



Elebeoba E. May, PhD

Associate Professor, Biomedical
Engineering Department
University of Houston

Modeling the Host-Pathogen Interface - A Multiscale Perspective on Infection and Disease

Abstract:

Infection, host response and the occurrence of disease can be viewed as an emergent property resulting from the interaction of multiple systems. Microbes such as *Mycobacterium tuberculosis* (Mtb), *Francisella tularensis* (Ft), and other intracellular pathogens must adapt to changing environments within host phagocytic cells in order to persist and proliferate during infection and onset of disease. While the tendency is to study microbial pathogens and their potential host systems separately or from a host or pathogen centric skew, the nature and dynamics of the interaction between the systems are key determinants in immunity and disease outcome. With the goal of integrating host and pathogen interactions, we develop multiscale, agent-based models (ABM) to explore pathogen adaptation to environmental stress and conditions that can be modulated as part of the host immune response to infection. Our models of infection take into account changes in the physiological environment of the host as well as the host intracellular environment. Results demonstrate the importance of host physiology, microenvironment, and biochemical dynamics in the modulation on infection outcome.

Keck Seminar

Friday, November 17, 4pm

BioScience Research Collaborative

Room 280 (2nd Floor)



The Gulf Coast Consortia is a collaboration of:

Rice University | Baylor College of Medicine | University of Houston | University of Texas Health Science Center at Houston
University of Texas Medical Branch at Galveston | University of Texas MD Anderson Cancer Center
Institute of Biosciences & Technology at Texas A&M Health Science Center

gulfcoastconsortia.org