

**Speaker:**

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Date: Monday, Nov. 23, 2020

Time: 4:00 pm - 4:50 pm

Zoom: 952-3324-4564

Passcode: 835322

Title:

“The Gut-Brain-Microbiome Axis in Bumble Bees”

Abstract:

The gut-brain-microbiome axis in vertebrate systems is a topic of increasing interest. Current evidence suggests that gut microbes in vertebrates influence basic physiological functions and that disturbances to the gut microbiome can have detrimental effects on cognition or lead to neurodevelopmental disorders. The relationship between the gut and the brain in vertebrates is being extensively studied, yet information about this connect in insects remains elusive. Here, we investigated whether this relationship exists in bumble bees. We hypothesized that because the gut microbiome is important to bee health, it could influence learning and memory in adult bumble bees. As a preliminary study of the existence of a gut-brain-microbiome axis in bumble bees, we reared microbe-inoculated and microbe-depleted *Bombus impatiens* from commercial colonies. We then performed a behavioral assay designed to condition the bees to associate a color with a sucrose reward. This behavioral assay allowed us to test whether the presence of gut microbes contributed to the bees' ability to learn. We found no differences between the performance of microbe-depleted and microbe-inoculated bees in our behavioral assay. These results suggest that the gut-brain-microbiome axis is not evident in *Bombus impatiens*. However, future studies are needed to further investigate the gut-brain-microbiome axis in invertebrate systems.