



Candidate for the position of Assistant Professor / Assistant Entomologist in the area of Genetics/Genomics of Arthropod Vectors of Human Diseases: Tse-Yu Chen

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Section of Infectious Diseases, Department of Internal Medicine

Date: Monday, March 4, 2024
Time: 4:00 pm - 5:00 Pm
Format: In-Person Seminar & Virtual Access
Location: Genomics Auditorium 1102A
Zoom: 938 1040 4405
Passcode: 833289

Title:
“Mosquito-Virus Interactions: Unraveling Signaling Triggers in Early Midgut Infection”

Abstract:
Vector-borne diseases, primarily transmitted by mosquitoes, present a substantial global health threat. *Aedes* mosquitoes, especially *Aedes aegypti*, serve as key vectors for flaviviruses such as Dengue and Zika, leading to significant health implications and global outbreaks. To formulate effective strategies for interrupting the transmission cycle, a comprehensive understanding of the mosquito-virus interaction is imperative. This seminar outlines my research, focusing on deciphering the molecular responses of mosquitoes to viral infection, with a specific emphasis on the early stages of the virus infectious dynamic within the midgut. Firstly, the adiponectin pathway, known for its metabolic regulatory roles, is investigated in *Aedes aegypti*. Identification of the homologous receptor reveals its impact on Zika virus replication and its connection to trypsin, critical enzyme in mosquito metabolism. Moreover, a novel approach utilizing single-cell sequencing is introduced to intricately examine virus-infected mosquito midguts at the cellular level. This technique not only identifies specific cell clusters targeted by the virus but also reveals transcriptomic differences, providing valuable insights for the development of targeted interventions. Lastly, I will discuss the potential application of a mosquito vaccine and small molecules to manipulate mosquito pathways, impacting virus replication. These findings significantly contribute to our understanding of mosquito-virus interaction and are integral to the next steps in developing effective strategies for interrupting the transmission cycle.

Refreshments will be served in the Entomology Building Lobby at 3:30 pm