

# 2023 CEZAP INFECTIOUS DISEASES SYMPOSIUM

7:30 – 8:30

## Check In & Refreshments

Foyer

## Welcome and Opening Remarks

Latham AB

8:30 – 8:45

Kylene Kehn-Hall, Director of CeZAP  
Randy Heflin, Senior Associate Vice President, Research and Innovation  
Aimée M. Surprenant, Dean of the Graduate School

8:45 – 9:00

## ID-IGEP Program Introduction

Ann Stevens, ID-IGEP Co-Director  
Kevin Edgar, ID-IGEP Co-Director  
Jonathan Auguste, ID-IGEP Co-Director

## Morning Keynote

Latham AB

9:00 – 9:30

## *“Early warning systems for disease (re)emergence”*

Pejman Rohani, Regents' Professor  
University of Georgia

## Morning General Session

Latham AB

Session Chairs:

Dana Hawley, Professor, Department of Biological Sciences  
Michael Robert, Assistant Professor, Department of Mathematics

9:30 – 9:50

## *“It’s a Risk to Handle Money: Networks of Information and Infection During the 1889 Influenza Pandemic”*

Tom Ewing, Professor  
Department of History, Virginia Tech

9:50 – 10:10

## *“The Impact of Human Mobility on Covid-19 Dynamics”*

Omar Saucedo, Assistant Professor  
Department of Mathematics, Virginia Tech

10:10 – 10:20

## *Break*

10:20 – 10:40

## *“Using Routinely Collected Public Health Data for Epidemiologic Research During the Evolving COVID-19 Pandemic: Challenges, Lessons, And Next Steps in Estimating Vaccine Effectiveness Using Surveillance Data from the Virginia Department of Health”*

Rachel Silverman, Research Scientist  
Center for Biostatistics and Health Data Science  
Department of Statistics, Virginia Tech

10:40 – 11:00

## *“3D Genome Architecture in Individual Development of a Malaria Mosquito”*

Igor Sharakhov, Professor  
Department of Entomology, Virginia Tech

**11:00 – 11:20**      ***“Divergent Evolution of the Typhoid Toxin and Alternative Binding Subunit ArtB was Shaped by the Gain and Loss of Prophage Across Salmonella spp. Lineages”***  
Rachel Cheng, Assistant Professor  
Department of Food Science and Technology, Virginia Tech

**11:20 – 11:40**      ***“COVID-19: Agent-based simulation-optimization to vaccine center location vaccine allocation problem”***  
Esra Toy, Associate Professor  
Grado Department of Industrial and Systems Engineering, Virginia Tech

**11:45 – 1:15**      ***Lunch and Poster Session***  
**Latham CDEF**

**11:45 – 12:45**      **External and Internal Advisory Board Close Door Meeting**  
**Drillfield**

### **Afternoon Keynote**

**Latham AB**      ***“Airborne Disease Transmission from 6 Feet to 6 Million Feet”***  
**1:20 – 1:50**      Linsey Marr, Charles P. Lunsford Professor and University Distinguished Professor  
Department of Civil & Environmental Engineering, Virginia Tech

**2:00 – 3:00**      **CeZAP Thematic Area Breakout Sessions**

### **Breakout Session #1: Antimicrobial Countermeasures, Pathogen Identification, and Disease Diagnostic** **Duckpond**

Session Chair: Andrew Lowell, Department of Chemistry, Virginia Tech

- 2:00**      ***“Semisynthetic Strategies to Access Novel Chloramphenicol Derivatives”***  
Suzzudul Islam Shuvo, Department of Chemistry, Virginia Tech, ID IGEP affiliated student
- 2:12**      ***“Engineering an Enhanced Auxin-Inducible Degron Degradation System for Rapid Depletion of Fungal Proteins: Expanding Horizons in Antifungal Drug Target Identification and Protein Function Studies”***  
Pat Chaisupa, Department of Biological Systems Engineering, Virginia Tech, ID IGEP affiliated student
- 2:24**      ***“Development of novel inhibitors against Venezuelan equine encephalitis virus by targeting capsid-importin interactions”***  
Abdullahi Jamiu, Department of Biomedical Sciences and Pathobiology, Virginia Tech, ID IGEP affiliated student
- 2:36**      ***“Immunogenicity and Replication Capacity of Recombinant Rotaviruses Expressing Norovirus Proteins”***

Charlotte Nyblade, Department of Biomedical Sciences and Pathobiology, Virginia Tech, ID IGEP affiliated student

- 2:48** ***“Subspecies-Specific Detection of Xylella fastidiosa with CRISPR-Cas12a”***  
Xuemei Missi Zhang, School of Plant and Environmental Sciences, Virginia Tech

## **Breakout Session #2: Computational Biology and Disease Modeling**

### **Smithfield**

Session Chair: Jingqiu Liao, Assistant Professor, Department of Civil and Environmental Engineering, Virginia Tech

- 2:00** ***“A Synthesis Work on Climate Change and Coastal Ecosystem Health”***  
Connor Hughes, Department of Fisheries and Wildlife Conservation, Virginia Tech, ID IGEP affiliated student
- 2:12** ***“Modeling the Effects of Host Availability and Temperature on Mosquito-borne Parasite Transmission”***  
Kyle Dahlin, PhD, Department of Mathematics, Virginia Tech
- 2:24** ***“ESM\_2: A Promising Deep Learning Approach for Identifying Novel Antibiotic Resistance Genes.”***  
Vineeth Manthapuri, Department of Civil and Environmental Engineering, Virginia Tech
- 2:36** ***“Ecological Niche Models of Cache Valley Virus; An Emerging Orthobunyavirus in North America”***  
John Muller, PhD, Department of Entomology, Virginia Tech
- 2:48** ***“Mathematical Formulations for Representing Human Risk Response in Epidemic Models”***  
Leah LeJeune, PhD, Department of Mathematics, Virginia Tech

## **Breakout Session #3: Ecology, Epidemiology, and Environmental Microbiology**

### **Cascades**

Session Chair: David Popham, Professor, Department of Biological Sciences, Virginia Tech

- 2:00** ***“Trait-based modelling of predator-prey dynamics in vampire bat rabies endemic countries”***  
Shariful Islam, Department of Fish and Wildlife Conservation, Virginia Tech, ID IGEP affiliated student
- 2:12** ***“Distribution of the Bats of Mali”***  
Abdu Alkisse, PhD, Department of Fish and Wildlife Conservation, Virginia Tech
- 2:24** ***“Ancient Gene Transfers and Co-Evolution Between Eukaryotes and Giant Viruses”***  
Sangita Karki, Department of Biological Sciences, Virginia Tech, ID IGEP affiliated student
- 2:36** ***“The Impact of Brewery Byproducts as a Feed Additive on Farmed Rainbow Trout (Oncorhynchus Mykiss): Spent Yeast (Saccharomyces Cerevisiae) and Black Soldier Fly (Hermetia Illucens) Cultured on Spent Grain”***  
Jason Pough II, Department of Food Science and Technology, Virginia Tech, ID IGEP affiliated student

- 2:48** ***“Entomopoxvirus Associated Polinton-like Viruses Provide Insight into Replicon Evolution”***  
Zachary Barth, PhD, Department of Biological Sciences, Virginia Tech

**3:00 –3:15** **Break**

**3:15 – 4:15** **CeZAP Thematic Area Breakout Sessions**

**Breakout Session #4: Human Dimension of Infectious Diseases, Public Health and Clinical Microbiology**  
**Duckpond**

Session Chair: Andrea Bertke, Associate Professor, Department of Population Health Sciences, Virginia Tech

- 3:15** ***“The Knowledge, Practices and Attitudes associated with Malaria Endemicity in the Tribal Communities of Southeastern Bangladesh”***  
Mahjabin Kabir Adrita, Department of Geography, Virginia Tech
- 3:27** ***“Mortality in Mexico City during the 1890 Influenza Epidemic”***  
Sydney Murphy, Department of Biological Sciences, Virginia Tech
- 3:39** ***“Understanding Impacts from Inflow and Infiltration on Pathogen Detection and Levels in a Rural Sewershed: Toward Universal Application of Wastewater Based Surveillance and Epidemiology”***  
Amanda Darling, Department of Civil Engineering, Virginia Tech, ID IGEP affiliated student
- 3:51** ***“Inhibition of Stress Hormone Receptors Reduces Clinical Recurrences of Herpes Simplex Virus 1 In Guinea Pigs”***  
Jillian Green, Department of Population Health Sciences, Virginia Tech, ID IGEP affiliated student
- 4:03** ***“SARS-CoV-2 Omicron XBB1.5 Shows Altered Replication in Neurons Versus Ancestral WA1/2020, Facilitated By NRP-1”***  
Jonathan Joyce, Department of Population Health Sciences, Virginia Tech, ID IGEP affiliated student

**Breakout Session #5: Immunology and Host Pathogen Interactions**

**Smithfield**

Session Chair: James Romero-Masters, Assistant Professor, Department of Biomedical Sciences and Pathobiology, Virginia Tech

- 3:15** ***“Rift Valley fever virus NSs protein interacts with LC3 family members to inhibit antiviral autophagy”***  
Kaylee Diana Petraccione, Department of Biomedical Sciences and Pathobiology, Virginia Tech, ID IGEP affiliated student
- 3:27** ***“Functional Characterization of a Novel Kinase TGTKL1 in Toxoplasma Pathogenesis”***  
Dima Hajj Ali, Department of Biomedical Sciences and Pathobiology, Virginia Tech
- 3:39** ***“MDM2 Overexpression Reduces Venezuelan Equine Encephalitis Virus Production Independent of its E3 Ligase Activity and the Proteasome”***

Morgen VanderGiessen, Department of Biomedical Sciences and Pathobiology, Virginia Tech, ID IGEP affiliated student

**3:51** *“Induction of an Endogenous Giant Virus in Chlamydomonas reinhardtii: Friend or Foe?”*  
Maria Paula Erazo Garcia, Department of Biomedical Sciences and Pathobiology, Virginia Tech

**4:03** *“Cross Protection Against Usutu Virus and Saint Louis Encephalitis Virus in Mice Treated with West Nile Virus Convalescent Plasma”*  
Md Shakhawat Hossain, Department of Biomedical Sciences and Pathobiology, Virginia Tech, ID IGEP affiliated student

## Breakout Session #6: Vector Biology, Vector-borne Diseases, and Zoonotic Diseases

### Cascades

Session Chair: Megan Vogt, Post-doctoral Associate, Department of Biomedical Sciences and Pathobiology, Virginia Tech

**3:15** *“Chromosomal Inversions Differentiate Mosquitoes in Culex pipiens Complex”*  
Yifan Feng, Department of Entomology, Virginia Tech

**3:27** *“The Role of Culex territans Mosquitoes in the Transmission of Batrachochytrium dendrobatidis to Amphibian Hosts”*  
Joanna Reinhold, PhD, Department of Biochemistry, Virginia Tech

**3:39** *“Investigation of the Type-B Muscarinic Acetylcholine Receptor (mAChR-B) as a Potential Insecticide Target for Control of Disease Vectors”*  
Brandon Bickley, Department of Entomology, Virginia Tech

**3:51** *“Evolution at Spike Position 519 in SARS-CoV-2 Facilitated Adaptation to Humans”*  
Chelsea Cereghino, Department of Biomedical Sciences and Pathobiology, Virginia Tech, ID IGEP affiliated student

**4:03** *“Spatiotemporal Emergence of Lyme Disease in Appalachia (2000-2019)”*  
Geoffrey Omondi Otieno, Department of Geography, Virginia Tech, ID IGEP affiliated student

**4:15 – 4:30** Break

### Closing Keynote

Latham AB

**4:30 – 5:00**

*“Novel brain-penetrant antivirals for Venezuelan and eastern equine encephalitis”*

Colleen B. Jonsson, Van Vleet Chair of Excellence in Virology  
University of Tennessee Health Sciences Center

**5:00 – 5:15** Closing Remarks

**5:15 – 7:00** Social

Latham CDEF