *Isospora* sp. (Apicomplexa: eimeriidae) within the UK Captive Breeding Program for the Bali mynah (*Leucopsar rothschildi*) **Veterinary Parasitology**. 2016\*
- Hosseini P, Rostal MK, Anyamba A, Paweska J, Karesh WB (In Prep) Modeling RVFV dynamics in response to host immunity in a ruminant community **PLoS Pathogens** 2015\*
- Tao Y, Hosseini P, Rostal MK, Kemp A, Hastings A (In Prep) The effects of animal movement on RVFV dynamics **PLoS Pathogens** 2015\*
- White A, Zambrana-Torrel C, Allan C, Rostal MK, Daszak P, Karesh WB. (In Prep) Hotspots of Canine Leptospirosis in the United States **JAVMA** 2015\*
- Sotomayor-Bonilla J, Chaves A, Álvarez-Mendizábal P, Rico-Chávez O, Ibáñez-Bernal S, Rostal MK, Ojeda-Flores R, Barbachano-Guerrero A, Gutiérrez-Espeleta G, Aguirre AA, Daszak P, Suzán G (Resubmitted) Sympatric vectors and mammalian hosts of arboviruses in Southern Mexico **Vector-Borne and Zoonotic Diseases** 2015\*
- Anthony, SJ; Islam, A; Johnson, C; Navarrete-Macias, I; Liang, E; Jain, K; Hitchens, PL; Che, X; Solovov, A; Hicks, AL; Ojeda-Flores, R; Ulrich, W; **Rostal, MK**, Epstein, JH; Petrosov, A; Garcia, J; Haider, N; Wolfe, N; Goldstein, T; Morse, SS; Rahman, M; Mazet, J; Daszak, P; Lipkin, W.I. (In Review) Predictable patterns in viral diversity **Nature Communications** 2015\*
- Liang E, Aguirre E, Rostal MK, Aguirre L, Zambrana C, Iniguez I, Anthony S. (In Review) Short Communication: A new assay for influenza virus in bats. **Journal of Virology**. 2015\*
- Lee M, Rostal MK, Hughes T, Griffiths A, Harden M, Rovie-Ryan J, Sitam F, Basir M, Epstein J, Daszak P. (2015) Macacine Herpesvirus 1 (B virus) in wild-caught long-tailed macaques (*Macaca fascicularis*) following capture and transport in Malaysia **Emerging Infectious Diseases**. 21(7) —July 2015 Epub ahead of print. DOI:10.3201/eid2107.140162. 2015
- Olival KJ, Dittmar K, Bai Y, Rostal MK, Lei BR, Daszak P, Kosoy M. (2015) *Bartonella* spp. in a Puerto Rican bat community **Journal of Wildlife Diseases** 51(1):274-278. 2015
- Sotomayor-Bonilla J, Chaves A, Rico-Chávez O, Rostal MK, Ojeda-Flores R, Salas-Rojas M, Aguilar-Setien A, Ibáñez-Bernal S, Barbachano-Guerrero A, Gutiérrez-Espeleta G, Aguilar-Faisal JL, Aguirre AA, Daszak P, Suzán G. (2014) Dengue virus 2014



- in bats from southeastern Mexico **The American Journal of Tropical Medicine and Hygiene** 91(1):129-131.
- Anthony SJ, Ojeda-Flores R, Rico O, Navarrete-Macias I, Zambrana-Torrel C, Rostal MK, Epstein J, Tipps T, Liang E, Sanchez-Leon M, Sotomayor J, Aguirre AAA, Ávila R, Medellín RM, Goldstein T, Suzán G, Daszak P, Lipkin WI. (2013) Coronaviruses in bats from Mexico. **Journal of General Virology** 94(Pt 5):1028-1038. 2013
- Quan P, Firth C, Conte J, Williams S, Zambrana-Torrel C, Anthony SJ, Ellison JA, Gilbert AT, Kuzmin IV, Niezgoda M, Osinubi MOV, Recuenco S, Markotter W, Breiman R, Kalemba L, Malekani J, Lindblade KA, Rostal MK, Ojeda-Flores R, Suzan G, Davis LB, Blau DM, Ogunkoya AB, Alvarez Castillo DA, Moran D, Ngam S, Akaibe D, Agwanda B, Briesse T, Epstein JH, Daszak P, Rupprecht CE, Holmes CE, Lipkin WI. (2013) Bats are a major natural reservoir for hepaciviruses and pegiviruses. **Proceedings of the National Academy of Sciences** 110(20):8194-8199. 2013
- Rostal MK. (2013) Herpes B. In J. E. Napier, K. C. Gamble (eds): **Infectious Diseases of Concern to Captive and Free Ranging Animals in North America**, 2nd ed. Infectious Disease Committee, American Association of Zoo Veterinarians, Yulee, Florida. 374. 2013
- Rostal MK, Olival K, Loh E, Karesh WB. (2013) Wildlife: The need to better understand the risks and linkages. **Current Topics in Microbiology and Immunology** 365:101–125. DOI: 10.1007/82\_2012\_271. PMID: 23117192 2013
- Loh EH, Murray KA, Zambrana-Torrel C, Hosseini PR, Rostal MK, Karesh WB, Daszak P. (2013) Ecological approaches to studying zoonotic diseases. **Microbiology Spectrum**. 1(3):OH-2009-2012. 2013
- Smith K, Loh E, Rostal MK, Zambrana C, Daszak P. (2013) Pathogens, pests and economics: Drivers of honey bee colony declines and losses. **EcoHealth**. 10(4):434–445. DOI: 10.1007/s10393-013-0870-2. 2013
- Uhart M, Pérez AA, Rostal M, Alandia-Robles E, Mendoza AP, Nava A, Dejuste de Paula C, Miranda F, Iñiguez I, Zambrana C, Durigon E, Franco P, Joly D, Goldstein T, Karesh W, Mazet J. (2013) A ‘One Health’ Approach to Predict Emerging Zoonoses in the Amazon. In **Wildlife and Human Health: Experiences and Perspectives**. Chame M, Labarthe N (eds) FIOCRUZ Rio de Janeiro, Brazil pp 65-73. 2013
- Rostal M, Evans A, Solberg E, Arnemo J. (2012) Hematology and serum chemistry reference ranges of free-ranging moose (*Alces alces*) in Norway. **Journal of Wildlife Diseases** 48(3):548-559. 2012
- Aguirre A, Rostal M, Zimmerman B, Keefe T. (2012) Epidemiologic investigations of infectious pathogens in marine mammals: The importance of serum banks and statistical analysis. **New Directions in Conservation Medicine: Applied Cases of Ecological Health**. Aguirre A, Ostefeld R and Daszak P (eds) Oxford University Press New York, NY pp 563-575. 2012

- Rostal MK, Lee M, Hughes T, Griffiths A, Harden M, Rovie-Ryan J, Sitam F, Basir M, Fair J, Epstein J, Daszak P. (2011) B-virus shedding rates determined by PCR in culled free-ranging long-tailed macaques (*Macaca fascicularis*) in Malaysia. **Proceedings of the 60th Annual International Conference of the Wildlife Disease Association**. pp 40 2011
- Epstein J, Zambriski J, Rostal M, Heard D, Daszak P. (2011) Comparison of Intravenous Medetomidine and Medetomidine/Ketamine for Immobilization of Free-Ranging Variable Flying Foxes (*Pteropus hypomelanus*). **PLoS ONE** 6(10): e25361. 2011
- Rostal MK, Evans A, Akoolo L, Wakhule L, Macharia J, Breiman R, and Njenga K. (2010) Rift Valley fever virus activity during inter-epidemic periods: Identification of potential vectors and detection of antibodies in livestock. **American Journal of Veterinary Research** 71(5):522-526. 2010
- Evans A, Gakuya F, Paweska JT, Rostal MK, Akoolo L, Van Vuren P, Manyibe T, Macharia J, Ksiazek T, Feikin D, Breiman R, Njenga K. (2008) Prevalence of Antibodies against Rift Valley fever virus in Kenya wildlife during an inter-epidemic period. **Epidemiology & Infection** 136(9):1261-9. 2008
- Rostal MK, A. Evans, M.K. Njenga. Rift Valley fever virus in East Africa. **Proceedings of the Minnesota Veterinary Medical Association**. 2007
- \* denotes *In Prep*

## CONFERENCE PRESENTATIONS:

- ASM Biodefense and Emerging Diseases Research Meeting** Washington D. C. 2014  
*Approaches to understanding the ecology of herpes B virus in nature*  
 Oral Presentation: **M. K. Rostal\***, A. Griffiths, M. Lee, T. Hughes, S. J. Anthony, A. Islam, M. Harden, L. Avena, P. Daszak, J. H. Epstein
- American Society of Tropical Medicine and Hygiene 62nd Annual Meeting** Washington D. C. 2013  
*The Contribution of Herd Immunity to the Epidemic Cycles of Rift Valley Fever Virus in South Africa*  
 Poster Presentation: **M. K. Rostal\***, W. Karesh, E. Gardner, A. Anyamba and P. Hosseini
- 1º Meeting of the WDA Latin America Section** São Paulo, Brazil 2013  
*Arbovirus in small mammals and the presence of vectors from southeastern Mexico*  
 Poster Presentation: J. Sotomayor-Bonilla\*, A. Abella, P. Álvarez-Mendizábal, A. Chaves, Ó. Rico-Chávez, S. Ibáñez-Bernal, **M. K. Rostal**, S. J. Anthony, G. Gutiérrez-Espeleta, R. A. Medellín, P. Daszak and G. Suzán
- International Congress on Pathogens at the Human Animal Interface** Porto de Galinhas  
*PREDICTing viral diversity along landscape disturbance in Mexico and*

- Brazil* 2013  
 Oral Presentation: **M. K. Rostal\***, C. Zambrana, K. Murray, S. Anthony, G. Suzan, R. Medellín, E. H. Loh, O. Rico, R. Ojeda, M. Romero and P. Daszak
- International Congress on Pathogens at the Human Animal Interface** Porto de Galinhas 2013  
*Coronaviruses and hantaviruses detected in bats from tropical and sub-tropical regions in Brazil during the PREDICT Project - 2008 to 2012.*  
 Poster Presentation: A. C. Campos\*, S. Anthony, J. Araújo, T. Ometto, R. Hurtado, M. S. Nardi, M. R. Solorio, A. Nava, **M. K. Rostal**, E. Loh, C. M. Zambrana-Torrelío, P. Daszak and E. L. Durigon
- International Congress on Pathogens at the Human Animal Interface** Porto de Galinhas 2013  
*Building an early warning system for emerging infectious zoonoses of wildlife origin in the Amazon.*  
 Poster Presentation: M. Uhart\*, E. Alandia, L. Aguirre, N. Cavero Young, C. Dejuste, M. De la Puente, E. Durigon, P. Franco, E. Loh, P. Mendoza, F. Miranda, Y. Murillo, K. Murray, F. Nassar, A. Nava, A. Perez, V. Periera, M. Romero, **M. K. Rostal**, F. Suarez, C. Zambrana and C. Zariquiey
- International Congress on Pathogens at the Human Animal Interface** Porto de Galinhas 2013  
*Deep Forest Brazil*  
 Poster Presentation: M. R. Solorio\*, E. Durigon, A. Campos, **M. K. Rostal**, K. A. Murray, C. M. Zambrana-Torrelío, S. Anthony, A. Nava, E. Loh and P. Daszak
- International Wildlife Disease Association Conference** Knoxville, TN 2013  
*USAID predict wildlife surveillance in Mexico*  
 Oral Presentation: **M. K. Rostal\***, R. Medellín, G. Suzán, O. Rico, R. Ojeda, A. A. Aguirre, J. E. Epstein, P. Daszak and S. J. Anthony
- Society for Conservation Biology's 26th International Congress for Conservation Biology** Baltimore, MD 2013  
*USAID PREDICT wildlife surveillance in Mexico and Brazil*  
 Oral Presentation: **M. K. Rostal\***, R. Medellín, G. Suzán, M. Romero-Solorio, S. J. Anthony, A. A. Aguirre, J. E. Epstein, P. Daszak and J. Mazet
- International Wildlife Disease Association Conference** Lyon, France 2012  
*Drivers of Honey Bee Colony Declines and Losses*  
 Oral Presentation: **M. K. Rostal\***, K. Smith, E. H. Loh, and P. Daszak
- International Wildlife Disease Association Conference** Lyon, France 2012  
*Dengue virus in bats from different landscapes in southeastern Mexico*  
 Poster Presentation: J. J. Sotomayor-Bonilla\*, A. Aguilar-Setien, R. Medellín, O. Rico, P. Daszak, **M. K. Rostal**, S. Anthony, M. Salas, A.

Chaves, G. Gutiérrez-Espeleta, S. Ibáñez, G. Suzán

**2º Congreso Internacional en Ecología de Enfermedades y Medicina de la Conservación Kalaankab**

*PREDICTing the emergence of zoonotic diseases in Mexico*

Oral Presentation: **M. Rostal\***

Querétaro,  
Mexico  
2011

**Congrés Armand-Frappier**

*Ecosystems and Health – Searching for Emerging Viruses*

Oral Presentation: **M. Rostal\*** and W. Karesh; Keynote speaker

Estérel, Canada  
2011

**International Wildlife Disease Association Conference**

*The Role Of Livestock Immunity In Periodic Resurgence Of Rift Valley Fever*

Poster Presentation: P. R. Hosseini\*, P. B. H. Formenty, **M. Rostal**, and P. Daszak

Iguazu,  
Argentina  
2010

**International Wildlife Disease Association Conference**

*Rift Valley Fever Virus Surveillance in Kenyan Wildlife*

Oral Presentation: **M. Rostal\***, A. Evans, F. Gakuya, J. Paweska, R. Breiman, and M.K. Njenga

Edmonton,  
Canada  
2008

**International Meeting on Emerging Diseases and Surveillance**

*Rift Valley Fever Virus Seroprevalence in Sheep Born Before and After the 1997-98 Epizootic in the Nakuru District of Kenya.*

Poster Presentation: **M. Rostal\***, A. Evans, L. Akoolo, L. Wakhule, J. Macharia, R. Breiman, and M.K. Njenga

Vienna, Austria  
2007

**International Meeting on Emerging Diseases and Surveillance**

*Rift Valley Fever Virus Surveillance in Kenyan Wildlife*

Poster Presentation: A. Evans\*, **M. Rostal**, F. Gakuya, J. Paweska, R. Breiman, and M.K. Njenga

Vienna, Austria  
2007

**Minnesota Veterinary Medical Association Annual Meeting**

*Rift Valley fever virus in East Africa*

Oral Presentation: **M. Rostal\***, A. Evans, M.K. Njenga.

Minneapolis,  
MN  
2007

**Northeastern Ecology and Evolution Conference**

*A Study of the Effect Cattle Grazing Has on the Plains Zebra (*Equus burchelli*)*

Poster Presentation: **M. Rostal\***, T. Young, I. Fischhoff and D. Rubenstein

Rutgers, NJ  
2003

**Senior Symposium**

*A Comparison of the Feeding Behaviors of Equids and Cattle: A Study of*

Princeton, NJ  
2003

*Grassland Competition Between Cattle and Zebras and Donkeys*

*Oral Presentation: M. Rostal\**

\*Indicates presenter

## RESEARCH GRANTS AND SCHOLARSHIPS:

<b>Tolerant Hosts Using Novel Drug-Enhanced Resilience (THUNDER)</b>	Submitted to
DARPA, PI Katze (Co-PI Karesh)	UW
Senior Personnel	\$649,788.81
<b>Dimensions: Taxonomic, genetic and functional limits of mammalian virodiversity</b>	Submitted
NSF, PI Dazak	\$250,000
Senior Personnel	
<b>PREDICT 2, USAID Emerging Pandemic Threats, PI, Mozet, J.</b>	10/1/15-9/30/19
EHA Surveillance Coordinator	\$100,000
<b>Understanding Rift Valley Fever in South Africa, DTRA Thrust Area 6, PI, Karesh,</b>	5/28/14-5/31/16
Co-Investigator	\$1,971,483
<b>Ecosystems Approach for Monitoring Biodiversity and Conservation USFW</b>	4/28/14-6/30/15
Wildlife without borders, PI Rostal, M	\$29,988
<b>Hotspots for Leptospirosis: Historic, current and future spatio-temporal dynamics of leptospirosis in the US, Zoetis, PI Daszak</b>	6/26/14-12/31/14
Research Scientist	\$200,000
<b>Deep Forest, The Samuel Freeman Charitable Trust, PI Melinda Rostal</b>	5/22/13-5/21/14
	\$25,000
<b>Development of a Great Ape Health Unit in Sabah, Malaysia, USFWS,</b>	09/13/12-12/31/14
F12AP01117 PI, Epstein, J.	\$39,487
Senior Personnel	
<b>PREDICT - Wildlife SMART Surveillance, USAID Emerging Pandemic Threats, GHN-A-00-09-00010-00 PI, Mozet, J.</b>	10/1/09-09/30/14
Latin American Regional Coordinator	\$3,232,500
<b>SCAVMA Travel Grant, University of Minnesota</b>	2008
Funding for an externship at Brookfield Zoo	
<b>Pfizer Animal Health Award, University of Minnesota</b>	2007
Funding to support veterinary education	
<b>International Externship Travel Grant, University of Minnesota</b>	2007
Funding for externship in Mongolia with Christian Veterinary Missions	
<b>SCAVMA Travel Grant, University of Minnesota</b>	2007
Funding to present poster at the International Meeting on Emerging Diseases and Surveillance and to attend the American Association of Zoo Veterinarians Annual Conference and to go to externships at The Marine Mammal Center and the National Zoo.	
<b>The Graduate and Professional Student Assembly Travel Grant, University of Minnesota</b>	2007
Funding to present poster at the International Meeting on Emerging Diseases and Surveillance	

<b>Harold Wetterberg Foundation Scholarship, University of Minnesota</b>	2006, 2007
Funding to support veterinary education	
<b>Caleb Dorr Scholarship, University of Minnesota</b>	2006
Funding to support veterinary education	
<b>Augustus Searles Scholarship for Women, University of Minnesota</b>	2006, 2007,
Funding to support veterinary education	2008
<b>Veterinary College Travel Grant, University of Minnesota</b>	2006
Funding to support Rift Valley fever virus research in Kenya	
<b>Dr. J Arthur Meyers Endowment for International Experience in Public Health, University of Minnesota</b>	2006
Funding to support Master of Public Health thesis research	
<b>JUDD Fellowship in the School of Public Health, University of Minnesota</b>	2006
Funding to support Master of Public Health thesis research	
<b>Merck Merial Summer Scholars Program, University of Minnesota</b>	2006
Funding to support Rift Valley fever virus research in Kenya	
<b>SCAVMA Travel Grant, University of Minnesota</b>	2006
<b>Funding to support travel to the American Association of Zoo Veterinarians Annual Conference and the Veterinary Student Exotic Animal Symposium</b>	
<b>Veterinary College Travel Grant, University of Minnesota</b>	2005
Funding to support work in Tanzania vaccinating dogs	
<b>SCAVMA Travel Grant, University of Minnesota</b>	2005
Funding to support travel to the American Association of Zoo Veterinarian Annual Conference	
<b>SCAVMA Travel Grant, University of Minnesota</b>	2005
Funding to support travel to “Show Me Exotics” Veterinary Student Symposium	
<b>Dean of the College Round Table Thesis Research Fund, Princeton University</b>	2002
Funding to support senior thesis research in Mpala, Kenya	
<b>H. Hamilton Hackney ’53 Senior Thesis Research Fund, Princeton University</b>	2002
Funding to support senior thesis research in Mpala, Kenya	

#### **MEMBERSHIP IN PROFESSIONAL SOCIETIES:**

<b>American Society of Tropical Medicine and Hygiene</b>	2013
<b>Wildlife Disease Association</b>	2008-2015
<b>American Association of Wildlife Veterinarians</b>	2005-2015
<b>American Veterinary Medical Association</b>	2008-2015
<b>American Association of Small Ruminant Practitioners</b>	2008-2010
<b>Washington Veterinary Medical Association</b>	2008-2010
<b>Student Chapter of the American Veterinary Medicine Association</b>	2004-2008

# **PROFESSIONAL CONFERENCES ATTENDED:**

<b>American Society of Tropical Medicine and Hygiene 62nd Annual Meeting</b>	Washington D. C. 2013
<b>Second International Congress on Pathogens at the Human Animal Interface</b>	Porto de Galinhas 2013
<b>International Wildlife Disease Association Conference</b>	Knoxville, TN; Leon, France; Quebec City, Canada; Iguazu, Argentina; Blaine, WA & Edmonton, Canada 2013, 2012, 2011, 2010, 2009, 2008
<b>American Association of Wildlife Veterinarians Annual Conference</b>	Omaha, NE & Edmonton Canada 2005, 2008
<b>International Meeting on Emerging Diseases and Surveillance</b>	Vienna, Austria 2007
<b>Minnesota Veterinary Medicine Association Annual Meeting</b>	St. Paul & Minneapolis, MN 2005, 2007
<b>American Association of Zoo Veterinarians Annual Conference</b>	Omaha, NE & Tampa, FL 2005, 2006
<b>EcoHealth One Conference</b>	Madison, WI 2006

# **HONORS AND AWARDS:**

<b>Caleb Dorr Certificate</b> – University of Minnesota	2007, 2008
<b>Phi Zeta</b> – Honor Society of Veterinary Medicine – University of Minnesota	2007
<b>National Honors Society</b> – University of Minnesota	2006
<b>Honor Society of Phi Kappa Phi</b> – University of Minnesota	2005
<b>Art Lane '34 Award</b> – Princeton University	2003
<b>Jack Smith Award</b> – Princeton University	2003
<b>Wanda P. Sieja Coach's Award</b> – Princeton University	2003
<b>All-Ivy Academic team</b> – Princeton University	2003
<b>9<sup>th</sup> at NCAA Championships for Women's Foil</b> – Princeton University	2000, 2003
<b>All-American NCAA Women's Fencing</b> – Princeton University	2000-01, 2003
<b>All-Ivy Women's Fencing</b> – Princeton University	2000-01, 2003
<b>3<sup>rd</sup> at NCAA Championships for Women's Foil</b> – Princeton University	2001
<b>Ranked 10<sup>th</sup> in the United States Fencing Association Open Women's Foil</b>	2001

# **OTHER WORK EXPERIENCE:**

*Public Education Experience, as education intern:*

- **HawkWatch International**  
Full-time  
September 2003- February 2004  
Salt Lake City, UT
  - **ProPeru**  
Part-time  
March – April 2004  
Urubamba, Peru
  - **Alaska SeaLife Center**  
Part-time  
Summer, 2002  
Seward, AK
- Gave informational talks and taught scientific theories to children and adults on raptors and the environment, habitat destruction and marine ecology. In Peru, the educational talks were given in Spanish.

#### **LEADERSHIP ACTIVITIES:**

- **Student Leadership:**
  - ◆ Vice president of Conservation Medicine Collective 2005-2007
  - ◆ President of Zoo, Exotic, Avian Wildlife Medicine Club 2005-2006
- **Fencing:**
  - ◆ Captain of Princeton's women's fencing team 2002-2003
  - ◆ Women's Foil Squad Leader – Princeton University 2001-2002

#### **TECHNICAL SKILLS:**

**Computer:** Proficient with Microsoft Word, Excel, Power Point.  
Familiar with R and EpiInfo 3.3.2 statistical tools.

#### **FOREIGN LANGUAGES SPOKEN:**

**Spanish** – Advanced intermediate  
**Portuguese** – Beginning  
**Swahili** – Beginning