Chemical Espionage: Exploring the relationship between aphrodisiac and anti-aphrodisiac chemicals in a model for, *Pieris brassicae,* and the Trichogramma wasp

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This presentation will focus on the interactions between two insects, the large cabbage white butterfly, *Pieris brassica,* and the Trichogramma wasp. Females butterflies produce an aphrodisiac that helps them attract a mate so they can reproduce and lay eggs. However, this can attract too many males, to counter this, males produce an anti-aphrodisiac which discourages other males from trying to reproduce with the same butterfly. These anti-aphrodisiacs attract certain species of wasp who can trace the trail of the chemical to find where the female butterflies lay their eggs so they can parasitize the eggs. In order to study the relationship between these two chemicals and their effect on the interactions between the species, a system of differential equations was used. The model results show that there are levels of anti-aphrodisiac consistent with the literature which allow for co-existence of both species. The effects of too much of each chemical was also explored, showing how the wasps are dependent on the butterflies for survival. The next steps are to improve the model by including environmental changes, and more species.