TITLE: Drivers of arboviral emergence

FACULTY MENTOR NAME, EMAIL PHONE NUMBER

Amy Y. Vittor, MD PhD
Assistant Professor
(352)294-8687
Amy.vittor@medicine.ufl.edu

FACULTY MENTOR DEPARTMENT

Division of Infectious Diseases and Global Medicine &
Emerging Pathogens Institute
University of Florida
2055 Mowry Rd, rm 255
Gainesville, FL 32611

RESEARCH PROJECT DESCRIPTION (brief overview of background, hypothesis, methods, role of medical student, funding and relevant publications -- SHOULD NOT EXCEED ~ 250 WORDS)

Numerous viruses have emerged and caused pandemics in recent years. These include zika, chikungunya, and West Nile, and there are other viruses that are on the brink of emergence such as Mayaro and Madariaga viruses in South America. The factors that lead to such emergence events are poorly defined. Having examined the role of deforestation and climate, my lab is now looking at the contribution of population immunity (or partial immunity). We have conducted epidemiological studies in Panama where multiple similar viruses co-circulate. Using specimen from patients exposed to Venezuelan equine encephalitis, we are looking at humoral cross-protection as a possible factor in allowing or preventing the establishment of another endemic virus, Madariaga virus. In addition, our lab is studying the pathogenesis of Mayaro virus, which also holds great outbreak potential. Medical students will participate in Mayaro viral assays aimed at defining the ability of this virus to replicate in key human cells (e.g. neurons, dendritic cells). In addition, students will examine the killing activity of natural killer cells exposed to patient serum and cells infected with a cross-reactive virus. Funding for the project is provided by the National Institute of Allergy and Infectious Disease.

1. Vittor AY, Armien B, Gonzalez P, Carrera JP, Dominguez C, Valderrama A, Glass GE, Beltran D, Cisneros J, Wang E, Castillo A, Moreno B, Weaver SC. Epidemiology of emergent eastern equine encephalitis in a region with endemic Venezuelan equine encephalitis: initial host studies and human cross-sectional study in Darien, Panama. PLoS Negl Trop Dis 2016 10(4):e0004554. PMID: 27101567

2. Carrera JP, Forrester N, Wang E, Vittor AY, Haddow AD, Lopez-Verges S, Abadia I, Castano E, Sosa N, Baez C, Estripeaut D, Diaz Y, Beltran D, Cisneros J, Cedeno HG, Travassos da Rosa AP, Hernandez H, Martinez-Torres AO, Tesh RB, Weaver SC. Eastern equine encephalitis in Latin America. NEJM 2013 369(8):732-44. PMID: 23964935