



Center for
Emerging,
Zoonotic, and
Arthropod-borne
Pathogens

Distinguished Speaker Seminar Series in Infectious Disease Fall 2023

August 24, 2023:

Rogério Bataglioli, Ph.D. *Postdoc, Hsu Lab*

"Developing a prophylactic approach to preventing Salmonella Typhimurium infection by the rational design of phage-bacterial interactions"

Host: Bryan Hsu

August 31, 2023:

T.M. Murali, Ph.D. *Professor & Associate Department Head of Research, Department of Computer Science, COE*

"Pandemic Prediction and Prevention: A Destination Areas Project"

September 7, 2023:

Jean Celli, Ph.D. *Professor, Department of Microbiology and Molecular Genetics, University of Vermont*

"Roles of Brucella Type IV effector proteins in bacterial proliferation"

Host: Clay Caswell, Ph.D.

September 14, 2023:

Helen Blackwell, Ph.D. *Norman C. Craig Professor, Department of Chemistry, University of Wisconsin-Madison*

"Chemical strategies to intercept and alter bacterial communication pathways"

Host: Ann Stevens, Ph.D.

September 21, 2023:

ID IGEP 1st Research Rotation Presentations

September 28, 2023:

Dr. White's seminar is part of a broader Human Dimensions of Infectious Diseases research symposium.

Alexandre White, Ph.D., *Assistant Professor, Department of Sociology, Johns Hopkins University*

"Epidemic Orientalism: Race, Capital, and the Governance of Infectious Disease".

Host: Tom, Ewing, Ph.D.



FRALIN LIFE SCIENCES INSTITUTE
VIRGINIA TECH.

October 5, 2023: – Virtual Seminar

Isabel Gordo, Ph.D.

"Natural Selection in commensal bacteria colonizing the mammalian gut"

Host: Brian Hsu, Ph.D.

October 12, 2023:

Stefan Rothenburg, Ph.D. *Professor, Dept. Medical Microbiology and Immunology, University of California, Davis*

"Poxvirus Evolution and the Molecular Basis for Poxvirus Host Range"

Host: Frank Aylward, Ph.D.

October 19, 2023:

ID IGEP 2nd Research Rotation Presentations

October 26, 2023:

Jingqiu Liao, Ph.D. *Assistant Professor, Department of Civil and Environmental Engineering, COE*

"A nationwide investigation of antibiotic resistance genes in soil-dwelling Listeria."

November 2, 2023:

Marshall Bloom, M.D. *Chief, Biology of Vector-Borne Viruses Section, NIH*

"New dimensions in the study of tick-borne virus infections"

Host: Gillian Eastwood, Ph.D.

November 9, 2023:

Kelly Doran Ph.D. *Professor of Immunology & Microbiology, University of Colorado Anschutz School of Medicine*

"Life in Mucus: Vaginal Colonization by Group B Streptococcus"

Host: Bryan Hsu, Ph.D., Clay Caswell, Ph.D.

November 16, 2023:

ID IGEP 3rd Research Rotation Presentations

November 30, 2023:

Aaron Gross Ph.D. *Associate Professor, Department of Entomology, CALS*

"The Insect Cholinergic System: Challenges and Opportunities in Vector Management"

Thursday August 24, 2023 at 12:30 PM

LS1 Conference Room 101

(NOTE: This is a new location from our previous seminars)

"Developing a prophylactic approach to preventing Salmonella Typhimurium infection by the rational design of phage-bacterial interactions"

Salmonella enterica serovar Typhimurim is a notorious diarrheal pathogen and is a contributor to the emergence and spread of antibiotic-resistant clinical isolates. Bacteriophages (phages) are bacterial viruses that have received renewed interest as antimicrobial agents. One limitation to this application of phages ("Phage Therapy") is that phages must be administered after the establishment of infection and the quantity of dosed phage is substantially lower than that of the established pathogen. We hypothesize that establishing a sustained basal concentration of anti-pathogen phage in the gut will provide protection against invading pathogens. To test this, we genetically engineer the commensal gut bacteria, Escherichia coli, to carry a virulent mutant of a S. Typhimurium phage, P22, as a prophage by providing the lysogenic machinery in trans. We find that a virulent phage P22 phage produced from E. coli is better at killing S. Typhimurium in vitro than P22 or E. coli alone. Our work represents an alternative approach to applying phage therapy in the gut: as prophylactic protection instead of remedial treatment.

Rogério Bataglioli, Ph.D. *Postdoctoral Associate, Hsu Lab*

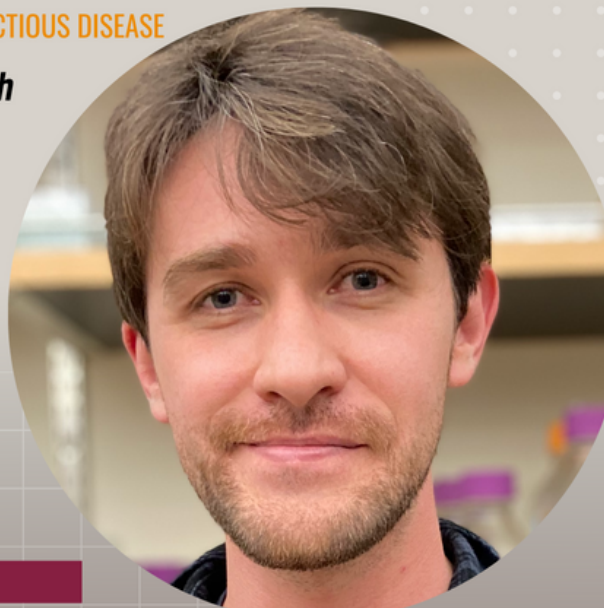
DISTINGUISHED SPEAKER SEMINAR SERIES IN INFECTIOUS DISEASE

"Developing a prophylactic approach to preventing Salmonella Typhimurium infection by the rational design of phage-bacterial interactions"

August 24th at 12:30 pm
LS1 Conference Room 101

Rogério Bataglioli, Ph.D.

Postdoctoral Associate, Hsu Lab



Center for Emerging, Zoonotic, and Arthropod-borne Pathogens (CeZAP)
Distinguished Speaker Seminar Series in Infectious Diseases

Thursday August 31, 2023 at 12:30 PM

LS1 Conference Room 101

(NOTE: This is a new location from our previous seminars)

"Pandemic Prediction and Prevention: A Destination Areas Project"

The Pandemic Prediction and Prevention Destination Areas (PPP DA) project has an aspirational vision: a world where we accurately foresee pandemics and proactively minimize their impact. The PPP DA includes faculty, scientists, graduate, and undergraduate students from eight colleges at Virginia Tech working in collaboration with leading researchers at other universities and partners. Our mission is to forecast and control future viral pandemics by addressing the grand challenge of uncovering the genetic, molecular, cellular, and chemical rules of life underlying virus-host interactions through community-based and ethically grounded research. I will describe our research thrusts, plans for hiring new faculty colleagues, and how the PPP DA aligns with the Beyond Boundaries vision of our institution. I will present our plans to educate and train a new generation of scientists with transformative technical and professional skills to form convergent teams that can protect and empower humans by anticipating future outbreaks and preventing them from becoming pandemics. To conclude, we will have an open discussion on ways in which the PPP DA and CeZAP can work together.

T.M. Murali, Ph.D. Professor & Associate Department Head of Research, Department of Computer Science, COE



CeZAP Distinguished Speaker Seminar Series
Center for Emerging, Zoonotic, and Arthropod-borne Pathogens in Infectious Disease

"Pandemic Prediction and Prevention: A Destination Areas Project"

August 31st at 12:30 pm
LS1 Conference Room 101

T.M. Murali, Ph.D.
Professor, Dept. of Computer Science, COE

VT FRALIN LIFE SCIENCES INSTITUTE

Center for Emerging, Zoonotic, and Arthropod-borne Pathogens (CeZAP)
Distinguished Speaker Seminar Series in Infectious Diseases

Thursday September 7, 2023 at 12:30 PM

LS1 Conference Room 101

(NOTE: This is a new location from our previous seminars)

“Roles of Brucella Type IV effector proteins in bacterial proliferation”

The bacterial pathogen *Brucella abortus* uses Type IV secretion-mediated intracellular delivery of effector proteins to promote its infectious cycle and proliferation in phagocytic cells of the infected host. While several Type IV effectors are known to modulate innate immune, cell-intrinsic responses or promote biogenesis of its niche of replication, whether *Brucella* intracellular growth within its vacuole requires Type IV effector functions has remained unclear. Here I will present recent evidence that *B. abortus* delivers various effector proteins that specifically contribute to intracellular proliferation by targeting endoplasmic reticulum-associated and endocytic cellular pathways, highlighting global remodeling of host functions during infection.

Jean Celli, Ph.D. Professor, Department of Microbiology and Molecular Genetics, University of Vermont

A graphic for the seminar series featuring a circular portrait of Jean Celli on the right. The text on the left includes the CeZAP logo, the seminar title, date, time, location, and speaker information.

CeZAP Distinguished Speaker Seminar Series
Center for Emerging, Zoonotic, and Arthropod-borne Pathogens in Infectious Disease

“Roles of Brucella Type IV effector proteins in bacterial proliferation”

September 7th at 12:30 pm
LS1 Conference Room 101

Jean Celli, Ph.D.
Professor, Dept of Microbiology & Molecular Genetics
University of Vermont

VT FRALIN LIFE SCIENCES INSTITUTE

Center for Emerging, Zoonotic, and Arthropod-borne Pathogens (CeZAP)
Distinguished Speaker Seminar Series in Infectious Diseases

Thursday September 14, 2023 at 12:30 PM


LS1 Conference Room 101

(NOTE: This is a new location from our previous seminars)

"Chemical strategies to intercept and alter bacterial communication pathways"

Our research is broadly focused on the design, synthesis, and application of non-native ligands that can intercept bacterial quorum sensing and provide new insights into its role in host/microbe interactions and the environment. At high cell densities, many common bacteria use quorum sensing to switch from a single cell existence to that of a multicellular community. This lifestyle switch is significant; only in groups will pathogenic bacteria turn on virulence pathways and grow into impervious communities called biofilms that are the bases of chronic biofouling and infections. We have developed a range of non-native analogs of autoinducer signals that can block or activate quorum sensing pathways, some with high selectivities, potencies, and chemical stabilities. These molecules provide a novel approach to study quorum sensing with both spatial and temporal control in a range of settings. We have applied our chemical tools in vitro and in vivo to investigate quorum sensing as an anti-infective target. Ongoing work is focused on understanding their interactions with key protein receptors involved in quorum sensing pathways, with native signals, and with membranes. In this talk, I will introduce my lab's research approach and highlight our most recent results.

Helen E. Blackwell, PhD, *Norman C. Craig Professor of Chemistry,*



CeZAP Distinguished Speaker Seminar Series
Center for Emerging, Zoonotic, and Arthropod-borne Pathogens
in Infectious Disease

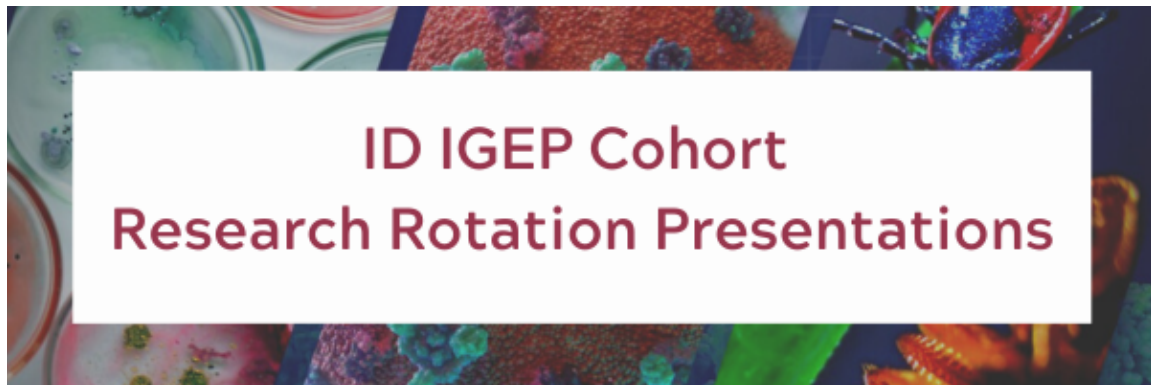
"Chemical strategies to intercept and alter bacterial communication pathways"

September 14th at 12:30 pm
LS1 Conference Room 101

Helen Blackwell, Ph.D.
Norman C. Craig Professor, Department of Chemistry,
University of Wisconsin-Madison

VT FRALIN LIFE SCIENCES INSTITUTE

Thursday September 21, 2023 at 12:30 PM
LS1 Conference Room 101



ID IGEP Cohort Research Rotation Presentations

ID IGEP funded students participate in three four-week rotations during their first fall semester on campus. Students will gain valuable technical skills during their three different lab rotations and they will develop professionally by giving oral presentations to the ID IGEP community at the end of each rotation period. Students will match to the laboratory of their major PI by the end of the fall semester, join the department of their PI and earn their degree in that department.

Student in the 3rd cohort class presenting:

- Joud Aldaroub
- Ekene Anekwe
- Chad Artman
- Marianne Beaulieu
- Elizabeth Burrell
- Hyun Choi
- Rakib Ehsan
- Ying-Xian Goh
- Abigail Heimbach

Thursday September 28, 2023 at 12:30 PM

Newman Library Goodall Room 100

Note this is a different location

<https://virginiatech.zoom.us/j/89915838236>

“Epidemic Orientalism: Race, Capital, and the Governance of Infectious Disease”

For most of the 21st century much of the world has taken for granted our ability to fight back pandemics and control them with little effect on day-to-day life. Until the emergence of COVID-19 few in the western world would have had any occasion to consider the histories of infectious disease control that have managed the spread of pandemic threats around the world. Epidemic Orientalism: Race, Capital and the Governance of Infectious Disease tells the story of how epidemic threats become the focus of international management, regulation and control, as well as the political, economic and racial ideologies that have shaped international coordination to stop pandemic spread.



CeZAP Distinguished Speaker Seminar Series
Center for Emerging, Zoonotic, and Arthropod-borne Pathogens in Infectious Disease

"Epidemic Orientalism: Race, Capital, and the Governance of Infectious Disease"

September 28th at 12:30 pm
Newman Library Goodall Room 100

Dr. Alexandre White
Assistant Professor, Department of Sociology, Johns Hopkins University

VT FRALIN LIFE SCIENCES INSTITUTE

Human Dimensions of Infectious Disease Research Colloquium, September 28-29, 2023

Newman Library Goodall Room 100, Virginia Tech Blacksburg Campus and over zoom:
<https://viriniatech.zoom.us/j/89915838236>

Thursday, September 28, 10:00-11:30 am

10:00-10:15: Welcome (Tom Ewing)

10:15-10:45: Rebecca Hester, Department of Science, Technology, and Society, "Pathogenic Entanglements: The Inflammatory Politics of Covid-19"

10:45-11:15: Marcus Johnson, School of Education, "Identifying and Reconstructing Infectious Disease Misconceptions Among K-12 Educators"

11:15-11:45: Domenique Villani, Population Health Sciences, with Sophie Wenzel and Lisa M. Lee, "Communicating Ethical Dimensions of Gain of Function Research Using Community Engagement Studios"

Thursday, September 28, 12:30-1:30 pm

Dr. Alexandre White, "Epidemic Orientalism: Race, Capital, and the Governance of Infectious Disease" Distinguished lecture, Center for Emerging, Zoonotic, and Arthropod-borne Pathogens ([link](#))

Thursday, September 28, 1:45-4:30 pm

1:45-2:15: Edward Polanco, Department of History, "Settler Colonialism is a Disease: Indigenous Depopulation Narratives from Sixteenth- and Seventeenth-Century Mexico"

2:15-2:45: Julie Gerdes, Department of English, "Extraordinary Declarations: Sources of Evaluation and Authority in Three International Public Health Emergency Decisions"

2:45-3:15: Esra Buyuktahtakin Toy, Department of Industrial Systems Engineering, with Xuecheng Yin, Sabah Bushaj, and Yue Yuan, "Covid-19: Agent-Based Simulation-Optimization to Vaccine Center Allocation Problem"

3:15-3:30: Break

3:30-4:30: Teaching / Covid-19: Perspectives from humanities and health sciences (I): Cora Olson, Science, Technology, and Society; Nick Ruktanonchai, Population Health Sciences; Julie Gerdes, Department of English; and Jeremy Draghi, Biological Sciences

Friday, September 29, 8:30 am - 12:30 pm

8:30-9:00: Sydney Murphy, Department of Biological Sciences, and Tom Ewing, Department of History, "Cultural and Medical Responses to the Outbreak of the "Russian Flu," 1889-1890"

9:00-9:30: James D. Ivory, Department of English, "Applying Social, Behavioral, and Humanities Research to Policy: Lessons from COVID-19"

9:30-10:00: Gillian Eastwood, Department of Entomology, with Ahmed Garba and Thomas Stanley, VCE, "Increasing Awareness of Tick-Borne Viruses in the Commonwealth"

10:00-10:30: Leah LeJeune, Department of Mathematics, Navid Ghaffarzadegan, Lauren Childs, and Omar Saucedo, "Mathematical Formulations for Representing Human Risk Response in Epidemic Models"

10:30-11:00: John Aggrey, Department of Science Technology and Society, "'Why should I be scared?' Epidemic Uncertainties and Risk Construction in Emerging Infectious Disease Epidemics"

11:00-11:15 Break

11:15-12:15: Teaching / Covid-19: Perspectives from humanities and health sciences (II): Alexandre White, Department of Sociology, Johns Hopkins University; Cori Ruktanonchai, Population Health, Sciences; Tom Ewing, Department of History

Contact information: Tom Ewing (etewing@vt.edu)

Funding from a Diversity Grant from the College of Liberal Arts and Human Sciences.

Thursday October 5, 2023 at 12:30 PM

Virtual Seminar

<https://viriniatech.zoom.us/j/89419666443>

“Natural Selection in commensal bacteria colonizing the mammalian gut”

More than 100 years ago Élie Metchnikoff wrote that “The dependence of the intestinal microbes on the food makes it possible to adopt measures to modify the flora in our bodies and to replace the harmful microbes by useful microbes”. To fulfil Metchnikoff's dream we need to understand the factors that drive change in our gut microbes. In this talk I will focus on intra-host evolution of gut microbes. I will describe the key results that my lab has obtained on how natural selection operates in gut bacteria, as revealed by the methodology of in vivo experimental evolution. These experiments reveal that gut bacteria change evolutionarily at a rapid pace. Such rapid evolution is adaptive and involves either the accumulation of mutations that alter their metabolic preferences or a remarkable fast gain of DNA from other conspecific strains. The later process of horizontal gene transfer is driven by temperate phages, which are bacterial viruses that integrate in bacterial genomes and constitute a substantial component of the gut virome. The data also shows that bacteria colonizing the intestine are able to domesticate their viruses to avoid the cost of their induction while keeping the benefits they may bring.

A poster for a Distinguished Speaker Seminar Series in Infectious Disease. The poster features the CeZAP logo, the title of the seminar, the date and time, the speaker's name, and a circular photograph of Isabel Gordo. The background of the poster is dark with a grid pattern.

CeZAP Distinguished Speaker Seminar Series
Center for Emerging, Zoonotic, and Arthropod-borne Pathogens in Infectious Disease

"Natural Selection in commensal bacteria colonizing the mammalian gut"

October 5th at 12:30 pm
Virtual Seminar

Isabel Gordo, PhD

Evolutionary Biology Group, Instituto Gulbenkian de Ciência

VT FRALIN LIFE SCIENCES INSTITUTE
VIRGINIA TECH.

Thursday October 12, 2023 at 12:30 PM

Virtual Seminar

<https://viriniatech.zoom.us/j/89419666443>

“Poxvirus Evolution and the Molecular Basis for Poxvirus Host Range”

Poxviruses as a group can infect a large number of animals. However, at the level of individual poxvirus species, even closely related poxviruses display highly diverse host ranges and virulence. Because, poxviruses enter host cells by binding to receptors that are highly conserved between different species, their host range is independent of species-specific receptors, and productive infection is largely determined by how well they can antagonize the host immune response. This conflict led to strong selective pressure on both the virus and the host. I will present data highlighting the genetic conflict between the antiviral host protein kinase R (PKR) and poxvirus inhibitors, and discuss consequences of these evolutionary “arms races” for poxvirus host range and virulence. I will also show that poxviruses possess highly adaptable genomes, and present our findings that poxviruses harness host retrotransposons to acquire host genes by horizontal gene transfer.

A graphic for the Distinguished Speaker Seminar Series in Infectious Disease. It features a circular portrait of Stefan Rothenburg, PhD, on the right. On the left, the text reads: "Poxvirus Evolution and the Molecular Basis for Poxvirus Host Range" in italics, followed by "October 12th at 12:30 pm Virtual Seminar" and "Stefan Rothenburg, PhD" in a white box, with "Professor, University of California, Davis" below it. Logos for CeZAP and the Fralin Life Sciences Institute are in the top left and bottom left corners respectively.

CeZAP Distinguished Speaker Seminar Series
Center for Emerging, Zoonotic, and Arthropod-borne Pathogens in Infectious Disease

"Poxvirus Evolution and the Molecular Basis for Poxvirus Host Range"

October 12th at 12:30 pm
Virtual Seminar

Stefan Rothenburg, PhD
Professor, University of California, Davis

VT FRALIN LIFE SCIENCES INSTITUTE
VIRGINIA TECH.

Thursday October 19, 2023 at 12:30 PM
LS1 Conference Room 101



ID IGEP Cohort 2nd Research Rotation Presentations

ID IGEP funded students participate in three four-week rotations during their first fall semester on campus. Students will gain valuable technical skills during their three different lab rotations and they will develop professionally by giving oral presentations to the ID IGEP community at the end of each rotation period. Students will match to the laboratory of their major PI by the end of the fall semester, join the department of their PI and earn their degree in that department.

Student in the 3rd cohort class presenting:

- Joud Aldaroub
- Ekene Anekwe
- Chad Artman
- Marianne Beaulieu
- Elizabeth Burrell
- Hyun Choi
- Rakib Ehsan
- Ying-Xian Goh
- Abigail Heimbach

Thursday October 26, 2023 at 12:30 PM

LS1 Room 101

“A nationwide investigation of antibiotic resistance genes in soil-dwelling Listeria”

Listeria, including *L. monocytogenes*, the causative agent of listeriosis in humans, has the genetic machinery to rapidly develop resistance to antibiotics. Indeed, antibiotic resistance among *L. monocytogenes* isolated from foods and the environment has increased over the past decade, posing a growing threat to food safety and public health. It is believed that environmental changes may select particular antibiotic-resistant clones that can then widely spread in nature. Thus, there is an urgent need to advance our understanding of the ecology and evolution of antibiotic resistance genes (ARGs) in *Listeria* inhabiting the environment. To this end, we leveraged a nationwide genomic and environmental dataset to characterize ARGs in 596 *Listeria* isolates detected in soil samples that we collected across the US. We identified five putative functional ARGs (*lin*, *mprF*, *sul*, *fosX*, and *norB*) with *lin*, which confers resistance to lincomycin, being the most prevalent. ARGs were predominantly detected in *Listeria sensu stricto* species and species more closely related to *L. monocytogenes* tend to harbor more ARGs. Also, we observed strong evidence of horizontal gene transfer (HGT) across species in all five ARGs and identified potassium, pH, aluminum, forest, zinc, manganese, and iron as the key environmental factors that may influence the ARG acquisition in *Listeria*. Using machine learning, we showed the richness of ARGs of a given *Listeria* isolate can be predicted by environmental variables with a mean accuracy of 0.8. Collectively, our data suggest that *Listeria* may acquire ARGs after speciation through HGT and the acquisition is influenced by environmental factors, chiefly soil properties.

Jingqiu Liao, PhD

Assistant Professor, Department of Civil and Environmental Engineering



CeZAP Distinguished Speaker Seminar Series
Center for Emerging, Zoonotic, and Arthropod-borne Pathogens in Infectious Disease

“A nationwide investigation of antibiotic resistance genes in soil-dwelling Listeria.”

October 26th at 12:30 pm
LS 1 Room 101

Jingqiu Liao, PhD
Assistant Professor,
Dept of Civil & Environmental Engineering, COE

VPI VIRGINIA POLYTECHNIC INSTITUTE

Center for Emerging, Zoonotic, and Arthropod-borne Pathogens (CeZAP)
Distinguished Speaker Seminar Series in Infectious Diseases

Thursday November 2, 2023 at 12:30 PM

LS1 Room 101

“New dimensions in the study of tick-borne virus infections”

Marshall E. Bloom, M.D.

Associate Director for Scientific Management

Division of Intramural Research


Chief, Biology of Vector-borne Viruses Section

Laboratory of Virology

Rocky Mountain Laboratories

National Institute of Allergy and Infectious Diseases

National Institutes of Health

A graphic for the Distinguished Speaker Seminar Series in Infectious Disease. It features the CeZAP logo in the top left, the title "New dimensions in the study of tick-borne virus infections." in the center, and a circular portrait of Marshall E. Bloom, M.D. on the right. Below the title, it lists the date and time: "Nov 2nd at 12:30 pm" and "LS 1 Room 101". A white box contains the speaker's name "Marshall E. Bloom, M.D." and a red box below it contains his title: "Associate Director for Scientific Management, Chief, Biology of Vector-borne Viruses Section, Laboratory of Virology, Rocky Mountain Laboratories, NNIH/NIAID". The bottom right corner features the Virginia Tech logo and the text "FRALIN LIFE SCIENCES INSTITUTE VIRGINIA TECH".

CeZAP Center for Emerging, Zoonotic, and Arthropod-borne Pathogens

Distinguished Speaker Seminar Series
in Infectious Disease

***"New dimensions in the study
of tick-borne virus
infections."***

Nov 2nd at 12:30 pm
LS 1 Room 101

Marshall E. Bloom, M.D.

Associate Director for Scientific Management
Chief, Biology of Vector-borne Viruses Section
Laboratory of Virology
Rocky Mountain Laboratories
NNIH/NIAID

VT FRALIN LIFE SCIENCES INSTITUTE
VIRGINIA TECH

Thursday November 9, 2023 at 12:30 PM

LS1 Room 101

“Life in Mucus: Vaginal Colonization by Group B Streptococcus”

Group B Streptococcus (GBS) asymptomatically colonizes 25-30% of healthy women in the vaginal tract, however it is a risk factor for preterm birth and adverse pregnancy outcomes, and can cause ascending infection in utero or be transmitted to the newborn during birth to cause invasive neonatal disease. GBS colonization is also transient in nature, which likely reflects the contributions of pathogen determinants, interactions with commensal flora, and host factors, making this environment particularly challenging to understand. Though the cervicovaginal mucosa is a natural site for GBS colonization, the specific interactions between GBS and mucins remain unknown. We demonstrate that MUC5B interacts directly with GBS and promotes barrier function by inhibiting both bacterial attachment to human epithelial cells and ascension from the vagina to the uterus in a murine model of GBS colonization. Additionally, using machine learning approaches, we show that vaginal community turnover during GBS colonization is driven by computationally predictable changes in key taxa, including several organisms not previously described in the context of the vaginal microbiota, such as *Akkermansia muciniphila*, a mucin degrading bacterium. We observed that *A. muciniphila* experimentally increases GBS vaginal persistence in the mouse and, in a cohort of human vaginal microbiome samples collected throughout pregnancy, we observed an increased prevalence of codetection of GBS and *A. muciniphila* in patients who delivered preterm compared to those who delivered at full term. These findings reveal the importance and complexity of both the native microbiome and mucins to GBS vaginal persistence.

 Distinguished Speaker Seminar Series
in Infectious Disease

"Life in Mucus: Vaginal Colonization by Group B Streptococcus"

Nov 9th at 12:30 pm
LS 1 Room 101

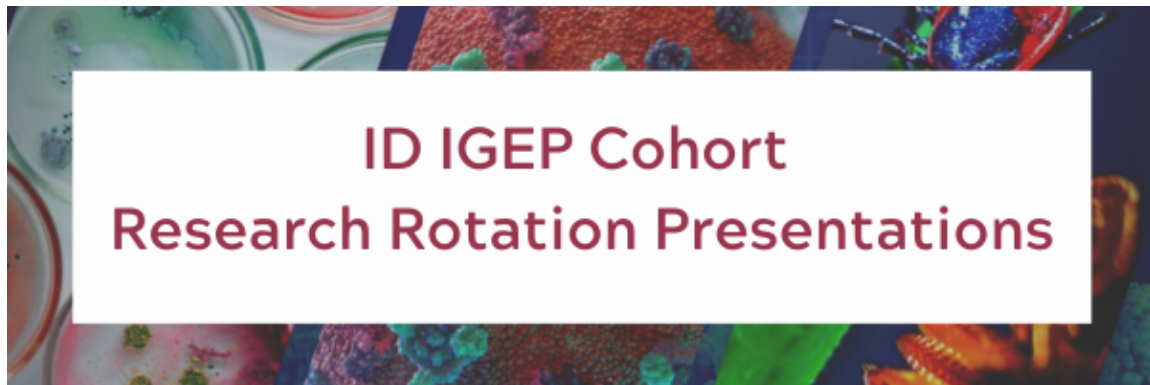
Kelly Doran, PhD

Professor of Immunology and Microbiology
University of Colorado Anschutz Medical Campus



 REAL LIFE SCIENCES INSTITUTE
VERMONT

Thursday November 16, 2023 at 12:30 PM
LS1 Conference Room 101



ID IGEP Cohort 3rd Research Rotation Presentations

ID IGEP funded students participate in three four-week rotations during their first fall semester on campus. Students will gain valuable technical skills during their three different lab rotations and they will develop professionally by giving oral presentations to the ID IGEP community at the end of each rotation period. Students will match to the laboratory of their major PI by the end of the fall semester, join the department of their PI and earn their degree in that department.

Student in the 3rd cohort class presenting:

- Joud Aldaroub
- Ekene Anekwe
- Chad Artman
- Marianne Beaulieu
- Elizabeth Burrell
- Hyun Choi
- Rakib Ehsan
- Ying-Xian Goh
- Abigail Heimbach

Thursday November 30, 2023 at 12:30 PM
LS1 Room 101

"The Insect Cholinergic System: Challenges and Opportunities in Vector Management"

Insecticides reduce vector populations alleviating the deleterious impacts that arthropods have on public and animal health. Most of the vector control insecticides are repurposed from agriculture, where widespread and overuse expedites the development of resistance. Because of this, there is an urgent need to understand molecular mechanisms of resistance, but to also find new molecules that work at novel or underutilized targets. In insects, acetylcholine functions as the primary excitatory neurotransmitter within the central nervous system (CNS). The insect cholinergic system has been a successful target for insecticides with the development of acetylcholinesterase inhibitors (e.g., organophosphates and carbamates) and modulators of nicotinic acetylcholine receptors (e.g., neonicotinoids, sulfoximines, mesoionics, etc.). However, muscarinic acetylcholine receptors (mAChRs) have not garnered as much attention. Using insect vectors (mosquitoes) and the genetic model organism *Drosophila melanogaster*, we are understanding the role of the cholinergic system in insecticide resistance. Further, we are exploring the muscarinic system as a target for insect/mosquito control and the disruption of the host-vector interaction. Overall, we propose that the insect muscarinic system could be a valuable target to control vector-borne diseases.

Aaron D. Gross, Ph.D.

Associate Professor,
Toxicology & Physiology, Department of Entomology



CeZAP Distinguished Speaker Seminar Series
Center for Emerging, Zoonotic, and Arthropod-borne Pathogens in Infectious Disease

"The Insect Cholinergic System: Challenges and Opportunities in Vector Management"

Nov 30th at 12:30 pm
LS 1 Room 101

Aaron Gross, PhD
Associate Professor, CALS

VT FRalin Life Sciences Institute
VIRGINIA TECH