



# IDASTP NEWSLETTER

Welcome to the Spring 2021 edition of the IDASTP Newsletter. Our program is hosting multiple events including the IDAS Symposium, IDASTP Career Panel and the IDAS Seminar Series, all detailed in this edition of the newsletter. All events are free but do require registration. Registration links appear throughout sections of the newsletter by following the links in the different sections or by going to the links on the last page of the newsletter.

**UPCOMING EVENTS**

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**2021 IDAS Symposium**  
3-30-21 12:00 PM – 4:00 PM ET

**IDASTP Career Panel 2021**  
3-30-21, 4:30 PM – 5:30 PM ET

**IDAS Seminar Series**  
Wednesdays, 12 PM – 1 PM ET

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Join the IDAS Listserv for registration & updates: [JOIN](#)

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**2021 IDASTP Application Deadlines**  IDASTP Application Deadline **April 16, 2021**  
IDASTP Award of Distinction (AOD) Deadline **May 19, 2021**

*Contact Todd Swink at [tswink@emory.edu](mailto:tswink@emory.edu) for more details.*

**2021 IDAS Symposium**  
Infectious Disease Across Scales

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DEADLINES & REGISTRATION

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# Researcher spotlight

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## Q & A with IDASTP Training faculty and Trainees



**Katia Koelle, PhD**  
*IDASTP Training Faculty*  
Associate Professor, Biology,  
Emory College of Arts & Sciences,  
Emory University

### What does across scales mean to you?

I interpret IDASTP's 'across scales' emphasis as 'across biological scales'. To me, the overall idea is that substantial insights can be gained into understanding disease dynamics (both ecological and evolutionary dynamics) by combining analyses and findings at small scales (e.g. within hosts) with those at larger scales (e.g., at the population levels).

### How did you get into your research?

Once I took a theoretical ecology class as an undergrad, I was hooked on using mathematical modeling to understand ecological dynamics. This transitioned to epidemiological dynamics, and then evolutionary dynamics. What got me really excited about studying infectious diseases was the intertwined nature of their ecological and evolutionary dynamics- for many viral pathogens, in particular, one can't understand their ecological/epidemiological dynamics without considering their evolutionary dynamics and vice versa.

### How has the program shaped your research?

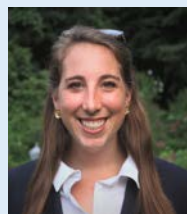
I've been excited to be involved in IDASTP and also with the MP3 Initiative at Emory. These programs have funded graduate students and post-docs who have been instrumental in forging collaborations between PIs and have established a new intellectual community between the medical school, ECAS, RSPH, and the CDC.

### Describe your most exciting research finding.

My most exciting research finding ever? I'd have to say, by the time I feel like I'm done with a paper, the results sound so obvious that I feel like no reputable journal should publish them.

### What do you see as your research trajectory?

Going forward? I'd have to say that if you asked me two years ago what my group would be working on today, I would not have been able to say SARS-CoV-2 (nor would any other researcher in my field). My research will continue to use quantitative approaches to attempt to answer interesting questions related to infectious disease, and it will continue to develop statistical inference methods using pathogen sequence data (because I love this area of research). Beyond that – who knows! It's hard to project more than a couple of years down the line, since the data landscape is changing so rapidly.



**Elizabeth Sajewski**  
*IDASTP Trainee*  
Lopman Lab,  
Environmental Health Sciences,  
Emory University

### What does across scales mean to you?

In my research, I study infectious disease transmission, focusing on enteric viruses, and the impact of vaccination, exposure risks, and environmental changes on disease dynamics. When modeling disease transmission, I think about how mechanisms acting at the individual scale, factors like immunity, disease progression, and exposure risk, can transfer across scales to impact observed disease burden and dynamics at the population scale.

### How did you get into your research?

I originally got into my research the way many people come to public health and infectious disease epidemiology, through learning about John Snow, who recognized patterns in the London cholera outbreak of 1854 and tied this outbreak to contaminated drinking water and the Broad Street pump.

This was the spark that ignited my interest in waterborne pathogens and the influence of different scales of interventions, from household chlorination to municipal water systems, on disease dynamics. While my focus has since shifted to enteric viruses, primarily transmitted person-to-person, my interest in the influence of changes across scale, from individual exposure risk to regional environmental changes, remains central.

### How has the program shaped your research?

The IDAS program has shaped the way I think about and contextualize my research. In developing research questions and analyzing results, I consider how dynamics working across scales could contribute to the patterns I see. Furthermore, the IDAS program has created a network of researchers thinking about infectious disease at and across different scales. Having the opportunity to connect with these researchers has been an exciting and instrumental part of my training.

*(continued on next page)*

# Researcher spotlight

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(continued)

## **Describe your most exciting research finding.**

In my recent work, I have been focusing on the influence of maternal antibody interference and dose schedule on pediatric norovirus vaccination impacts. An exciting finding has been that there seems to be a sweet spot for norovirus vaccination timing that is effective at averting pediatric norovirus cases, independent of assumptions regarding maternal antibody interference. Thus, even though overall

population impact is highly sensitive to maternal antibody interference assumptions, optimal vaccination schedule may not be.

## **What do see as your research trajectory?**

In my research, I hope to continue to explore the impacts of vaccination on population health, using dynamic models to incorporate heterogeneity in terms of individual exposures, immunity, risk factors, and environmental determinants across scales of infectious disease transmission.



**Kelsey Shaw, DVM**  
*IDASTP Trainee Alumna*  
Civitello Lab  
Population Biology,  
Ecology & Evolution,  
Emory University

## **What does across scales mean to you?**

To me, "across scales" means exciting work! Before beginning my PhD, I had done research at the molecular level and clinical work at the individual level, yet I knew I was interested in population-level questions in disease ecology. What I didn't initially realize is that I could do research that spanned these multiple scales, and that this is the type of work I find really invigorating. While I had already written my research proposal before joining IDASTP, it was really this program that helped me connect my work across multiple scales.

research. Before joining the program, I had some sense of how to connect my work across scales, but I had a complete underappreciation for the work so many others are doing across scales in many disease systems. Meeting with seminar speakers to discuss our work has helped me clarify my research questions and hone in on how to present my work to a broad audience.

## **Describe your most exciting research finding.**

So far my most exciting research finding has been related to how individual-level mechanisms -- resource competition between species altering individual body size -- can play out at the population scale: in this case, altering the body size structure of the entire population. This idea was the building block for many of the other experiments I had planned in my dissertation, but there was no empirical evidence in the literature that it would actually occur, and some in our field even told me they didn't believe it would happen. When I got the data that confirmed that my idea could work, I was very excited and a little shocked!

## **How did you get into your research?**

For my doctoral work, I wanted to study disease transmission in a setting that allowed me to merge mathematical modelling and empirical experiments. To me, these two ways of exploring questions in disease ecology are ideal for studying phenomena across scales. Dr. Civitello's lab, and the snail-schistosome system we work in, was the perfect fit for these goals. I was additionally drawn to this work by the potential to have a positive impact on human health.

## **What do see as your research trajectory?**

I absolutely want to continue to study infectious diseases across scales. For my dissertation, I have conducted experiments at the individual and population levels, but I hope to be able to travel to a schistosome-endemic area (Tanzania) next year to ask questions about schistosomes and the greater ecological community. I think that for my post-doc I will change host-pathogen systems in order to expand my skillset and eventually I hope to continue this type of work as an independent investigator.

## **How has the program shaped your research?**

The IDASTP program has been integral in shaping my

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Visit the [IDASTP Website](#) for more information on infectious disease across scales research.

# IDAS Symposium

The IDAS Symposium highlights important research in infectious disease across scales occurring at Emory and around the world. The IDAS Symposium offers an event for Emory students and faculty as well as outside contributors and interested parties with the ultimate goal to build a larger Infectious Disease Across Scales community. Guest speakers, Emory faculty and IDASTP students meet to share their research in a formal symposium setting as well as an informal setting after the symposium. The IDAS Symposium is a joint effort between IDASTP and the MP3 Initiative with funding support from multiple Emory sources.

**2021 IDAS Symposium**  
Infectious Disease Across Scales

**March 30, 2021 12 PM – 4 PM**

**HOSTED BY**

**MP3**  
From Molecules and Pathogens to Populations and Pandemics

**IDASTP**  
Infectious Disease Across Scales Training Program

[MP3 & IDASTP Website](#)

Featuring interdisciplinary research that transcends traditional scales to better understand and control infectious disease

## Keynote Speakers

### Vincent Bond, PhD

*Exosomes and immune/inflammatory micro-environments: HIV pathogenesis case study.*

Professor and Chair of Microbiology, Biochemistry, and Immunology;  
Principal Investigator, Research Centers in Minority Institutions (RCMI);  
Morehouse School of Medicine



### Erin Mordecai, PhD

*Global change and the ecology of vector-borne disease.*

Assistant Professor of Biology,  
Center Fellow, by courtesy,  
the Woods Institute For The Environment  
Stanford University

## Featured Speakers

### Elizabeth Sajewski

*Pediatric norovirus vaccination: modeling population-level effects of individual-level immunity.*

Environmental Health Sciences,  
Lopman Lab, Emory University



IDASTP Trainee



MP3 Faculty  
Startup Package  
Awardee

### Matthew Gardner, PhD

*Utilizing gene therapy for HIV prevention and cure.*

Assistant Professor, Dept. of Medicine: Infectious Diseases and Department of Pathology and Laboratory Medicine,  
Researcher, Yerkes National Primate Institute Research Center and Emory Vaccine Center, Emory University

### Matthew Collins, MD, PhD

*Resolving type-specific flavivirus antibody responses to understand how viral variants move in people and populations.*

Assistant Professor,  
Infectious Disease, Department of Medicine  
School of Medicine, Emory University



MP3 Awardee



MP3 COVID-19  
Awardee

### Masa Hirano, PhD

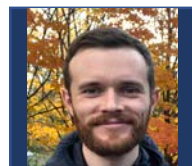
*Development of 2019-nCov-specific antibodies from lampreys.*

Assistant Professor,  
Department of Pathology and Laboratory Medicine,  
School of Medicine, Emory University

### Dave VanInsberghe, PhD

*Identification of recombinant SARS-CoV-2 genomes.*

Postdoctoral Scholar,  
Department of Pathology & Laboratory Medicine  
School of Medicine, Emory University



MP3 COVID-19  
Awardee



MP3 COVID-19  
Awardee

### Mirko Paiardini, PhD

*SARS-COV-2 pathogenesis, immune responses, and treatment: from macaques to humans.*

Associate Professor, Dept. of Medicine: Infectious Diseases and Department of Pathology and Laboratory Medicine,  
Researcher, Yerkes National Primate Institute Research Center and Emory Vaccine Center, Emory University

REGISTER ONLINE [HERE](#)

## IDAS Career Panel

# IDASTP Career Panel 2021

This new event will follow the IDAS Symposium scheduled on the same day (see link below for IDAS Symposium details). Both IDAS Symposium keynote speakers, Vincent Bond from Morehouse School of Medicine and Erin Mordecai from Stanford University, will join IDASTP Trainee Elizabeth Sajewski and IDASTP Award of Distinction awardee Sandra Mendiola for a one-hour question and answer session designed for undergraduate and graduate students. Jacobus de Roode, IDASTP Director, will moderate the panel as we explore the career pathway in the field of infectious disease across scales approach.

Exploring the career pathways in the field of infectious disease across scales research

March 30, 2021 4:30 PM – 5:30 PM via Zoom

### Vincent Bond, PhD

Professor and Chair of Microbiology,  
Biochemistry and Immunology;  
Principal Investigator, Research Centers in  
Minority (RCMI);  
Morehouse School of Medicine



Research: HIV pathogenesis leading to  
AIDS: from supercomputer modeling to  
monkey studies and translational  
immunology in humans.

### Erin Mordecai, PhD

Stanford University  
Assistant Professor of Biology,  
Center Fellow, by courtesy, at  
The Woods Institute For The Environment



Research: Infectious disease dynamics  
in humans and natural ecosystems:  
from lab experiments to mathematics  
and climate modeling.



Research: Modeling pathogens and public  
health interventions: from the environment  
and exposure risk to mathematical models  
of disease transmission.

### Elizabeth Sajewski

Emory University  
PhD Candidate  
Environmental Health Sciences  
Lopman Lab



Research: Methods for vector-borne disease  
control: from laboratory investigation to  
modeling effectiveness in the field.

### Sandra Mendiola

Emory University  
PhD Candidate  
Population Biology, Ecology & Evolution  
Gerardo & Civitello Labs



Register Online and submit panel questions [HERE](#)  
[Event Website](#)



EMORY UNIVERSITY



EMORY STUDENTS FOR  
ONE HEALTH

#### EMORY STUDENTS FOR ONE HEALTH

Emory Students for One Health's (ESOH) mission is to provide students from all disciplines a unified platform for One Health-based education, social interaction, activism, and engagement. ESOH's initiative is to improve One Health through increased education, awareness, and advocacy. Throughout the semester we invite speakers from Emory and the Atlanta-area to share the work they do and organize trips to engage with the community! Come join the fun and get involved! All are welcome!

For direct contact, we can be reached at [esoh@gmail.com](mailto:esoh@gmail.com). We also have various social media platforms where we post about club events, news about one health, and potential one health opportunities.

Facebook: <https://www.facebook.com/groups/emoryesoh>

Instagram: [https://www.instagram.com/esoh\\_rsph/](https://www.instagram.com/esoh_rsph/)



## 2021 IDAS SEMINAR SERIES

### Speaker Schedule

- 1/27/21 Lance Waller, RSPH, Emory University
- 2/03/21 Jacobus de Roode, ECAS, Emory University
- 2/10/21 – Erin Mordecai, Stanford University
- 2/17/21 Daniel Barber, NIH-NIAID
- 2/24/21 Sarah Cobey, University of Chicago
- 3/03/21 Luisa Cervantes Barragan, SOM, Emory University
- 3/10/21 Katia Koelle, ECAS, Emory University
- 3/17/21 Shabaana Abdul Khader, Washington University in St. Louis
- 3/24/21 Shane Crotty, La Jolla Institute for Immunology
- 3/31/21 Benjamin Lopman, RSPH, Emory University
- 4/07/21 Johanna Salzer, Centers for Disease Control and Prevention
- 4/14/21 Raina Plowright, Montana State University
- 4/21/21 Max Lau, RSPH, Emory University

### Wednesdays at 12 PM Via Zoom

All seminars are open to everyone.  
Email [tswink@emory.edu](mailto:tswink@emory.edu) to receive Zoom links.

The second annual seminar series supported by the IDASTP (Infectious Disease Across Scales Training Program) and the MP3 Initiative (Molecules and Pathogens to Populations and Pandemics). This weekly series of seminars and discussions on infectious disease research and control across scales is presented by visiting Emory speakers, Emory faculty/postdocs and IDASTP students. Seminar and discussion topics are chosen to provide a broad overview of the current status of the field. Attendance of seminars will allow attendees to keep up to speed with developments in the field, and also provide a weekly opportunity to meet with peers and faculty in the IDASTP program. We encourage anyone interested in the infectious disease across scales research approach to attend.

Speaker schedule and Talk Titles can be found on the [IDASTP Website](#).

To schedule a 1-1 Zoom meeting with a guest speaker, email [tswink@emory.edu](mailto:tswink@emory.edu).  
(limited availability)

### IDAS Journal Club

The first IDAS Journal Club was created to continue discussions from the IDAS Seminar Series in June of 2020. For 8 weeks the IDAS Journal Club met via Zoom to discuss the different topics of infectious disease and to present research.

MP3 & IDASTP Info



#### Todd Swink

Assistant Director,  
IDASTP & MP3 Initiative  
Biology Department  
Emory College of Arts and Sciences  
[tswink@emory.edu](mailto:tswink@emory.edu)

# IDASTP Sponsors

The IDASTP is sponsored by the the NIAID and multiple Emory entities. We would like to take time to recognize our sponsors.



Provost Office



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Emory Department of Biology

## IDASTP Deadlines & Registration

2021 IDAS Symposium  
**March 30, 2021**  
**12 PM – 4 PM ET**  
[Register Here](#)

IDASTP Career Panel 2021  
**March 30, 2021**  
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IDAS Journal Club  
**May – June 2021**

2021 IDAS Seminar Series  
Spring 2021 Semester  
**Wednesdays, 12 PM – 1 PM**  
[Register Here](#)

IDASTP Application Deadline  
**April 16, 2021**

[Application Details](#)

IDASTP AOD Deadline  
**May 19, 2021**

