

# Biology Seminar



Western  
UNIVERSITY · CANADA

12:30 - 1:30 pm  
Friday, February 1, 2019  
BGS 0153



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## Uncovering the Molecular Regulators of Seasonal Responses in Mosquitoes

Female mosquitoes are deadly vectors of disease and, like other insects, their growth, development and reproduction are restricted to periods of the year when temperatures are favorable, water is abundant and they have access to floral resources and vertebrate hosts. The rest of the time, mosquitoes are in a dormant state, known as diapause. While in diapause mosquitoes do not grow, develop, or reproduce, and therefore do not transmit disease. We have long known that the short days of late summer and early fall are the cues that female Northern house mosquitoes use to predict winter's arrival. However, we do not know how females mosquitoes distinguish a long, summer day from a short, winter one. We also do not know whether males in this species, who do not survive the winter, might also respond to seasonal cues. My lab is investigating whether female mosquitoes use their circadian clock genes to measure day length, and how these genes might be connected to the hormonal and other signaling pathways that regulate dormancy in this species. Additionally, we are exploring whether male Northern house mosquitoes change the composition of their seminal fluids to induce the females to bite and lay eggs under long, summer days and to help the females store and protect their sperm under short, winter days. The goal of this work is to identify genes and proteins that regulate these responses in mosquitoes so that we could trick mosquitoes into thinking it's the wrong time of year; in this way we might be able to prevent them from biting us in the summer or surviving the winter.

