

# Mitigating Zoonotic Threats

The First Annual Scialog Conference  
September 30–October 1, 2021

**scialog2021**<sup>®</sup>



RESEARCH CORPORATION   
*for* SCIENCE ADVANCEMENT

## Objectives

Engage in dialogue with the goal of accelerating high-risk/high-reward research.

Enhance partnerships between USDA and academic scientists to build deeper ties that will expand the research base, knowledge sharing and expertise required to tackle critical scientific questions relating to zoonotic diseases that impact human and animal health and our society as a whole.

Build a creative, better-networked, collegial community that is more likely to produce breakthroughs.

Form teams to write proposals to seed novel projects based on highly innovative ideas that emerge at the conference.

Most importantly, enjoy the discussions about where this field should go and how we can work together to get there.

## Process

Brainstorming is welcome; don't be afraid to say what comes to mind.

Consider the possibility of unorthodox or unusual ideas without immediately dismissing them.

Discuss, build upon and constructively criticize each other's ideas – in a spirit of cooperative give and take.

Make comments concise to avoid monopolizing the dialogue.

## Diversity, Inclusion and No Harassment

Research Corporation for Science Advancement fosters an environment for listening and considering new ideas from a diverse group, with respect for all participants without regard to gender, race, ethnicity, sexual orientation, age or any other aspect of how we identify ourselves other than as fellow scientists.

RCSA does not tolerate any form of harassment, which could include verbal or physical conduct that has the purpose or effect of substantially interfering with anyone else's participation or performance at this conference, or of creating an intimidating, hostile, or offensive environment; any such harassment may result in dismissal from the conference.

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# Scialog: Mitigating Zoonotic Threats

## From the President

Welcome to the 2021 *Scialog: Mitigating Zoonotic Threats* meeting, organized by Research Corporation for Science Advancement and supported by funding from the USDA under award #58-3022-0-005. This is the first of three Scialog meetings on this theme. Our planning for this Scialog actually started prior to the COVID-19 outbreak, but the importance and current relevance of this theme has been made crystal clear by the events of the past 18 months.

The goal of this Scialog is to think deeply about ways scientists can use their training from across a diverse set of disciplines and methodologies to collaborate on new and innovative projects to accelerate fundamental science addressing zoonotic diseases. We challenge you to think about science that would identify potential zoonotic outbreaks earlier (preferably before spillover occurs) and allow us to respond more quickly and effectively—not if but when the next incident occurs.

Scialog's overarching purpose is to advance cutting-edge science of great significance to humanity by catalyzing innovative, basic research leading to fundamental discoveries. Our focus is on scientists in the early years of their independent careers. Through the unique Scialog process, we seek to lay the foundation for an ongoing, highly creative, cross-disciplinary community of scientists that will prove adept at identifying exciting areas for research advances for decades to come.

To that end, under the guidance of RCSA Program Directors **Andrew Feig**, **Richard Wiener** and **Silvia Ronco** and USDA administrators **Jeff Silverstein**, **Suelee Robbe-Austerman** and **Roxann Motroni**, we hope you will be engaged in passionate discussions with colleagues, many of whom you will have met for the first time at Scialog. The process may even push you out of your comfort zone with the goal of stimulating new and better ideas. The result, we expect, will be a meeting unlike others that you attend. We are confident that you will find the next few days to be extremely worthwhile.

This is your opportunity to air that wild idea you have been reluctant to share with others, or to discuss a nagging hunch that does not yet have sufficient supporting data, or to take a leap on a high-impact/high-risk project instead of concentrating all your effort on somewhat more “incremental” studies. This is the time to come up with, and be open to, completely new ideas that may truly change the world.

We hope this first meeting on this topic yields a crop of outstanding team proposals, which will make our job of determining who receives funding very challenging. I wish you every success in exploring new and compelling ideas over the next few days.

Have a terrific meeting!

**Daniel Linzer**

President

Research Corporation for Science Advancement

## From the Program Director

This year Research Corporation and the USDA are jointly sponsoring the first annual meeting of *Scialog: Mitigating Zoonotic Threats*. Research Corporation's highly interactive Scialog meetings seek to catalyze new collaborations based on blue-sky ideas among Scialog Fellows who constitute a highly select group of exemplary early career U.S. and Canadian scientists. The emphasis is on dialogue, networking, and building new collaborations to pursue novel, high-risk discovery research.

Research Corporation and the USDA chose to focus on *Mitigating Zoonotic Threats* because we believe this critical area of science requires major breakthroughs in fundamental understanding of zoonosis. While we began planning for this initiative one year prior to the outbreak of SARS-CoV2, the current pandemic has exemplified why this topic is so important. Because spillover events will occur again, we need to muster the combined expertise of chemists and life scientists, human, animal and public health experts, computational biologists and disease modelers, wildlife biologists and experts in how climate change will impact human and animal migration. Through this effort we also wish to enhance partnerships between USDA and academic scientists to build the deeper ties that will expand the research base, knowledge sharing and expertise required to tackle critical scientific questions that impact human and animal health and our society as a whole.

We have an outstanding keynote speaker to set the stage for breakout discussions:

**Christine Johnson**, University of California, Davis

We have a team of terrific discussion facilitators: **Peter Dorhout** (Iowa State University), **Curt Horvath** (Northwestern University), **Matt Erdman** (USDA/APHIS), **Rebecca Garabed** (Ohio State University), **Linda Detwiler** (USDA/APHIS), **Michael Wimberly** (University of Oklahoma), **Christine Johnson** (University of California, Davis), **Amy Vincent** (USDA/ARS), **Wilfred van der Donk** (University of Illinois Urbana-Champaign).

Program representatives from philanthropic organizations including the Burrows Wellcome Fund, the Gordon and Betty Moore Foundation, The Walder Foundation, and the Science Philanthropy Alliance, as well as administrators from the CDC and USDA, will all be present to join the conversations and are looking forward to interacting with Fellows and Facilitators..

Scialog meetings focus on dialogue and team building with the goal of creating novel strategies and collaborative approaches. An important feature is the opportunity for Scialog Fellows to form teams and write proposals to pursue particularly creative ideas that emerge through the dialogue. We hope this competition is exciting, but regardless of which proposals are funded, the primary purpose is to catalyze a deeper and more meaningful exchange of ideas than ordinarily occurs at scientific conferences. Our intent is for this process to help participants gain new insights and connections that significantly advance fundamental science to protect our society from future zoonotic outbreaks, and to be better able to respond to them quickly and effectively.

We hope everyone finds the Scialog experience of great value. Please do not hesitate to provide feedback on how to make the conference better. My fellow Program Directors, **Richard Wiener** and **Silvia Ronco**, the RCSA staff, and I are here to help make the meeting a great experience!

**Andrew Feig**

Program Director

Research Corporation for Science Advancement

# Scialog: Mitigating Zoonotic Threats

## Conference Agenda (Optional activities in green) September 30–October 1, 2021

### Thursday, September 30 (all times listed in Pacific time zone)

8:00 – 8:30 am	<b>Early login, Informal dialog, BYO breakfast/lunch</b>	Zoom Main Room & Breakout Rooms
8:30 – 8:40 am	<b>Welcome</b> Dan Linzer, President, <i>RCSA</i> Jeff Silverstein, <i>USDA</i>	Zoom Main Room
8:40 – 8:55 am	<b>Conference Overview &amp; Desired Outcomes</b> Andrew Feig, <i>RCSA</i>	Zoom Main Room
8:55 – 9:30 am	<b>Small Group Ice Breakers</b>	Zoom Breakout Rooms
9:30 – 10:05 am	<b>Keynote Presentation &amp; Discussion</b> <i>Catalyzing Innovation for Surveillance of Emerging Pandemic Threats in an Era of Accelerated Global Change</i> Christine Johnson, UC Davis, EpiCenter for Disease Dynamics	Zoom Main Room
10:05 – 10:20 am	<b>Break</b>	
10:20 – 10:30 am	<b>Directions for Breakout Sessions</b>	Zoom Main Room
10:30 – 11:45 am	<b>Breakout Session I</b>	Zoom Breakout Rooms
11:45 am – 12:15 pm	<b>Report Out</b>	Zoom Main Room
12:15 – 12:30	<b>Directions for Mini Breakout Sessions</b>	Zoom Main Room
12:30 – 1:30 pm	<b>Lunch</b>	Zoom Main Room
1:30 – 2:15 pm	<b>Mini Breakout Session I (Fellows only)</b>	Gather Rooms
2:15 – 2:30 pm	<b>Break</b>	
2:30 – 3:15 pm	<b>Mini Breakout Session II (Fellows only)</b>	Gather Rooms
3:15 – 5:00 pm	<b>Break</b>	
5:00 – 7:00 pm	<b>Social Mixer</b>	Gather Rooms

### Friday, October 1 (all times listed in Pacific time zone)

8:00 – 8:30 am	<b>Early login, Informal dialog, BYO breakfast/lunch</b>	Zoom Main Room
8:30 – 8:40 am	<b>Check in regarding Thursday Sessions</b>	Zoom Main Room
8:40 – 9:00 am	<b>Discussion of Team Formation/Proposals</b>	Zoom Main Room
9:00 – 10:15 am	<b>Breakout Session II</b>	Zoom Breakout Rooms
10:15 – 10:45 am	<b>Report Out</b>	Zoom Main Room
10:45 – 11:00 am	<b>Break</b>	
11:00 am – 12:15 pm	<b>Breakout Session III</b>	Zoom Breakout Rooms
12:15 – 12:45 pm	<b>Report Out</b>	Zoom Main Room
12:45 – 1:00 pm	<b>Wrap-up</b>	Zoom Main Room
1:00 – 2:00 pm	<b>Lunch</b>	Zoom Main Room
2:00 – 2:45 pm	<b>Mini Breakout Session III (Fellows only)</b>	Gather Rooms
2:45 – 3:00 pm	<b>Break</b>	
3:00 – 3:45 pm	<b>Mini Breakout Session IV (Fellows only)</b>	Gather Rooms
3:45 – 5:00 pm	<b>Break</b>	
5:00 – 7:00 pm	<b>Social Mixer</b>	Gather Rooms

**Keynote Presentation**

# Catalyzing Innovation for Surveillance of Emerging Pandemic Threats in an Era of Accelerated Global Change

**Christine Kreuder Johnson**

*EpiCenter for Disease Dynamics, One Health Institute,  
School of Veterinary Medicine, University of California, Davis*



**Abstract:** Emerging infectious diseases and large-scale disease outbreaks are increasingly more frequent due to accelerated global change. The vast majority of pandemics first emerge as RNA viruses in wild animals, with high potential for cross-species transmission among wild and domestic animals, before the first human is even infected. Zoonotic viruses have opportunities to adapt to human transmission in people with close interactions with animals, thus surveillance is most needed at the animal-human interfaces that constitute the frontlines for emerging infectious disease. Unfortunately, the animal sources and the circumstances involved in early emergence and spillover of pandemic viruses into susceptible human populations remains shrouded in mystery. Early recognition of emerging infectious disease threats is impeding pandemic preparedness. Thus, innovation in transdisciplinary solutions spanning a much wider range of expertise is urgently needed. Future efforts must be directed at detection of infectious diseases at the point of spillover, in rural and remote settings where diseases are most likely to emerge, not just in urban settings where diseases spread and healthcare is more accessible. Improved efficiencies and accuracies in broad spectrum zoonotic disease detection must accompany scientific and technological breakthroughs in understanding environmental change and the implications this has for animal and public health. We aim to catalyze innovation in cross-disciplinary research, and highlight the importance of meaningful international collaborations, to improve preparedness for the next emerging pandemic threat.

# Scialog: Mitigating Zoonotic Threats

## 2021 Proposal Guidelines and Collaborative Awards

### Scialog: Mitigating Zoonotic Threats

1. Awards are intended to provide seed funding for teams of two to three Scialog Fellows formed at this conference for high-risk, high-impact projects. Teams may include up to two USDA scientists so long as they are from different agencies and must also include at least one non-USDA member.
2. Two-page proposals should describe the project and the role of each team member. No budget is necessary. A third page may be used for references.
3. Awards will be in the amount of \$50K direct funding per team member, plus indirect costs. The indirect cost rate for a given awardee will be dependent upon the awardee institution type since these will be processed as subawards from USDA prime award #58-3022-0-005. Grant duration will be one year.
4. We encourage USDA scientists to join teams that initiate collaborations with academic scientists. APHIS and ARS have set aside USDA funds to cover the agency side of collaborations initiated through the Scialog proposal competition.
5. No Scialog Fellow can be a member of more than two teams. If a Scialog Fellow is a member of two teams, other members of the teams must be different. No team can submit more than one proposal.
6. No Scialog Fellow who previously has won a Scialog Collaborative Award can be a member of more than one team. The other team members must be different from the members of the previously awarded team. (Applies to Years 2 & 3).
7. Teams cannot include members who have previously collaborated with one another. If you are unsure of your status (e.g., prospective team members were part of a large collaboration but did not significantly interact), please check for clarification with an RCSA program director.
8. Teams are encouraged (but not required) to:
  - a. Include members with different research approaches and methods.
  - b. Include members from different disciplines.
  - c. Include collaborators from USDA and academic laboratories.
9. Proposals must be submitted electronically by 11:59 p.m. PDT on **October 8, 2021**. Instructions for submission will be provided at the meeting.
10. Awards are anticipated to start on **December 15, 2021**.

## Scialog Fellows

### **Salvador Almagro-Moreno** [samoreno@ucf.edu](mailto:samoreno@ucf.edu)

University of Central Florida,  
Burnett School of Biomedical Sciences

*The Moreno lab focuses on identifying what are the genetic and environmental triggers that lead to the emergence of bacterial pathogens. We use members of the Vibrionaceae, a diverse family of aquatic bacteria, as model systems to understand this complex phenomenon.*

### **Cheryl Andam** [candam@albany.edu](mailto:candam@albany.edu)

University at Albany, State University of New York,  
Biological Sciences

*Interested in microbial population genomics, evolution, genomic epidemiology, antibiotic resistance, horizontal gene transfer.*

### **Tavis K. Anderson** [tavis.anderson@usda.gov](mailto:tavis.anderson@usda.gov)

USDA, ARS, National Animal Disease Research Center, Virus and Prion Research Unit

*I study how pathogens are transmitted and evolve among hosts, across the landscape, and over time. My goal is to discover generalized mechanisms that govern pathogen transmission, evolution, and emergence, to improve the health and wellbeing of animals and humans.*

### **Angela Arenas** [aarenas@cvm.tamu.edu](mailto:aarenas@cvm.tamu.edu)

Texas A&M University, Veterinary Pathobiology

*My research experience is in the area of infectious diseases with a strong emphasis in the development of vaccines for human and animal use against Brucella spp., a bacterial pathogen of nearly worldwide distribution.*

### **Justin Bahl** [justin.bahl@uga.edu](mailto:justin.bahl@uga.edu)

University of Georgia, Infectious Diseases

*Ecology, Epidemiology and Evolution of RNA viruses using comparative genomic methods.*

### **Guillaume Bastille-Rousseau** [gbr@siu.edu](mailto:gbr@siu.edu)

Southern Illinois University,  
Cooperative Wildlife Research Laboratory

*My research focuses on spatial wildlife ecology, especially variation in animal movement, its drivers and its impacts on inter- and intra-specific interactions like predator-prey interactions and disease ecology.*

### **Daniel Becker** [danbeck@ou.edu](mailto:danbeck@ou.edu)

University of Oklahoma, Biology

*I combine field studies, immunology, machine learning and meta-analyses approaches, and theoretical models to understand how zoonotic pathogens spread in their reservoir hosts, with special attention to bats and birds in the context of environmental change.*

### **Ana Bento** [Abento@iu.edu](mailto:Abento@iu.edu)

Indiana University, Epidemiology and Biostatistics

*I strive to understand the mechanisms underlying the frequency, magnitude & shape of disease dynamics & the effects of population heterogeneity. Identifying evo-eco & demographic drivers of infectious disease systems, with the aim of informing vaccination & other control policies.*

### **Paola M. Boggiatto** [paola.boggiatto@usda.gov](mailto:paola.boggiatto@usda.gov)

USDA, ARS, National Animal Disease Center,  
Infectious Bacterial Diseases Research Unit

*Immune responses, novel vaccination platforms and innovative diagnostics.*

### **Yanling Chang** [yanling.chang@tamu.edu](mailto:yanling.chang@tamu.edu)

Texas A&M University,

Engineering Technology and Industrial Distribution

*Data-driven dynamic decision making under uncertainty.*

### **Lauren Charles** [lauren.charles@wsu.edu](mailto:lauren.charles@wsu.edu)

Washington State University,

Paul G. Allen School for Global Animal Health

*Using traditional and nontraditional data sources with cutting edge data science and engineering to develop mission driven tools for chem-bio surveillance, disease forecasting, and defense at the interface between humans, animals, plants, and their shared environments.*

### **Nicole Eikmeier** [eikmeier@grinnell.edu](mailto:eikmeier@grinnell.edu)

Grinnell College, Computer Science

*My research is in the field of Network Analysis. The primary goal of my research is to understand features, behavior, and structure of networks which arise from the real world, by constructing and analyzing models which maintain those features.*

### **Pilar Fernandez** [pilar.fernandez@wsu.edu](mailto:pilar.fernandez@wsu.edu)

Washington State University,

Paul G. Allen School for Global Animal Health

*My work focuses on the eco-epidemiology of zoonotic diseases—particularly, vector-borne diseases. My main research interests lay in understanding the transmission of these diseases as complex socio-ecological systems, combining methods from epidemiology and ecology.*

### **Hannah Frank** [hkfrank@tulane.edu](mailto:hkfrank@tulane.edu)

Tulane University, Ecology and Evolutionary Biology

*I investigate the impact of host ecology, biogeography and land use change on the ecology and evolution of bat-borne infections, bat immunity and potential for bat-borne zoonoses in the field and lab. I also use experimental infections to investigate bat immune function.*

# Scialog: Mitigating Zoonotic Threats

## Scialog Fellows Continued

### **Amy Hartman** [hartman2@pitt.edu](mailto:hartman2@pitt.edu)

University of Pittsburgh, Center for Vaccine Research  
*In the Hartman lab, we conduct basic and applied research to further understanding of the pathogenesis of emerging zoonotic RNA viruses. We strive to understand the basic mechanisms contributing to understudied disease outcomes, including neurological disease and fetal infection. A major goal is to translate our basic pathogenesis work to the applied evaluation of antiviral therapeutics and preventative vaccines.*

### **Crystal Hepp** [crystal.hepp@nau.edu](mailto:crystal.hepp@nau.edu)

Northern Arizona University, School of Informatics, Computing, and Cyber Systems and the Pathogen and Microbiome Institute  
*I am broadly interested in viral detection and evolution in complex sample types (eg. mosquitoes, wastewater). My group uses a variety of pan-assays and amplicon sequencing approaches to identify viruses of public health interest and estimate outbreak magnitude over time.*

### **Claudia P. Herrera** [cherrera@tulane.edu](mailto:cherrera@tulane.edu)

Tulane University, Tropical Medicine  
*I am interested in developing new serological tests for diagnosing *T. cruzi* infection and understanding parasite transmission dynamics and disease epidemiology to design novel interventions to reduce disease spread and cross over from zoonotic cycles to humans.*

### **Matthew W. Hopken** [matt.w.hopken@usda.gov](mailto:matt.w.hopken@usda.gov)

USDA, APHIS, National Wildlife Research Center  
*Molecular ecology, population genetics, phylogenetics, conservation genetics, disease ecology.*

### **Diego Huet** [diego.huet@uga.edu](mailto:diego.huet@uga.edu)

University of Georgia,  
Pharmaceutical and Biomedical Sciences  
*The Huet lab investigates the highly divergent metabolic adaptations and organellar biology of apicomplexan parasites, a group of single-celled eukaryotes that cause morbidity, mortality and substantial economic loss worldwide.*

### **Silvie Huijben** [shuijben@asu.edu](mailto:shuijben@asu.edu)

Arizona State University, School of Life Sciences  
*I use experimental evolution, field observations and mathematical modeling to study the evolution of drug-resistant malaria parasites and insecticide-resistant mosquitoes in order to slow the evolution of resistance with improved resistance management strategies.*

### **Joyce Jose** [jxj321@psu.edu](mailto:jxj321@psu.edu)

The Pennsylvania State University,  
Biochemistry and Molecular Biology  
*Virus-host and virus-vector interactions involved in the pathogenesis of positive-strand RNA viruses. Mechanism of flavivirus assembly and maturation to develop new targets for antivirals. Spatial and temporal analysis of flavivirus replication and assembly in live cells.*

### **Kristin S. Koutmou** [kkoutmou@umich.edu](mailto:kkoutmou@umich.edu)

University of Michigan, Chemistry  
*Cells chemically modify biomolecules to control their structure, function and stability. Work in the Koutmou lab focuses on identifying the molecular level consequences of RNA modifications on the speed and accuracy of RNA and protein synthesis.*

### **Jason Ladner** [jason.ladner@nau.edu](mailto:jason.ladner@nau.edu)

Northern Arizona University, Biology  
*My research utilizes genomic technologies and bioinformatics to study the emergence, spread and evolution of infectious diseases. This includes the development of a novel technology for highly-multiplexed characterization of antibody reactivities with epitope-level resolution.*

### **Charles E. Lewis** [clewis@iastate.edu](mailto:clewis@iastate.edu)

Iowa State University,  
Veterinary Microbiology and Preventive Medicine  
*My research interests revolve around zoonotic and transboundary disease emergence at the human-domestic animal-wildlife interface focused on the ecology and drivers of spillover transmission and the role that domestic animals and intensive production systems may play.*

### **Efrem Lim** [Efrem.Lim@asu.edu](mailto:Efrem.Lim@asu.edu)

Arizona State University, School of Life Sciences  
*To discover and characterize novel viruses in human health and disease.*

### **Hongfu Liu** [hongfuliu@brandeis.edu](mailto:hongfuliu@brandeis.edu)

Brandeis University, Computer Science  
*Employ and design machine learning techniques to mitigate zoonotic threats.*

### **Jenny G. Maloney** [jenny.maloney@usda.gov](mailto:jenny.maloney@usda.gov)

USDA, ARS, Environmental Microbial and Food Safety Laboratory  
*My research centers on the detection and characterization of zoonotic and emerging pathogens important to food safety. My lab uses state-of-the-art molecular tools and novel methods to address the major challenges associated with the study of zoonotic parasites.*

## Scialog Fellows Continued

**Kezia Manlove** [kezia.manlove@usu.edu](mailto:kezia.manlove@usu.edu)

Utah State University,  
Department of Wildland Resources  
*Wildlife disease ecologist, particularly interested in wildlife-livestock interactions and models connecting movement data to contact patterns.*

**Bethany McGregor** [Bethany.McGregor@usda.gov](mailto:Bethany.McGregor@usda.gov)

USDA, ARS, Arthropod-borne Animal Diseases Research  
*My research focuses on the ecology of vector-borne diseases with a primary focus on vectors and their interactions with hosts, viruses, and the environment. The goal is to identify ways in which these interactions can be used to help prevent vector-borne disease outbreaks.*

**Gisselle Medina** [gisselle.medina@usda.gov](mailto:gisselle.medina@usda.gov)

USDA, ARS, National Bio and Agro-Defense Facility,  
Plum Island Animal Disease Center  
*I am a molecular virologist and cellular biologist. I study DNA/RNA viruses that infect livestock animals. I am interested in innate immune responses during viral infections.*

**Angad Mehta** [apm8@illinois.edu](mailto:apm8@illinois.edu)

University of Illinois at Urbana-Champaign, Chemistry  
*We are interested in developing model synthetic biology platforms to study, manipulate and evolve the fundamental chemistry of bacterial and viral pathogens. Our goal is to then use these platforms to develop novel strategies to combat these pathogens.*

**Dana N. Mitzel** [dana.mitzel@usda.gov](mailto:dana.mitzel@usda.gov)

USDA, ARS, Arthropod-borne Animal Diseases  
Research/Foreign Arthropod-Borne Animal Diseases  
Research Unit  
*Identifying host/vector/viral determinants important for virus replication, pathogenesis and transmission.*

**Adela S. Oliva Chavez** [aolivachavez@tamu.edu](mailto:aolivachavez@tamu.edu)

Texas A&M University, Entomology  
*Vector-borne pathogens have acquired mechanisms to manipulate the cellular machinery their vector and the mammalian host. We study how pathogens exploit extracellular vesicles for transmission and their potential for the developed of diagnostic tools.*

**Sen Pei** [sp3449@cumc.columbia.edu](mailto:sp3449@cumc.columbia.edu)

Columbia University, Environmental Health Sciences  
*I develop mathematical models and computational tools to advance surveillance, forecasting and control of infectious diseases. Using dynamical and statistical modeling techniques, I work to better understand the environmental, social, and ecological drivers of disease spread.*

**Kim M. Pepin** [kim.m.pepin@usda.gov](mailto:kim.m.pepin@usda.gov)

USDA, APHIS, National Wildlife Research Center  
*Spatial spread of disease, disease emergence/transmission at wildlife-livestock & wildlife human interfaces, evolutionary drivers of disease emergence, management of disease, determining optimal management strategies, translation of disease research into management practices.*

**Alex Perkins** [taperkins@nd.edu](mailto:taperkins@nd.edu)

University of Notre Dame,  
Department of Biological Sciences  
*Mathematical modeling of infectious disease dynamics and control. I seek to use models to make the most effective use of data, biological knowledge, and basic principles of transmission, surveillance, and other processes to inform accurate predictions and good decision making.*

**Erik Procko** [procko@illinois.edu](mailto:procko@illinois.edu)

University of Illinois at Urbana-Champaign, Biochemistry  
*Engineered decoy receptors with affinity and specificity for pandemic-potential viruses.*

**Brenda Marilyn Rubenstein**

[brenda\\_rubenstein@brown.edu](mailto:brenda_rubenstein@brown.edu)  
Brown University, Chemistry  
*We use biophysical and machine learning tools to predict the possible evolutionary pathways of pathogens.*

**Audrey Ruple** [aruple@vt.edu](mailto:aruple@vt.edu)

Virginia Institute of Technology, Public Health  
*I am interested in population health and diseases that occur at the intersection of humans, animals, and the environment.*

**Liliana Salvador** [salvador@uga.edu](mailto:salvador@uga.edu)

University of Georgia,  
Infectious Diseases/Institute of Bioinformatics  
*My research interests are 1) determining the impacts of movement patterns on the spatio-temporal disease dynamics; 2) understanding the underlying evolutionary processes of bacterial zoonotic pathogens; 3) developing computational tools to deal with large datasets.*

# Scialog: Mitigating Zoonotic Threats

## Scialog Fellows Continued

### **Danae Schulz** [dschulz@g.hmc.edu](mailto:dschulz@g.hmc.edu)

Harvey Mudd College, Biology

*Life cycle stage transitions and adaptation to differing host environments in African trypanosomes. Epigenetic mechanisms for adaptation are of particular interest.*

### **Prashant Singh** [psingh2@fsu.edu](mailto:psingh2@fsu.edu)

Florida State University,

Nutrition Food and Exercise Science

*Beef safety and development of diagnostic assays.*

### **Rebecca L. Smith** [rlsdvm@illinois.edu](mailto:rlsdvm@illinois.edu)

University of Illinois at Urbana-Champaign, Pathobiology

*What can we actually learn from the data we collect?*

*How do the sources of data impact how we can use it?*

*How do we operationalize models built on imperfect data?*

### **Avery E. Strait** [Avery.e.strait@usda.gov](mailto:Avery.e.strait@usda.gov)

USDA, APHIS, Veterinary Services

*The One Health concept is a topic of great interest to me.*

*My past research focused on antimicrobial resistance*

*in companion animals, farm animals, and humans. My*

*interests include surveillance design and analysis, disease ecology, and foreign animal disease investigations.*

### **Troy C. Sutton** [tcs38@psu.edu](mailto:tcs38@psu.edu)

The Pennsylvania State University,

Veterinary and Biomedical Sciences

*Pandemic influenza viruses, transmission and vaccine development.*

### **Laurene Tetard** [Laurene.Tetard@ucf.edu](mailto:Laurene.Tetard@ucf.edu)

University of Central Florida,

NanoScience Technology Center, Physics

*Steering advances in nanoscale imaging and spectroscopy to deepen our understanding of pathogens.*

### **Christoph Thaiss** [thaiss@pennmedicine.upenn.edu](mailto:thaiss@pennmedicine.upenn.edu)

University of Pennsylvania, Microbiology

*The Thaiss lab studies host-microbial interactions and their impact on systemic physiology.*

### **Gonzalo Vazquez-Prokopec** [gmvazqu@emory.edu](mailto:gmvazqu@emory.edu)

Emory University, Environmental Sciences

*My research areas are Disease Ecology and Global*

*Health and I investigate: a) the role of heterogeneity*

*(environmental, individual) in the transmission of vector-*

*borne diseases; b) the ecology of insect vectors and hosts;*

*c) the efficacy of interventions on vectors and pathogens.*

### **Heather D. S. Walden** [hdstockdale@ufl.edu](mailto:hdstockdale@ufl.edu)

University of Florida,

Comparative, Diagnostic and Population Medicine

*Research interests are zoonotic parasitic disease,*

*parasite diagnosis and classical parasite biology.*

*Current work includes introduced parasites of invasive*

*species and the zoonotic, metastrongyloid nematode,*

*Angiostrongylus cantonensis.*

### **Mark Q. Wilber** [mwilber@utk.edu](mailto:mwilber@utk.edu)

University of Tennessee, Institute of Agriculture,

Forestry, Wildlife, and Fisheries

*I combine mathematical modeling, laboratory*

*experiments, and pathogen surveillance to unravel*

*how hot hosts, hot species, and hot spots interact to*

*drive disease emergence, spread, and persistence in*

*wildlife communities.*

### **William H. Witola** [whwit35@illinois.edu](mailto:whwit35@illinois.edu)

University of Illinois at Urbana-Champaign, College of

Veterinary Medicine, Department of Pathobiology

*Interests in zoonotic protozoan parasites of medical*

*and veterinary significance, with aim of identifying,*

*characterizing, and validating host molecular*

*networks targeting elimination of intracellular*

*parasites.*

### **Xiaohu Xia** [xiaohu.xia@ucf.edu](mailto:xiaohu.xia@ucf.edu)

University of Central Florida, Chemistry

*My research focuses on developing advanced*

*nanoscale materials for applications in diagnostics,*

*bio-chemical sensing, and food and agriculture.*

### **Ali Yanik** [yanik@ucsc.edu](mailto:yanik@ucsc.edu)

University of California, Santa Cruz,

Electrical and Computer Engineering

*My research focuses on development of ultrasensitive*

*point-of-care platforms, lab-on-chip devices and*

*bio-microelectromechanical systems (BioMEMS) for*

*detection and analysis of emerging pathogens.*

### **Sara Zimmer** [szimmer3@d.umn.edu](mailto:szimmer3@d.umn.edu)

University of Minnesota, Biomedical Sciences

*The intersection of gene expression and metabolism*

*of eukaryotic pathogens, and their flexibility in these*

*areas, may be key to understanding their pathogenic*

*potential.*

## Discussion Facilitators

**Linda A. Detwiler** [Linda.Detwiler@usda.gov](mailto:Linda.Detwiler@usda.gov)

USDA, APHIS, Veterinary Sciences

*Primary research and epidemiological interests are the prion diseases including Chronic Wasting Disease, Bovine Spongiform Encephalopathy and Scrapie.*

**Peter Dorhout** [dorhout@iastate.edu](mailto:dorhout@iastate.edu)

Iowa State University, Chemistry

*Building diverse and interdisciplinary teams to address global challenges.*

**Matt Erdman** [matthew.m.erdman@usda.gov](mailto:matthew.m.erdman@usda.gov)

USDA, APHIS, Center for Veterinary Biologics

*Evaluation of veterinary vaccines and diagnostics used to prepare for and respond to emerging threats.*

**Rebecca Garabed** [garabed.1@osu.edu](mailto:garabed.1@osu.edu)

The Ohio State University,

Veterinary Preventive Medicine

*Modeling complex human, animal, pathogen, and environment interactions to understand disease persistence and prevention using sparse data.*

**Curt Horvath** [Horvath@northwestern.edu](mailto:Horvath@northwestern.edu)

Northwestern University, Molecular Biosciences

*Cytokine production, signaling, and transcriptional responses, especially virus-host interactions.*

**Christine Johnson** [ckjohnson@ucdavis.edu](mailto:ckjohnson@ucdavis.edu)

University of California, Davis, One Health Institute

*Advancing interdisciplinary research to characterize impacts of environmental change on animal and human health, inform preparedness for emerging threats, and guide public policy at the intersection of emerging disease and environmental health.*

**Wilfred van der Donk** [vddonk@illinois.edu](mailto:vddonk@illinois.edu)

University of Illinois at Urbana-Champaign/HHMI, Chemistry

*Discovery of new antimicrobial agents by genome mining of natural product biosynthetic pathways.*

**Amy Vincent** [amy.vincent@usda.gov](mailto:amy.vincent@usda.gov)

USDA, ARS, National Animal Disease Center, Virus and Prion Research Unit

*Influenza A virus evolution in swine and at the swine-human interface and vaccine intervention.*

**Michael C. Wimberly** [mcwimberly@ou.edu](mailto:mcwimberly@ou.edu)

University of Oklahoma,

Geography and Environmental Sustainability

*An ecologist studying the effects of climate and land use change on vector-borne and zoonotic disease transmission. I work with mathematical models and satellite Earth observations to map disease risk and forecast outbreaks. Develop tools for public health decision making.*

# Scialog: Mitigating Zoonotic Threats

## Guests

**Patrick Ayscue** [payscue@gmail.com](mailto:payscue@gmail.com)

Chan Zuckerberg Biohub, Rapid Response Team  
*Detecting, assessing risk of, and developing tools to mitigate emerging infectious diseases.*

**Colin Basler** [wjq3@cdc.gov](mailto:wjq3@cdc.gov)

Centers for Disease Control and Prevention,  
One Health Office

*My research interests focus on improving the identification, investigation, and response to outbreaks that occur at the human-animal-environmental interface.*

**Genny Biggs** [genny.biggs@moore.org](mailto:genny.biggs@moore.org)

Gordon and Betty Moore Foundation,  
Office of the President

*Better understanding links and evidence of links between human-caused environmental change and human health.*

**Daren Ginete** [dginete@sciphil.org](mailto:dginete@sciphil.org)

Science Philanthropy Alliance

**Sandra Laney** [slaney@walderfoundation.org](mailto:slaney@walderfoundation.org)

Walder Foundation, Science Innovation

**Beth Lautner** [elizabeth.a.lautner@usda.gov](mailto:elizabeth.a.lautner@usda.gov)

USDA, APHIS

*Rapid diagnostics for early detection of high-consequence animal diseases and as tools for epidemiology investigations.*

**Victoria McGovern** [vmcgovern@bwfund.org](mailto:vmcgovern@bwfund.org)

Burroughs Wellcome Fund, Programs

*BWF PATH grows with the science toward a bigger and bigger view of human's relationships with microbes. We're building a new program in climate & health, too! We have run the "Becoming Faculty" vet new faculty career development workshop, held at NVSS, since 2009.*

**Sue Merrilees** [smerrilees@sciphil.org](mailto:smerrilees@sciphil.org)

Science Philanthropy Alliance

*I want to find out more about basic science research priorities in infectious disease research that could appeal to philanthropists who have high risk tolerance and a desire for impact.*

**Roxann Motroni** [roxann.motroni@usda.gov](mailto:roxann.motroni@usda.gov)

USDA, ARS

*I am interested in countermeasure development to livestock infectious diseases.*

**Lou Muglia** [lmuglia@bwfund.org](mailto:lmuglia@bwfund.org)

Burroughs Wellcome Fund, Office of the President

*The intersection of zoonotic diseases and climate change is both one of our greatest challenges and opportunities in sciences. I look forward to fostering creativity exploration at this interface.*

**Jeff Silverstein** [jeff.silverstein@usda.gov](mailto:jeff.silverstein@usda.gov)

USDA, ARS, Office of National Programs

*The connections between animal and public health. Use of technology to anticipate and prevent disease.*

## U.S. Department of Agriculture

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**Suelee Robbe-Austerman** suelee.robbe-austerman@usda.gov  
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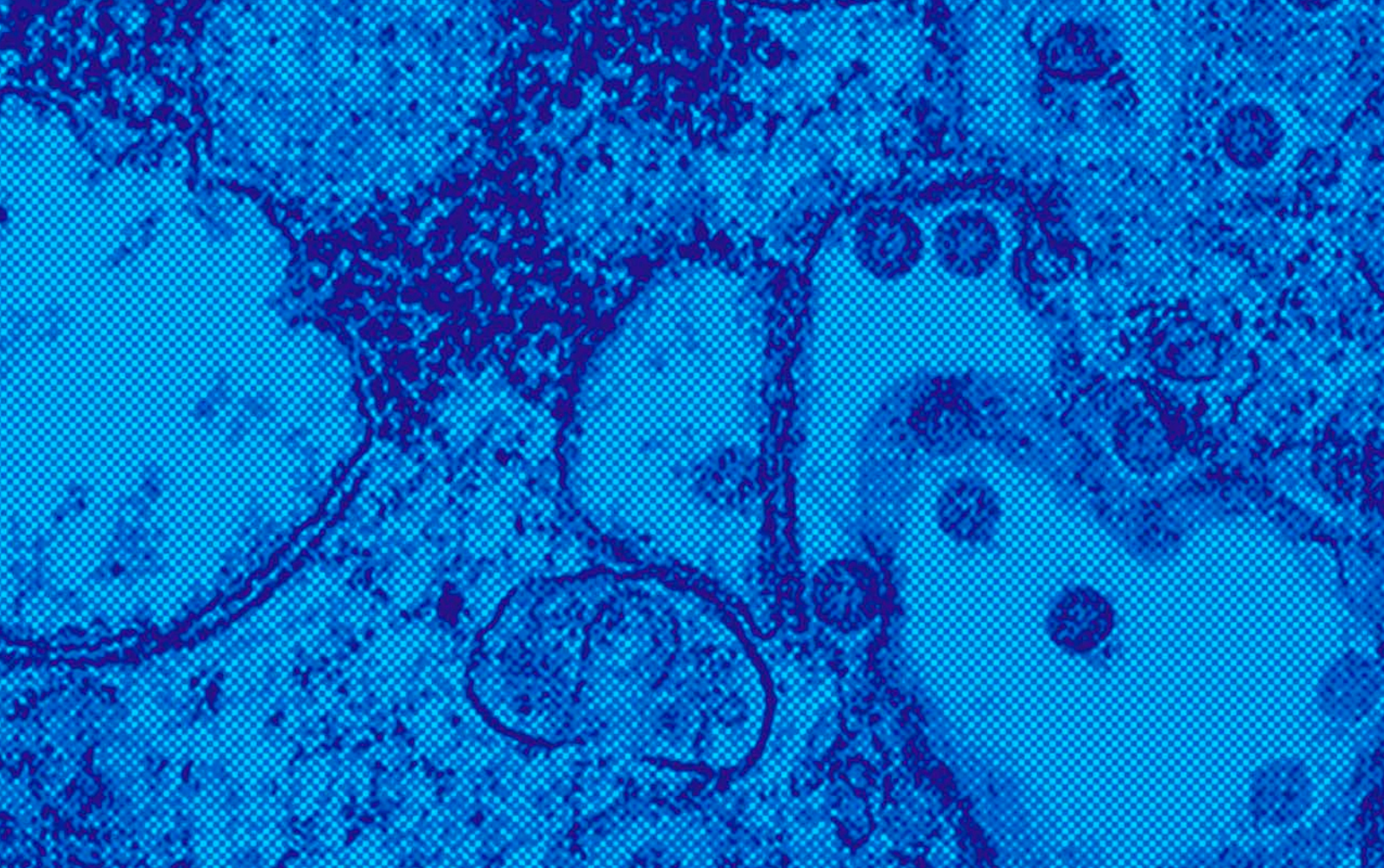
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