

Genetics and Genomics (G2) Seminar Series



**INSTITUTE FOR GENOME
SCIENCES AND SOCIETY**
TEXAS A&M UNIVERSITY

The Interdisciplinary Faculty of Genetics
Genetics Graduate Student Association



Mi Casa es su Casa: How an intracellular symbiont manipulates host biology

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"Many bacteria live as intracellular symbionts - persistent infections within insects. One extraordinarily common infection is that of *Wolbachia pipientis*, which infects 40% of insect species and induces reproductive effects. Since *Wolbachia* cannot yet be genetically manipulated, and due to the constraints imposed when working with an intracellular symbiont, little is known about mechanisms used by *Wolbachia* for host interaction. We employ a combination of bioinformatics, functional genomics, experimental evolution, *Drosophila* genetics, and biochemistry to identify the mechanisms used by *Wolbachia* for host colonization. Our most recent publications have revealed *Wolbachia* manipulate host actin to colonize and persist between *Drosophila* generations. In addition, *Wolbachia* modify host gene expression to protect the fly from virus infection. It is likely the case that *Wolbachia* interact with host cell biology through the secretion of effectors via a type IV secretion system (T4SS). Our discovery of the first *Wolbachia* secreted effector (WolE1, an actin bundler) further emphasized the importance of the actin cytoskeleton to *Wolbachia*'s intracellular lifestyle. Finally, using a growth assay in yeast, we have predicted a large number of *Wolbachia* secreted effectors, which are coregulated during host development and correlated in their expression with components of the T4SS machinery. These approaches have begun to reveal how a bacterial symbiont maintains a persistent intracellular infection in an insect host."



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Monday, October 30, 2017

3:30 p.m.

Rudder Tower 410

Seminar co-hosted with the Ecology &
Evolutionary Biology (EEB) Seminar Series

Genetics

Texas A&M Institute for Genome
Sciences and Society (TIGSS)