Ackert Hall, Room 120
Wednesday, February14, 2024
4:00 P.M.

Coffee and Cookies
Chalmers Hall, Room 168
3:45 P.M.

Biochemistry & Molecular Biophysics Seminar

Roles of Extracellular Vesicles as Mediators of RNA Interference Responses in Insects

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RNA interference (RNAi) has enormous potential for specific control of arthropod pests and disease vectors. Whereas our understanding of RNAi responses has grown exponentially in recent years, our understanding of the mechanisms that produce systemic RNAi responses are still limited. Use of in vitro cultured insect cells has produced some invaluable insights for understanding core RNAi machinery as well as mechanisms of uptake for double-stranded RNA (dsRNA). Similarly, our lab has been using beetle cells as models to enhance our understanding of systemic RNAi responses. A cultured cell line from southern corn rootworm (SCR, *Diabrotica undecimpunctata*) is not only highly sensitive to treatment with dsRNA, but it also produced a robust systemic RNAi response. Further investigation revealed that systemic RNAi responses in SCR cells were associated with extracellular vesicles (EVs) in conditioned media. Fluorescent staining of EVs showed that they enter other cells and small RNA sequencing showed that EVs carry RNAs that correspond to the dsRNA with which the SCR cells were treated. Finally, EVs derived from SCR cells treated with dsRNA specific for the yellow fever mosquito, *Aedes aegypti*, were imported by Aag2 cultured cells (derived from *Ae. aegypti*) and induced an RNAi response.