Rosetta Briegel Barton Lecture

CHEMISTRY AND BIOCHEMISTRY DEPARTMENT, THE UNIVERSITY OF OKLAHOMA NORMAN, OK 73019-3051 (405) 325-4811

Is Pleased to Present a Seminar
Presented By

Dr. Ann M. Fallon
University of Minnesota

“Wolbachia and Mosquitoes: Prospects for Disease Reduction by Population Control”

Friday, April 15, 2015
At 3:45 pm
National Weather Center
David L. Boren Auditorium, Rm. 1313

Wolbachia pipiens is an obligate intracellular alphaproteobacterium that is widespread in arthropods, including insects that vector diseases of humans. In infected mosquitoes, Wolbachia causes a reproductive distortion known as cytoplasmic incompatibility (CI), which favors reproduction of infected, relative to uninfected females, and increases the abundance of Wolbachia in the host population. CI provides an attractive mechanism for introducing transgenic mosquitoes into the field to reduce disease transmission, and our goal is to characterize the biological and molecular mechanisms that underlie CI. Because Wolbachia can be produced only within insect host cells, its implementation for control purposes requires an understanding of metabolic interactions that can be maximized to develop effective transformation protocols and improve its recovery after genetic manipulation. Using mosquito cell lines, we have developed flow cytometric methods for evaluating Wolbachia infection, have identified conditions that maximize production of Wolbachia, and have characterized a Wolbachia proteome including 800 proteins. A complementary proteomic analysis of differentially expressed host cell proteins provides a framework for identifying pharmacological agents that may influence production and retention of Wolbachia in cell lines. Using a proteomics approach with Culex pipiens mosquitoes, we have identified candidate proteins from Wolbachia-modified sperm that are encoded by two-gene operons, and encode a SUMO-protease domain consistent with the modification-rescue hypothesis for CI in mosquitoes.

Refreshments will be served at 3:30 pm
REMINDER: Wear your ID