Proteomic Analysis of Iron-Transport in *Aedes Agypti* (mosquito) Ovaries

This project is in collaboration with Dr. Joy Winzerling from the Department of Nutritional Sciences at the University of Arizona
http://nutrition.arizona.edu/index.php?id=11,35,0,0,1,0

Over one million cases of mosquito-transmitted diseases, including malaria and yellow fever, occur each year. In order to find a way to prevent this spread of mosquito-carried diseases, the mechanism of the disease transmission must be understood. A key aspect in the prevalence of mosquito-transmitted diseases is the ability of the mosquito to reproduce in as little as 72 hours after feeding on a blood meal. The blood supplies the necessary iron, present in the form of hemoglobin, necessary for development of eggs in the ovaries. This project seeks to determine the proteome of mosquito ovaries and how it differs in the presence and absence of iron. Preliminary evidence of the difference between the mosquito ovary proteome with and without iron is shown below in the 1-D poly-acrylamide gel (SDS-PAGE) image shown below in Figure 1. With the identification of the differences in the iron present and iron absent proteomes from LC-MS/MS and MudPIT experiments, the Winzerling lab uses vector biology to interfere with proteins that enable the use of iron for reproductive purposes, thus effectively halting the ability of the mosquitoes to transmit diseases. This differential proteomic analysis is planned to be further extended to other national pests that either transmit human diseases or do considerable agricultural damage.

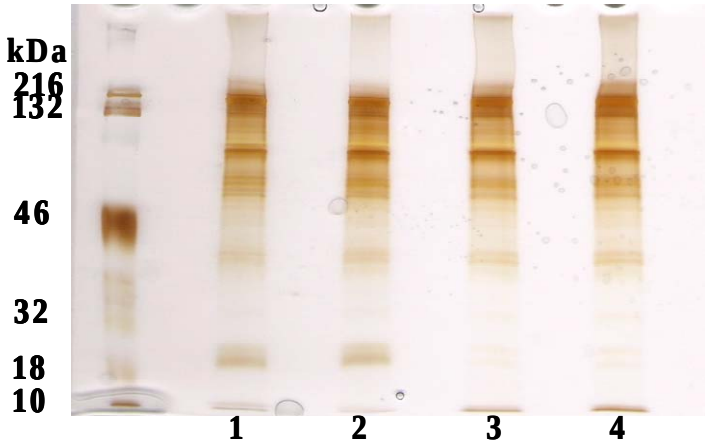

Figure 1. 1-D SDS-PAGE gel of *A. aegypti* ovarian proteins. Lanes 1-2, extracts from animals fed an artificial blood meal with hemoglobin; lanes 3-4, extracts from animals fed an artificial blood meal without hemoglobin, 10 µL.