CHEMOSENSORY PREFERENCES IN PARASITOID WASPS (MUTILLIDAE)
Alexandra Zeldennust & 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
- Mutillid
- Other Wasps

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.
- Distance ranged from directly under hive entrance to 10m from hive.
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

- Phylum Arthropoda
- Class Insecta
- Order Hymenoptera
- Host
- Parasitoid
- Armillidiidae
- Gryllidae
- Coccinellidae
- Apidae
- Mutillidae

METHODS

- Collection
- Preparation
- Experimentation

RESULTS

EXPERIMENT 1 - BEHAVIORAL ASSAY

EXPERIMENT 2 - PHYLOGENETIC PREFERENCE

FUTURE RESEARCH

Dr. Revel: What the Heck Am I Doing?
WHAT DOES THIS MEAN?  
(AKA- WHO CARES?)

- These observations and experiments are the first of their kind studying the behavior of parasitoid Mutilids.
- 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.