



# IDASTP NEWSLETTER



Welcome to the Spring 2025 edition of the IDASTP Newsletter. We are excited to announce the IDASTP has earned renewal funding from NIAID allowing the program to expand even more! This year’s IDAS Seminars, application deadlines and other activities are detailed within this edition of the newsletter.



## Note From the Director

**Jaap de Roode, PhD**  
IDASTP DIRECTOR

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I am happy to report that – thanks to all the hard work of our students and faculty – NIAID has funded our T32 renewal to continue our training program. Excitingly, we have been able to expand the program from four to six trainees per year. This also means we can now support students from six graduate programs: IMP, MMG, PBEE, EHS, EPI and BIOS! It is so exciting to be able to bring all these programs together, and to learn from each other about the different ways we can study infectious diseases.

It has been rewarding to see the growing interest in our seminar series, the career development series, and our Virulent Vortex podcast (speaking of which – don’t forget to share your episodes on your social media accounts, we are still waiting for an episode to go viral 😊).

This Fall marks our biggest cohort of students, with four new trainees and eight affiliates joining the program. Please find out about them and their interests in this newsletter.

Please also save the date for our next retreat on April 18-19, 2025. We will discuss student research, hear from exciting MP3 projects, and have a hike and get together that is open to puppies. I hope to see you there!



## IDASTP Trainee & AOD Application Deadline

IDASTP

**APRIL 2, 2025**

Visit the [IDASTP website](#) for application requirements submission portal, and other details.

## Virulent Vortex Podcast



*New Episodes released the first Thursday of each month*

Hosted by Jaap de Roode

Featuring MP3 and IDASTP researchers

[YouTube](#) [Apple Podcasts](#) [Spotify](#)

## SPRING IDAS Seminars



Spring, Tuesdays, 3 PM – 4 PM ET

Begins 1/21/25

Claudia Nance Rollins Building, Room 1051

Zoom link sent via NEWS Across Scales Listserv

Recordings can be found on our [YouTube Page](#)

## FALL IDAS Seminars



Spring, Tuesdays, 3 PM – 4 PM ET

Fall 2025

Claudia Nance Rollins Building, Room 1051

Zoom link sent via IDAS Listserv

Recordings can be found on our [YouTube Page](#)

**NEWS ACROSS SCALES**  
MP3 INITIATIVE & IDASTP

Biweekly newsletter announcing all the MP3 and IDASTP events

[Join the News Across Scales Listserv](#)

SCAN ME



INFECTIOUS DISEASES ACROSS SCALES  
TRAINING PROGRAM



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

FALL IDAS CAREER  
DEVELOPMENT SEMINARS

SPRING IDAS SEMINARS

**NEWS ACROSS SCALES**  
MP3 INITIATIVE & IDASTP

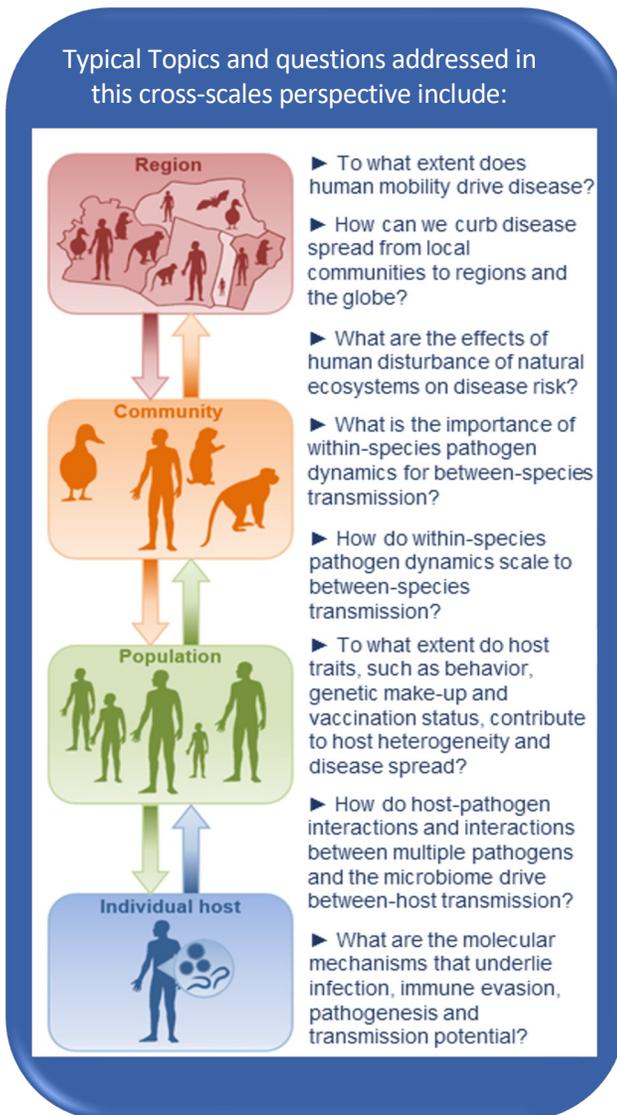


MP3 & IDASTP  
RETREAT

IDASTP (Infectious Diseases Across Scales Training Program) is a NIH T32 grant funded by the NIAID (National Institute of Allergy and Infectious Diseases) in 2019.

The objective of the IDASTP is to train competitive scientists who use interdisciplinary cross-scale approaches to better study and control infectious disease. This training program supports pre-doctoral students in infectious disease across scale research approach.

## ACROSS SCALES RESEARCH



[APPLICATION REQUIREMENTS](#)

[PROGRAMING & SUPPORT](#)

## RESEARCH TRACKS

### Trainee Track

- 4 students per year (2 3rd years and 2 4th years)
- Trainees are supported for 2 years (3rd and 4th year)
- Trainees from IMP, MMG, PBEE, EPI, EHS and BIOS
- Two-year support includes:
  - Stipend support
  - \$1,000 per year for travel to conferences, workshops or fieldwork
  - \$1,000 per year for research-related costs
  - First access to 1-1 meetings with guest speakers from various IDASTP events

### Affiliate Track

(Award of Distinction; AOD)

The IDASTP Award of Distinction was created to further support student research from students who have not been admitted to the IDASTP program and whose research clearly fits with in the infectious disease across scales approach. Students support includes funds for research supplies and travel

- 3-4 students per year
- One year support includes:
  - \$2,000 for 1 year for travel conferences, workshop, fieldwork and research related expenses
  - First access to 1-1 meetings with guest speakers from various IDASTP events

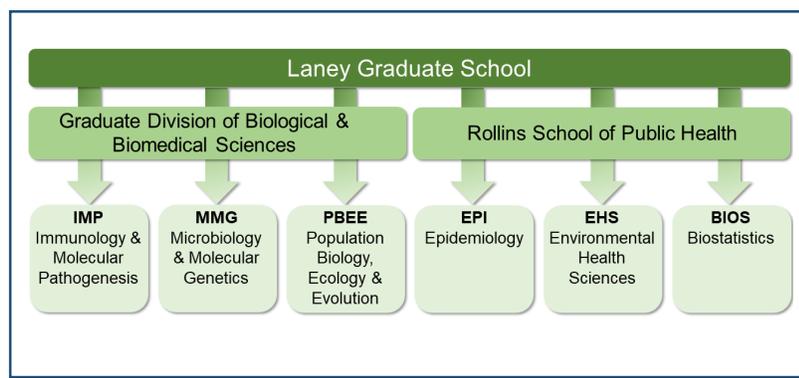
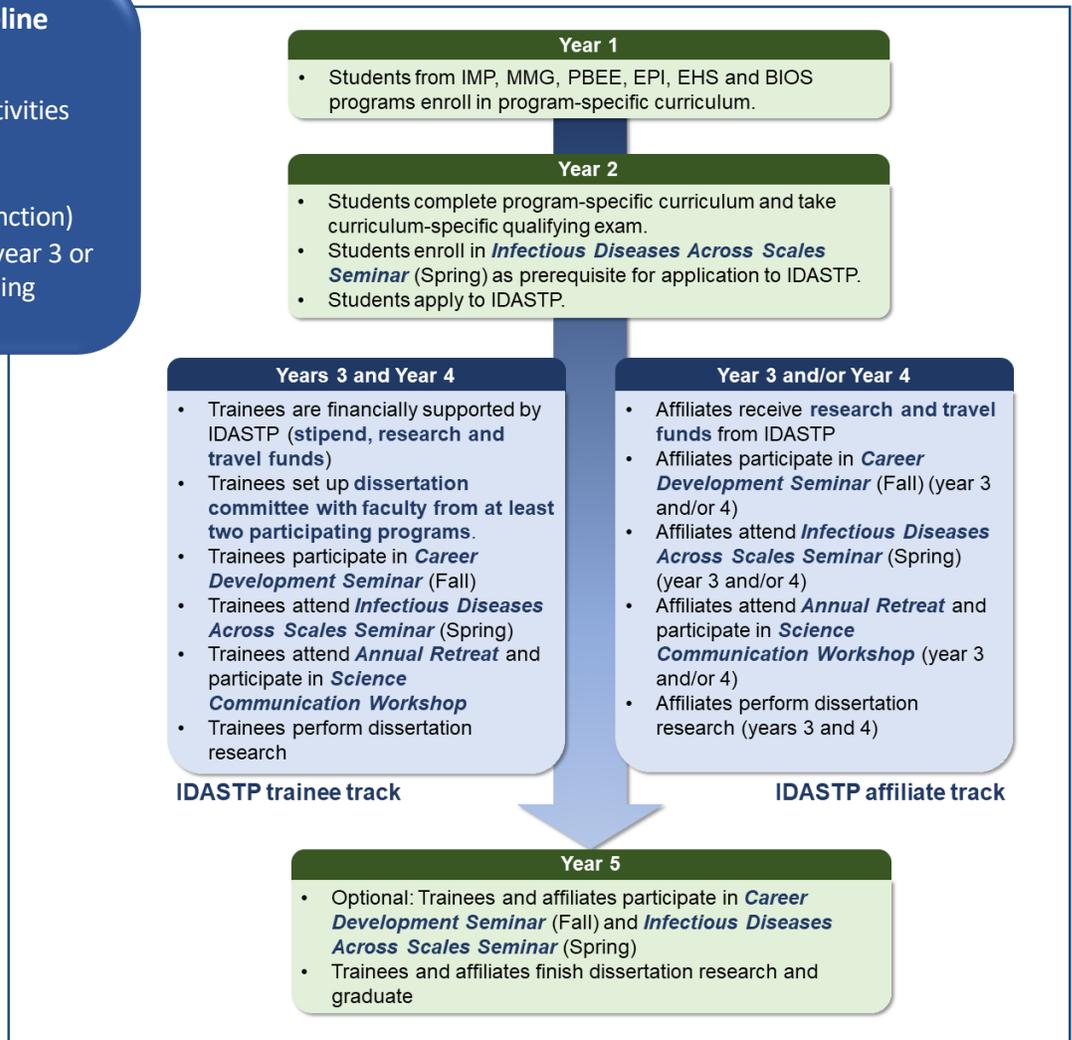
2025 TRAINEE & AOD DEADLINE

**APRIL 2, 2025**

Visit the [IDASTP Website](#) for more details.

**IDASTP Trainee Timeline**

- Trainees are required to participate in training activities during both year 3 and 4
- Affiliates (Award of Distinction) are required to do so in year 3 or 4, with the other year being optional.



**Organizational structure of graduate programs**

The Laney Graduate School administers all graduate programs at Emory University, including the IMP, MMG, PBEE, EPI, EHS and BIOS programs. The IMP, MMG and PBEE programs are further organized into the Graduate Division of Biological and Biomedical Sciences, together with another five graduate programs.

**2025 TRAINEE & AOD DEADLINE  
APRIL 2, 2025**

Visit the [IDASTP Website](#) for more details.

2024-2025 Trainees

IDASTP welcomes Courtney Babb, Nicole Hood, Madison Schwab and Andrew Sieben as trainees for the 2024-2025 academic year. Together with Maria Garcia Quesada and David Jimenez-Vallejo, they will have access to opportunities, training, and support to further their contributions in the field of infectious diseases.

MARIA GARCIA QUESADA



Admitted 2023  
Lopman Lab  
Epidemiology

My dissertation research explores how we can advance the evaluation of enteric vaccines, or vaccines that prevent diarrheal disease, across the development pipeline by considering multiple scales. In my first aim, I am using traditional epidemiologic methods to improve estimates of *Shigella* diarrhea incidence in the country sites where vaccine trials will occur by accounting for heterogeneity in healthcare seeking behaviors. In my second aim, I am using a simulation to identify optimal *Shigella* vaccine trial endpoints to minimize misclassification of cases by considering pathogen quantity, co-infections, and disease severity characteristics. In my third aim, I am using mathematical modeling to estimate the indirect effects of a norovirus vaccine considering decreased infectiousness among breakthrough cases.

DAVID JIMENEZ-VALLEJO



Admitted 2023  
Prokopec Lab  
Population Biology,  
Ecology & Evolution

My work focuses on better understanding the behavioral ecology and evolutionary biology of *Aedes aegypti*'s understudied resting behavior. Specifically, I am interested in how we can characterize the genetic, ecological, and environmental factors driving resting height preferences to understand how this behavior is manifested at a population level, inform deployment of vector control tools targeting resting mosquitoes, and assess the emergence of behavioral resistance across populations in the field.

COURTNEY BABB



Admitted 2024  
Lopman Lab  
Epidemiology

I am interested in the effects of diarrheal disease-causing pathogens on child health. My doctoral research aims to understand the sources and routes of transmission of *Shigella* and *Campylobacter* spp. in a young cohort in Bangladesh and Tanzania. *Shigella* and *Campylobacter* likely have different primary transmission routes, so this study will associate environmental and household detections of the pathogens with subclinical infections and diarrhea among enrolled children. Ultimately, this work can assist with understanding enteric pathogen transmission and inform the design of targeted interventions to improve child health in low-resource settings.

2024-2025 Trainees (continued)

**NICOLE HOOD**



*Admitted 2024*  
Lopman Lab  
Epidemiology  
AOD Alum

In the US, influenza epidemics occur yearly, resulting in significant morbidity and mortality. Thus, influenza is an infectious disease of consequence each year. Initial exposures to influenza infection are known to create a lasting imprint that has been shown to have long-term effects on future immune responses to influenza virus. My research focuses on understanding how initial exposures to influenza virus impact future susceptibility to influenza disease. I plan to investigate how incorporating imprinting to specific influenza virus subtypes in mechanistic models improves our predictions of influenza morbidity during future influenza seasons.

**MADISON SCHWAB**



*Admitted 2024*  
Nadimpalli Lab  
Population Biology,  
Ecology & Evolution

My research investigates the transmission dynamics of antimicrobial resistant E. coli between chickens and humans in peri-urban Lima, Peru. Specifically, I am investigating shared strains of E. coli harbored by these hosts and am interested in using genomic tools to reconstruct transmission of antimicrobial resistant strains or AMR genes between these two populations.

**ANDREW SIEBEN**



*Admitted 2024*  
Civitello Lab  
Population Biology, Ecology & Evolution

I study the socioecology of schistosomiasis, a parasitic blood worm that infects people when they contact infested ponds, lakes, and streams. Before infecting humans, schistosomes must first infect an intermediate snail host. I am currently studying how nutrient inputs from migratory livestock herds alter snail population dynamics and schistosome infection risk. Using a combination of ecological field studies, qualitative interview methods, and mathematical models, I am testing the efficacy of nutrient remediation interventions in waterbodies around northern Tanzania as a method of reducing schistosomiasis infection risk. I will also be investigating livestock herd movements to better understand spatiotemporal variation in nutrient deposition. Overall, I aim to better understand ecological and social factors impacting schistosomiasis infection dynamics at the level of individual waterbodies and across the Lake Victoria region of northern Tanzania.

2025 TRAINEE & AOD DEADLINE

**APRIL 2, 2025**

Visit the [IDASTP Website](#) for more details.

2024 – 2025 IDASTP Award of Distinction (AOD)

The IDASTP Award of Distinction was created to further support student research that fits with the infectious disease across-scales approach. Student support includes funds for research supplies, training and travel.

**NATALIE OLSON**



*Awarded 2023-2025*  
Nadimpalli and Waller Labs  
Environmental Health Sciences

My research explores zoonotic spillover at the human-livestock-wildlife interface. I am investigating industrial extractive activities (logging and mining) as drivers of habitat degradation and spillover between wildlife and human populations in the Congo Basin. I am also investigating within-and between-host metagenomic microbiome and resistome diversity among human and chicken populations in Mozambique.

**MEHER SETHI**



*Awarded 2023-2025*  
Lowen Lab  
Microbiology & Molecular Genetics

My project entails studying viral evolution at a fundamental level wherein I will evaluate how virus-virus interactions between cells modulate virus-virus interactions within cells and, in turn, the implications of this cross-scales biology for viral evolution. Collective dissemination is a form of dispersal, in which clusters of virions move between cells and is common across virus families. Using a mammalian orthoreovirus system, my project will focus on understanding the implications of virion aggregation- a form of collective dispersal between cells on reassortment and phenotypic hiding (which occur within cells) to determine how virus-virus interactions can shape evolution at the viral population level and impact viral transmission and disease.

**MACKENZIE HOOGSHAGEN**



*Awarded 2024*  
de Roode Lab  
Population Biology,  
Ecology & Evolution

My research focuses on the role of plant chemistry in tri-trophic interactions between plants, herbivores, and herbivores' natural enemies. Plant chemistry greatly influences interactions between plant-herbivores and herbivore-natural enemies, and it can vary widely within and between species. My research aims to better understand how environmental factors affect plant chemistry and how these changes cascade to affect herbivores and their natural enemies. To do this, I use monarch butterflies, their toxic milkweed host plants, and a protozoan parasite of monarchs. Currently, I am investigating the interactive effects of rising temperature and atmospheric carbon dioxide on milkweed chemistry and growth, monarch fitness, and parasite infection outcomes. This will provide a framework for studying responses of tri-trophic interactions to climate change

**LOUIS HOPKINS**



*Awarded 2024*  
Rengarajan Lab  
Epidemiology

Louis studies the host immune response against Mycobacterium tuberculosis (Mtb) to gain insights that lead to the development of better vaccines. Through a combination of infection models, immunological assays, and bioinformatic and spatial transcriptomic analyses, Louis interrogates novel immune suppression pathways and assesses architecture of granuloma lesions in the lung during TB pathogenesis. Together, his studies will help to better understand host-pathogen interactions, and disease dynamics and control.

2024-2025 AODs (continued)

**BEN LUKUBYE**



*Awarded 2024*  
Civitello Lab  
Population Biology,  
Ecology & Evolution

Broadly am interested in understanding the ecology of neglected tropical diseases like Schistosomiasis to inform disease control strategies. For my doctoral work, I am investigating the role of cattle dung in human schistosome transmission from snails into humans. In exploring this question, I employ field work, experimentation, and mathematical modelling to integrate across scales and predict the consequences of dung input on schistosomiasis epidemiology.

**MEGAN PHILLIPS**



*Awarded 2024*  
Weissman and Read Labs  
Population Biology,  
Ecology & Evolution

My doctoral research focuses on the genome evolution of bacterial pathogen *Staphylococcus aureus*. Specifically, I am currently working to understand multiple dimensions of plasmid evolution in *S. aureus*: genetic sequence evolution, spread of the plasmid to new hosts, and change in copy number. Plasmids are small, circular pieces of DNA separate from the chromosome. They function as obligate intracellular symbionts in bacteria, can be transmitted to new hosts, and potentially confer a diverse set of traits, including antimicrobial resistance. In the future, I plan to explore how subspecies of *S. aureus* are connected in networks of gene exchange.

**ANANYA SAHA**



*Awarded 2024*  
Koelle and Anita Labs  
Population Biology,  
Ecology & Evolution

My research focuses on understanding the within host immune response dynamics against virus infections and how that impacts transmission of viruses between host. Specifically, in one of my projects, I am analyzing antibody response dynamics for multiple vaccine and virus antigens using a mixed effect modelling framework. Analysis of the immune response dynamics following vaccination or infection will guide us to design vaccination schedule effectively. In a second project, I am looking at the effect of vaccine generated CD8 T cells to prevent transmission in a mouse model of parainfluenza virus transmission using mathematical modelling. Elucidating and quantifying the specific roles of different arms of the immune system at different stages of a virus infection and transmission will be helpful to characterize the host-virus interactions better. Ultimately, my research aims to shed light on the population level circulation and evolution of different viruses by studying the interconnected cross-scale dynamics of viruses, i.e., both within and between host dynamics.

**ELIZABETH SOMSEN**



*Awarded 2024*  
Koelle Lab  
Population Biology,  
Ecology & Evolution

Influenza viruses have caused four pandemics since the start of the last century, all of which resulted from genetic mixing between human-origin and animal-origin viruses. Surveillance at human-animal interfaces is one strategy used to identify potential pandemic viruses before they emerge. However, current risk assessment strategies do not take advantage of computational and modeling approaches to predict the pandemic potential of these pre-emergent viruses. I work on developing mathematical and evolutionary models to better characterize influenza virus pandemic risk.

## Alums

IDASTP takes pride in our students and their contributions to the program. Building a program over the span of five years is no small feat, and it's clear that the students have played a crucial role in its development.

Congratulations to our students on their achievements, and here's to continued success and progress in the field of infectious disease research and training!

### TRAINEES



**Ashley Alexander**  
*Trainee 2021-2023*  
 Goldberg & Read Labs  
 Population Biology, Ecology & Evolution  
 Now postdoc at Georgia State University



**Stephen Mugel**  
*Trainee 2022 - 2024*  
 Clasen & Gillespie Lab  
 Environmental Health Sciences  
 Now EIS Fellow at the CDC



**Steph Bellman**  
*Trainee 2022 - 2024*  
 Prokopec & Piantadosi Lab  
 Environmental Health Sciences



**Rachel Pearson**  
*Trainee 2021-2023*  
 Day Lab  
 Immunology & Molecular Pathogenesis



**Amber Coats**  
*Trainee 2021-2023*  
 Koelle Lab  
 Microbiology & Molecular Genetics



**Elizabeth Sajewski**  
*Trainee 2019-2021*  
 Lopman Lab  
 Environmental Health Sciences  
 Now EIS fellow at the CDC



**Ian Hennessee**  
*Trainee 2020-2022*  
 Clasen & Kitron Lab  
 Environmental Health Sciences  
 Now EIS fellow at the CDC



**Kelsey Shaw**  
*Trainee 2019-2020*  
 Civitello Lab  
 Population Biology, Ecology & Evolution  
 Now postdoc at the University of Notre Dame



**Frederica Lamar**  
*Trainee 2020-2021*  
 Levy & Freeman Labs  
 Environmental Health Sciences  
 Now EIS fellow at the CDC

**9**  
 Trainees have completed  
 IDASTP Training since 2019

2025 TRAINEE & AOD DEADLINE

**APRIL 2, 2025**

Visit the [IDASTP Website](#) for more details.

Alums (continued)

**AWARD OF DISTINCTION (AOD)**



**KM Barnett**  
*AOD 2021-2022*  
 Civitello Lab  
 Population Biology, Ecology & Evolution  
 Now ORISE Epidemiology Fellow CDC



**Michael Martin**  
*AOD 2020-2021*  
 Koelle Lab  
 Population Biology, Ecology & Evolution  
 Now postdoc at John Hopkins University



**LM Bradley**  
*AOD 2020-2021*  
 Civitello Lab  
 Population Biology, Ecology & Evolution



**Sandra Mendiola**  
*AOD 2020-2021*  
 Gerardo & Civitello Labs  
 Population Biology, Ecology & Evolution  
 Now postdoc at the University of Georgia



**Aniruddha Deshpande**  
*AOD 2022-2023*  
 Lopman Lab  
 Epidemiology



**Vishnu Raghuram**  
*AOD 2022-2023*  
 Read and Goldberg Lab  
 Microbiology & Molecular Genetics  
 Now postdoc at Umea University



**Vincent Giacalone**  
*AOD 2021-2022*  
 Tirouvanziam Lab  
 Immunology & Molecular Pathogenesis  
 Now Scientist at Larkspur Biosciences



**Tammy Spikes**  
*Awarded 2023-2024*  
 Wolf Lab  
 Environmental Health Sciences



**Carol Liu**  
*AOD 2021-2022*  
 Lopman Lab  
 Epidemiology  
 Now PE Fellow at CDC



**Courtney Victor**  
*AOD 2022-2023*  
 Freeman Lab  
 Environmental Health Sciences

**10**  
 AODs have completed  
 IDASTP Training since 2019

Since 2019, Trainees and AODs achieved:

**46+**  
 PUBLICATIONS

**50+**  
 PRESENTATIONS

2025 TRAINEE & AOD DEADLINE  
**APRIL 2, 2025**

Visit the [IDASTP Website](#) for more details.

## IDASTP STEERING COMMITTEE

### Faculty Members



**Jaap de Roode, PhD**  
*Director, IDASTP*  
*Samuel C. Dobbs Professor of Biology*  
*Emory College of Arts and Sciences*  
*Member, Board of Directors, Rosalynn Carter*  
*Butterfly Trail*



**Lance Waller, PhD**  
 Professor, Department of  
 Biostatistics and Bioinformatics,  
 Rollins School of Public Health



**Deanna Kulpa, PhD**  
 Associate Professor,  
 Pathology & Laboratory Medicine  
 Emory School of Medicine



**Maya Nadimpalli, PhD**  
 Assistant Professor,  
 Environmental Health  
 Jointly Appointed, Global Health  
 Rollins School of Public Health



**Anne Piantadosi, PhD**  
 Assistant Professor,  
 Pathology and Laboratory Medicine  
 Emory University School of Medicine



**Gonzalo Vazquez-Prokopec, PhD**  
 Associate Professor, Environmental Sciences  
 Winship Distinguished Research Professor in  
 Environmental Sciences  
 Global Health Institute Faculty Distinction  
 Fund Awardee  
 Emory College of Arts and Sciences

### Student Members



**Maria Garcia Quesada**  
*IDASTP Trainee (2<sup>nd</sup> Year)*  
 Lopman Lab  
 Epidemiology



**Madison Schwab**  
*IDASTP Trainee (1<sup>st</sup> Year)*  
 Nadimpalli Lab  
 Population Biology,  
 Ecology & Evolution

### Administrative Member



**Todd Swink**  
 Associate Director,  
 IDASTP  
 The MP3 Initiative

## IDASTP LEADERSHIP

IDASTP is led by the IDASTP Steering Committee representing ECAS, RSPH and SOM. Training Faculty are recruited from various departments on campus to ensure IDASTP includes a broad spectrum of infectious disease research training faculty.

## IDASTP TRAINING FACULTY

Faculty	Department
Cervantes-Barragan, Luisa	Microbiology and Immunology
Civitello, Dave	Biology
Clasen, Thomas F.	Environmental Health
Day, Cheryl L.	Microbiology and Immunology
de Roode, Jacobus C.	Biology
Dean, Natalie	Biostatistics and Bioinformatics; Epidemiology
Freeman, Matthew	Environmental Health, Epidemiology and Global Health
Gerardo, Nicole M.	Biology
Gillespie, Thomas R.	Environmental Sciences
Goldberg, Joanna B.	Pediatrics
Hunter, Eric	Pathology and Laboratory Medicine
Kitron, Uriel D.	Environmental Sciences
Koelle, Katia	Biology
Kulpa, Deanna	Pathology & Laboratory Medicine
Lau, Max	Biostatistics and Bioinformatics; Epidemiology
Leon, Juan S.	Global Health
Logan, Latania	Pediatrics
Lopman, Benjamin A.	Epidemiology
Lowen, Anice C.	Microbiology and Immunology
McQuade, Elizabeth Rogawski	Epidemiology
Moe, Christine L.	Global Health
Nadimpalli, Maya	Environmental Health
Piantadosi, Anne	Pathology & Laboratory Medicine
Read, Timothy D.	Medicine (Infectious Diseases)
Rengarajan, Jyothi	Medicine (Infectious Diseases)
Silvestri, Guido	Pathology and Laboratory Medicine
Sullivan, Patrick S.	Epidemiology
Suthar, Mehul	Pediatric Infectious Disease
Tirouvanziam, Rabin	Pediatric Infectious Diseases
Vazquez-Prokopec, Gonzalo M.	Environmental Sciences
Vega, Nic M.	Biology
Waller, Lance A.	Biostatistics and Bioinformatics

## Q &amp; A with IDASTP Training Faculty Students



**Rabin Tirouvanziam, PhD**  
IDASTP Training Faculty

MP3 Awardee  
Associate Professor,  
Pediatrics, Cystic Fibrosis,  
School of Medicine  
Emory University

### What does across scales mean to you?

Infectious diseases happen at the interface between host and microbial biology. To me, most organisms on Earth, whether big or small, mostly attempt to live together and minimize cost linked to attack and defense. Humans for example carry more than 100x more microbial cells in and on them than their own. Disease occurs when hosts and microbes are not adapted to each other (e.g., in human plague), or hosts are tricked into choosing microbial containment rather than elimination (e.g., in tuberculosis). Approaching health and disease across scales means integrating all levels of biological organization (molecules, cells, organs, organisms, populations, ecosystems, evolutionary history) to provide a holistic understanding of complex interactions (mostly friendly, sometimes conflictual) between species.

### How did you get into your research?

I was trained as a biomedical engineer and developmental biology PhD in Paris, France, then moved to Stanford for my postdoc to train in human genetics and immunology as well as clinical research. I started my lab at Emory / Children's / Georgia Tech 13 years ago and love the opportunity to collaborate with basic scientists, engineers, and clinicians on critical mechanisms in human disease. My group currently counts 20 members, including chemistry and pre-med undergrads, PhD students (from 4 programs), postdocs, and staff technicians and scientists. We investigate mechanisms of acute and chronic adaptation to sterile and infectious stressors in humans mediated by the innate immune system.

### How has the program shaped your research?

We were fortunate to gain support from the MP3 program for a collaborative project on plague pathogenesis as a driver of human evolution, which has involved colleagues across human immunology,

microbiology, genetics, anthropology and epidemiology. Leveraging such a broad range of disciplines and expertise across our team has been a joy and a constant incentive to think outside our individual boxes. Attending IDASTP seminars has been equally eye opening. I love the opportunity for students and faculty to think in truly multidisciplinary ways about biology, health / disease and ecosystems.

### Describe your most exciting research finding

I got my Masters in 1994 so I have been a biomedical researcher for 3 decades now! I was blessed to have mentors who gave me a lot of independence, and by the opportunity to work with fantastic peers and trainees. My research program has coalesced over time around the role of barrier tissues (epithelia) and immune cells that are abundant within them (granulocytes, monocytes / macrophages, T-cells) in protecting against stressors. Two related and exciting findings from my group have been that granulocytes and monocytes from blood rapidly open their chromatin and undergo profound adaptations upon entry into tissues, and that these changes can be recapitulated in biomimetic models in vitro. This is opening novel avenues for drug development, which we are pursuing in multiple disease contexts (cystic fibrosis, tuberculosis, plague, COVID-19, cancer), as small molecule- and RNA-based "innate immunotherapeutics".

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

These are exciting times to be a biomedical scientist. I believe our access to high content data through "omics" methods, combined with advanced computational methods will lead to profound advances in how we understand biology, host / microbe interactions, ecosystems, and ultimately, health and disease. I am halfway through my career as a scientist (I hope!) and I am as excited as I was as a Masters student 30 years ago to contribute to advances in biomedicine and train the next generation of scientists. Multidisciplinary, as exemplified by the IDASTP, will be a critical element in the future of our field.



2021  
MP3 Seed Grant Awardee  
[IDAS Seminar Talk 3.26.24](#)



**David Jimenez-Vallejo**

IDASTP Trainee

Mentor: Gonzalo Vazquez-Prokopec  
Population Biology, Ecology and Evolution  
PhD Candidate  
Emory University

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

To me, crossing scales is all about having an interdisciplinary approach that keeps in consideration the role of multiple disciplines, as well as different geographical and temporal contexts. Having this kind of approach not only facilitates looking at a research question from different angles, but also how those different angles may be interacting with each other. In essence, crossing scales you are inherently thinking outside the box in the ever-repeating search to understand if your data at hand is able to provide the answers you are seeking from your research.

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

When I arrived at Emory, I knew I wanted to partake in research that would blend multiple disciplines in order to better understand what factors drove evolutionary arms races. When I rotated in the Prokopec Lab during my first year of Graduate School, I began to learn more about the development of insecticide resistance in mosquito populations across the world, and how the interplay of evolutionary and ecological dynamics drove such development. At the same time, the Lab was leading a field trial in Mexico assessing the impact of a new method of insecticide application and whether it would be effective in not only reducing the incidence of mosquito-borne disease, but also avoiding selecting for insecticide resistance in mosquito populations. The novelty of this new method is for indoor residual insecticides to only be applied at 1.5 meters from the floor, a height preference for *Aedes aegypti* mosquitoes to rest at. After multiple discussions with my advisor, Dr. Gonzalo Vazquez-Prokopec, we soon realized not much was known about *Ae. Aegypti* resting behavior, about the factors driving such as preference, and about the likelihood of the species developing a very particular kind of insecticide resistance: behavioral resistance. Though I never would have thought resting behavior of mosquitoes would be the topic of my PhD dissertation, after seeing the intersectionality of the questions at hand, it was evident to me that it was what I wanted to pursue. This project has given me the opportunity to bring together insect behavior, vector ecology, evolutionary biology, vector control, and field work.

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

The program has played a role in my research from very early on in my PhD career when I started attending the Spring seminar series during my first year. Having the privilege to learn about the research approaches of highly regarded and inspiring speakers, provided a vast amount of perspective and insight that I then reflected upon and incorporated into my own work as I crafted my dissertation proposal for my qualifying exam. Over the last year as a trainee, the program remains an important inspiration that is constantly reminding me of the importance to think beyond one's discipline and consider how each step forward fits into the bigger picture of my research.

**Describe your most exciting research finding.**

A previous study demonstrated that there is a 14-times higher chance of finding a *Aedes aegypti* mosquito resting below 1.5 meters than above. Some authors have gone on to propose that this may be the case possibly due to more favorable microclimates occurring at these lower heights. In addition, other authors bring attention to the influence that color attraction (particularly to darker colors) may have on the resting height choices of individual mosquitoes. Given these, my most exciting finding about which factors seem to be driving this resting height preference is that: it seems to depend! While there appears to be quite a strong negative relationship between relative humidity and resting height (i.e. the more humidity, the more favorable the microclimate, the lower individual mosquitoes rest), mosquitoes also strongly track the presence of black color stimuli (i.e. If the black stimulus is high, mosquitoes will rest higher more; and vice versa). This interaction between microclimate and color attraction holds when compared between two different strains, though I have also found that mosquitoes with a field genetic background rest significantly lower than mosquitoes from a lab genetic background.

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

My love for animals, in particular wildlife, is what drove me to pursue research in ecology and evolution when I was an undergraduate at Duke University. After completing my PhD, my goal is to pivot to the world of conservation biology and gain practical experience in the management and conservation of different wildlife areas and parks with the U.S. Fish and Wildlife Service. It would be an honor for me to apply all of the interdisciplinary skills and experience I have been able to gain both in the field and in the lab, at a governmental agency dedicated to wildlife conservation.



## Maria Garcia Quesada

*IDASTP Trainee*

Mentor: Ben Lopman  
Environmental Health Sciences  
PhD Candidate  
Emory University

### What does across scales mean to you?

To me, across scales means considering how infectious disease characteristics and dynamics at the most microscopic level affect what we see at the population level, and vice versa, when answering research questions. It also means collaboration across disciplines instead of working in silos, which happens all too often in science, to do our best to generate answers and solutions that will have the most impact.

### How did you get into your research?

I have been interested in public health since before I knew what public health was. I was fortunate to see a lot of the world growing up, which included gaining an early awareness of the health challenges and disparities that many communities face, particularly in low resource settings. Through my undergraduate and master's studies I came to care deeply about the potential impact of vaccines as an invaluable tool to promote health equity among the world's most vulnerable populations. My current work on advancing the evaluation of enteric vaccines stemmed from collaboration and guidance from my dissertation co-chairs and mentors, Dr. Elizabeth Rogawski McQuade and Dr. Ben Lopman.

### How has the program shaped your research?

The IDASTP has greatly enriched my doctoral training by not only giving me the freedom and resources to pursue the research questions I care about, but also by providing me with a direct exposure and connection to researchers from other disciplines. Seeing how other scientists approach research questions has enabled me to better consider and incorporate multiple scales in my own work. Additionally, the program support has enabled me to attend and present my work at conferences which have been key to diversifying my perspectives and networking with scientists from other institutions.

### Describe your most exciting research finding

Prior to starting my doctoral studies at Emory, I worked on a WHO funded project aiming to estimate the global impact of pneumococcal conjugate vaccines (PCVs) as well as the potential impact of new higher-valency vaccines. We found that PCVs have eliminated the vast majority of vaccine-type disease, and that newer products have the potential to target over half of remaining disease. These findings were presented to and have informed WHO recommendations. Since starting at Emory, my work on diarrheal disease has shown that we can improve etiologic attribution of diarrheal disease by leveraging longitudinal changes in pathogen quantities detected by molecular diagnostics. This is key to population-level decisions such as setting research priorities and resource allocation, as well as individual-level decisions such as treatment. Stay tuned for the most exciting research finding from my dissertation!

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

I plan to continue pursuing vaccine research with the objective of improving our evaluation of new vaccines as well as optimizing the impact of existing vaccines. My short-term plan after graduation is to apply to a CDC fellowship to gain more applied practical experience, but I may eventually return to academia to continue my research on vaccine-preventable diseases.

To hear from more members of the IDAS Community, visit the



[MP3 & IDASTP YouTube Channel](#)

FEATURING

IDAS Fall Career Development Seminar Talks

IDAS Spring Seminar Talks

The Virulent Vortex Podcast

IDASTP

## 2025 SPRING IDAS SEMINAR SERIES

## Speaker Schedule

- 1/21/25 [Lance Waller](#),  
RSPH, Emory University
- 1/28/25 [Charles Nunn](#),  
Duke University
- 2/04/25 [Jaap de Roode](#),  
ECAS, Emory University
- 2/11/25 [David Benkeser](#),  
RSPH, Emory University
- 2/18/25 [Kelly Speer](#),  
Northern Arizona University
- 2/25/25 [Marion Koopmans](#),  
Erasmus MC
- 3/18/25 [Justin Lessler](#),  
University of North Carolina
- 3/25/25 [James Platts-Mills](#),  
University of Virginia
- 4/01/25 [Tim Read](#),  
SOM, Emory University
- 4/08/25 [Erin Scherer](#),  
SOM, Emory University
- 4/15/25 [Min Levine](#),  
CDC

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



Select recorded talks can be found on the MP3 & IDASTP [YouTube Channel](#)

## Tuesdays at 3 PM

In-Person: Claudia Nance Rollins Building  
Room 1051

Virtual: Join the IDAS Listserv to  
receive Zoom Link

Join us for the annual spring seminars 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 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.

All seminars are open to everyone.

More details can be found on the [2025 IDAS Seminar Series Homepage](#).

## Course Information

Class Name: IBS 500R  
Current Topics in Bioscience

Class Nbr: 5923

Email [tswink@emory.edu](mailto:tswink@emory.edu) for permission code

## NEWS ACROSS SCALES

*Join the community of infectious disease across scales approach*

[+ Add me to the News Across Scales Listserv](#)

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## FALL IDAS CAREER DEVELOPMENT SERIES

Tuesdays at 3 PM

The success of our annual Spring IDAS Seminar Series lead to the development of the new Fall IDAS Career Development Seminar Series. In the inaugural year, IDASTP students, alums, faculty and a guest speaker kicked off the discussions on career development in the infectious disease across scales field. Discussion included the evolution of writing a paper, student research projects, Lance Waller Zombie Talk and special guest Marc Lipsitch presentation.

2 0 2 4

Jacobus de Roode  
Lance Waller  
Maria Garcia Quesada

Natalie Olson  
David Jimenez-Vallejo  
Nicole Hood  
Meher Sethi

Marlene Wolfe  
Deanna Kulpa  
Lauren McCullough

Special Guest: Ying Kai Chan – Cirrus Therapeutics

Special Guest: Garry Myers – University of Technology Sydney Australia

2 0 2 3

Jacobus de Roode  
Steph Bellman  
Amber Coats  
Ashley Alexander

LM Bradley  
Dave Civitello  
Maya Nadimpalli  
Stephen Mugel

Kelsey Shaw  
Ian Hennessee  
Frederica Lamar  
Elizabeth Sajewski

Lance Waller  
Rachel Pearson  
Aniruddha Deshpande  
Sandra Mendiola

Special Guest: Marc Lipsitch – Harvard University



Select recorded talks can be found on the MP3 & IDASTP [YouTube Channel](#)

The Virulent Vortex is a podcast hosted by Jaap de Roode in which IDAS Community members discuss infectious diseases across scales from molecules and pathogens to populations and pandemics, and everything in between.

Featuring MP3 Awardees, IDASTP students and faculty.

The recorded sessions will be released through the News Across Scales Listserv.

The recordings will also be featured on our [website](#) , [YouTube Channel](#) [Spotify](#) and [Apple Podcasts](#)



New Episodes  
First Thursday  
of each Month

SEASON ONE

[Episode 01 – Lance Waller](#)

[Episode 02 – Mirko Paiardini](#)

[Episode 03 – Sandra Mendiola](#)

[Episode 04 – Anice Lowen](#)

[Episode 05 – Ben Lopman](#)

[Episode 06 – Katia Koelle](#)

[Episode 07 – Steph Bellman](#)

[Episode 08 – Rachel Pearson](#)

[Episode 09 – Stephen Mugal](#)

[Episode 10 – Ashley Alexander](#)

SEASON TWO

[Episode 01 – Jaap de Roode](#)

[Episode 02 – Ani Deshpande](#)

[Episode 03 – Natalie Dean](#)

Season 2 includes new episodes featuring:

Matthew Collins

Elizabeth Rogawski McQuade

Anne Piantadosi

LM Bradley

Maya Nadimpalli

Gonzalo Vazquez-Prokpec

Amber Coats

Dave Civitello

Don't forget to press "like" on your favorite episodes



[Virulent Vortex' video podcast reveals the personalities behind infectious disease science](#)

Emory Communications

By Carol Clark

The Virulent Vortex is sponsored by The MP3 Initiative.

Episodes are recorded and edited by [The Recording Service](#), Jaap de Roode and Todd Swink

# MP3 & IDASTP RETREAT 2025

April 18 – 19, 2025

IDASTP faculty and students along with MP3 Initiative Awardees will meet for the annual MP3 & IDASTP Retreat April 18-19, 2025, on Emory Campus in the Rollins School of Public Health.

The 2024 retreat will feature presentations from IDASTP and MP3 faculty and student awardees.

Saturday April 19<sup>th</sup> will feature the annual hike at a local destination.

Registration and more details to come in the coming months.

## SCENES FROM PREVIOUS RETREATS



**NEWS ACROSS SCALES**  
 MP3 INITIATIVE & IDASTP  
[Join the News Across Scales Listserv](#)

SCAN ME



IDASTP gratefully acknowledges the generous support from the following contributors:



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



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**Laney Graduate School**

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**Department of Microbiology & Immunology**

**Division of Infectious Disease**

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**NEWS ACROSS SCALES**  
**MP3 INITIATIVE & IDASTP**

Biweekly newsletter announcing all the MP3 and IDASTP events

[Join the News Across Scales Listserv](#)

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