




## CHEMOSENSORY PREFERENCES IN PARASITOID WASPS (MUTILLIDAE)

Alexandra Zeldenrust & David Zusin



## A NATURAL HISTORY

- Velvet Ant? Actually a wasp.
- A member of the Hymenoptera order, and parasitizes other species in this order.
- Parasitizes bumblebees by invading the colony and leaving their eggs.







## DEVELOPMENT OF THE RESEARCH

- ❖ Personal communication of *Dasymutillids* roaming under commercial beehives.
- ❖ Honeybees are not known to be a host of these parasitoids and there are no reports of Mutillids being a pest species of commercial hives.
- ❖ Honeybees, Mutillids and many of the host species are in the same family: Apidae.

## MECHANISMS OF CHEMOSENSORY DETECTION


<p>Mutillid</p>  	<p>Other Wasps</p>  
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## SEARCHING BEHAVIORS



## TESTING THE HYPOTHESIS


- BIO 104/150 class of Spring 2009 observed and measured behavior of *Dasymutillid occidentalis* in presence of soil samples taken various distances from an active commercial beehive.
- Although the behavioral measurements were inconclusive the students accurately predicted group A in this blind study.

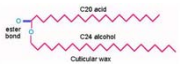


## UPDATING THE HYPOTHESIS

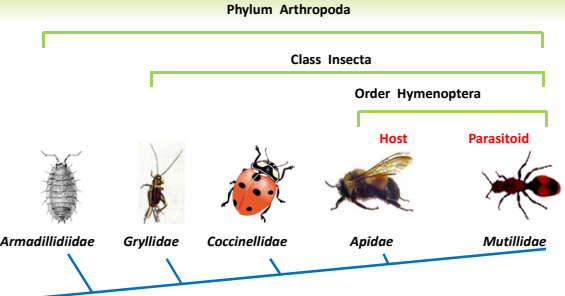
- CHCs, or Cuticle Hydrocarbons.
- Insect recognition, Intra- and Inter- species recognition.
- Our Hypothesis:

That there is a threshold for detection of *Bombus* chemosensory stimuli, and that Mutillids will have an innate preference for the stimuli of *Bombus* over other CHC stimuli because of the ecological significance of that particular stimuli over the others.









## PHYLOGENETIC RELATIONSHIPS



## METHODS

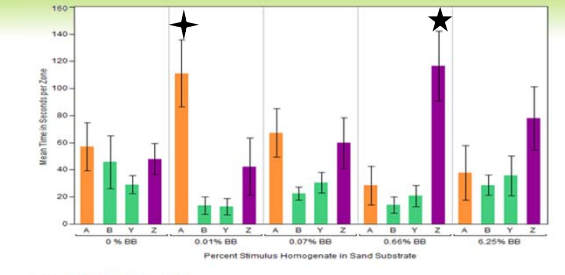
- Collection
- Preparation
- Experimentation

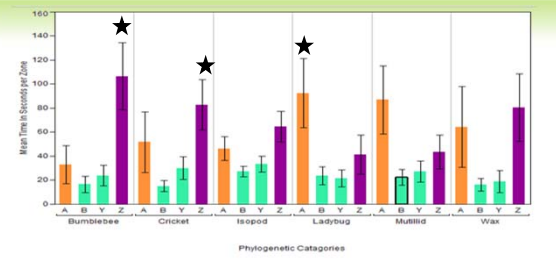
*Dr. Revels:*  
What the Heck Am I Doing?

## RESULTS

### EXPERIMENT 1-BEHAVIORAL ASSAY



## EXPERIMENT 2- PHYLOGENETIC PREFERENCE



## FUTURE RESEARCH




## WHAT DOES THIS MEAN? (AKA- WHO CARES?)

- These observations and experiments are the first of their kind studying the behavior of parasitoid Mutillids.
- Important (baby) steps towards new understanding of parasitoid behaviors and the link to chemosensory biology.



## MANY THANKS TO...



Dr. J.F. Moeller "The Ant Whisperer"

Dr. Rayner for Use of His Lab

And Dr. Revels for bravely catching our ants.