

NRESI RESEARCH COLLOQUIUM SERIES

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3:30 - 4:30 pm

**LECTURE
THEATRE
7-158**

**LIGHT
REFRESHMENTS
SERVED AT 3:20 PM**

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The chemical senses (taste and smell) as targets for the development of insect pest control agents.

There are ~800,000 recorded species of insect, a few of which cause major damage to crops and forests or transmit disease. On the other hand, many species of insect are indispensable for agriculture and forestry. Control of the harmful insects is usually achieved with toxicants, but these also affect the beneficial insects. To develop a more benign, species-specific pest control approach, it is necessary to find a target that is important to insect behaviour and survival and whose specificity varies between insect species. The chemical senses meet these conditions: insects are highly dependent on their senses of smell and taste, to detect food, egg-laying sites, mates, predators and competitors. They also use their chemical senses to compare the quality of nearby resources and to choose one. At the same time, insect species differ in the general odorants, pheromones and tastants they respond to. In order to find new compounds that mask or alter important cues for insects, we use a two-pronged approach. 1) We synthesize groups of related compounds that mimic known insect odorants and test these against various insects. 2) We study the olfactory system of insects. Specifically, we study insect odorant-binding proteins (OBPs), selective proteins that bind odorants in the sensory hairs of insects. This talk will cover our most recent results with odorant analogs and our results with gypsy moth pheromone-binding proteins 1 and 2; both are specialized OBPs that bind the sex-attractant pheromone of the moth.