



Pacific Center for
Emerging Infectious Diseases
Research



UNIVERSITY
of HAWAII
MĀNOA

Department of Tropical Medicine, Medical Microbiology
& Pharmacology

JOHN A BURNS SCHOOL OF MEDICINE, UNIVERSITY OF HAWAII AT MANOA

Ecological Metacommunity Dynamics of the Mosquito Microbiome and its Relevance to Public Health

Matthew Medeiros, Ph.D.

*Assistant Research Professor
Pacific Biosciences Research Center
University of Hawaii at Manoa*



Microbial symbionts influence the physiology of mosquito vectors, and these effects scale to impact capacity of mosquitoes to sustain disease transmission in real-world environments. Mosquito microbiotas vary between individuals within and among populations, however the drivers of this variation are poorly understood. Understanding the drivers of mosquito microbiome assembly may inform strategies to suppress mosquito-borne disease by modulating the composition of *in situ* mosquito microbiotas in a manner that lowers vectorial capacity. Here, natural and controlled experiments are performed to elucidate patterns of mosquito microbiome assembly, using a metacommunity framework that integrates local-to-regional, deterministic, and stochastic processes to understand how ecological communities form. These experiments reveal microbial interactions in cosymbiosis may be an important factor in structuring mosquito microbiotas, that the environment heavily modulates

mosquito microbiome assembly, and that this influence of the environment on the composition of adult mosquito microbiotas is mediated by the host. We conclude that the assembly of the mosquito microbiome is a niche-driven process, which has important implications for predicting the transmission of mosquito-borne disease in nature and selecting microbial platforms for paratransgenic strategies to suppress that transmission.

Wednesday, February 19, 2020 at 12:00 noon
John A. Burns School of Medicine, Kaka'ako Campus
Medical Education Building Auditorium (Room 315)
For further information, contact (808) 692-1654

This seminar is supported by grant P30GM114737 (COBRE) from the National Institutes of Health.