



**Candidate for the position of Assistant Professor / Assistant Entomologist in the area of Genetics/Genomics of Arthropod Vectors of Human Diseases:  
Takeshi Morita, Ph.D.**

Postdoctoral Fellow

The Rockefeller University/Howard Hughes Medical Institute

Laboratory of Neurogenetics and Behavior

**Date:** Thursday, March 7, 2024  
**Time:** 11:00 am - 12:00 pm  
**Format:** In-Person Seminar & Virtual Access  
**Location:** MRB seminar room  
**Zoom:** 983 6120 0167  
**Passcode:** 818719

**Title:**

“The neural and behavioral basis of the unbreakable attraction of mosquitoes to humans”

**Abstract:**

Female mosquitoes possess a strong innate drive to seek out and feed on human blood, making them efficient vectors of infectious diseases. As predatory insects, mosquitoes exhibit exceptional sensitivity and accuracy in detecting human-emitted cues, such as carbon dioxide, volatile compounds, and heat. Although recent studies have started to uncover how individual human-emitted cues are detected and processed by the mosquito sensory system, the molecular and neural mechanisms by which mosquitoes integrate and modulate multiple sensory cues remain largely unknown. In this talk, I will describe an unexpected mechanism of long-range sensory compensation in *Aedes aegypti*, where the loss of an olfactory pathway in the head sensory appendages leads to a dramatic increase in the thermosensory pathway in the legs. I will discuss the changes in gene expression, neural activity, and behavioral strategies underlying this unique sensory compensation mechanism. This cross-modal sensory compensation expands the repertoire of behavioral strategies that *Aedes aegypti* can utilize in their persistent and seemingly unbreakable drive to seek humans. Lastly, I will outline my future work, which aims to better understand the development and evolution of sensory systems across disease-transmitting vectors.

*Refreshments will be served in the MRB seminar room at 10:30 am*