

Biology Seminar



Western
UNIVERSITY · CANADA

12:30 - 1:30 pm
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Via ZOOM



Takeshi Suzuki
Associate Professor
Department of Biology
Tokyo University of
Agriculture and Technology

How do mites adapt to their environments?

Mites form the second largest group of arthropods, despite their small body size on the sub-millimeter order. A small body has a large specific surface area, meaning that mites are susceptible to environmental influences. How do these tiny creatures receive and respond to stimuli from their environments and develop adaptation? Based on these simple interests, I began studying mites in 2003 and have been fortunate to come across some exciting data. In the two-spotted spider mite (*Tetranychus urticae*), a diapause-mediated switch of the attraction to visible radiation, together with regular avoidance of ultraviolet radiation, plays a key role in the seasonal change of habitat selection. In the Kanzawa spider mite (*T. kanzawai*), up-regulation of a detoxification enzyme gene acquired by horizontal transfer from fungi supports the infestation on tea plants rich in the defensive substance catechin. How do spider mites recognize predators? Volatiles released from plants in response to the traces of predatory mites have repellent activity against spider mites and may serve as an alarm signal for them to avoid predation. RNAi is useful in investigating the molecular mechanisms of these biological phenomena, and the basic technology was acquired in the Grbić lab, where I joined as a postdoctoral fellow in 2014-2015. RNAi technology in spider mites has also attracted attention as a biopesticide with its inducer dsRNA as an active ingredient. In addition to RNAi screening, we are also working on functional analysis of the RNAi machinery to improve its efficacy and manage potential resistance. Ultimately, I want to be a mite and see the world! I hope you all enjoy my talk on the research toward this goal.

