Texas Medical Center Training Program in Antimicrobial Resistance (TPAMR)

Funded by the National Institute of Allergy and Infectious Diseases (NIAID), T32 AI141349

Program Director: **Cesar Arias, MD, PhD**, director and founder of the Center of Antimicrobial Resistance and Microbial Genomics (CARMiG) at McGovern Medical School and director of the Center for Infectious Diseases at the School of Public Health, University of Texas Health Science Center at Houston

Program Co-Directors: **E. Lynn Zechiedrich** PhD, Professor, Molecular Virology and Microbiology, Baylor College of Medicine, and **Kevin Garey**, Pharm D, Chair, Department of Pharmacy Practice and Translational Research, University of Houston

https://www.gulfcoastconsortia.org/home/training/tpamr/

Meet the Trainees

Cohort 1, Appointed July 1, 2019

Jourdan Andersson, PhD

Pathology and Immunology, Baylor College of Medicine

Primary Mentor: Dr. Tor Savidge, Pathology and Immunology, Baylor College of Medicine

Co-Mentor: Dr. Ashok Chopra, Microbiol. & Immunol., UT Medical Branch at Galveston

Co-Mentor: Dr. Vincent Tam, Pharmacy Practice and Translational Research, University of Houston College of Pharmacy

Host-directed therapeutics to combat antibiotic resistant pathogens.

Antibiotic resistant pathogens represent one of the most pressing public health concerns of the 21st century. With traditional drug development being insufficient to keep up with the current demand for newer drugs, drug repurposing offers a more rapid, alternative approach to identify novel therapeutics. Utilizing a drug repurposing screening approach, I previously identified three drugs that were broadly protective against a variety of pathogens, including *Yersinia pestis*, *Clostridioides difficile*, *Klebsiella pneumoniae*, and *Salmonella* Typhimurium. With no direct drug effects observed on these pathogens of interest, my project aims to optimize the protective effects of these drug leads as well as evaluate their impact on protective host defenses. The results of this study will identify previously unreported host pathways involved in disease pathogenesis and aid in development of targeted immunomodulation as an alternative option to combat antibiotic resistant pathogens.

Luis Vega, PhD
Pediatrics, McGovern Medical School, University of Texas Health Science Center - Houston
Primary Mentor: Dr. Anthony Flores, McGovern Medical School, UTHSC- Houston
Co-Mentor: Dr. Samuel Shelburne, Department of Infectious Diseases, Division of Internal Medicine, The University of Texas MD Anderson Cancer Center
Co-Mentor: Dr. Cesar Arias, Department of Infectious Diseases, Division of Internal Medicine, The University of Texas Health Science Center at Houston

Characterization of relationships between pathogenesis and antimicrobial resistance in Group A Streptococcus

Group A Streptococcus (GAS) can, like most other bacteria, transfer resistance to antibiotics between strains using mobile genetic elements. In addition to making bacteria resistant to antibiotics, mobile genetic elements may affect the ability of bacteria to cause disease. My research project tests the hypothesis that, by changing GAS gene expression, mobile genetic elements may enhance transmission and disease. Using GAS as a model to study how mobile genetic elements that carry antibiotic resistance change the ability of bacteria to infect and transmit across people, my research will enhance our understanding of the emergence and spread of antibiotic resistance.