

# Would you like some lithium chloride with that?: An Attempt at Cricket Food Aversion.

Hannah Schaupp, Michaela Voorhees

Reed College Bio342



Image courtesy of:  
<http://www.the-piedpiper.co.uk/th2f.htm>

Food aversion is a common and basic form of memory . We explored food aversion in crickets to see if they demonstrate this form of memory.

*Acheta domesticus*  
the common house cricket  
are opportunistic eaters (1)  
belong to the same order as grasshoppers  
(Orthoptera)

**Food aversion has been demonstrated in grasshoppers and hermit crabs. It has been suggested that the ability to acquire a food aversion would be strongly selected for in scavengers.**

**Are house crickets also capable of acquiring a food aversion?**

## Experimental Design:

**Hypothesis:** As scavengers, crickets would demonstrate food aversion especially towards foods with which they are unfamiliar.

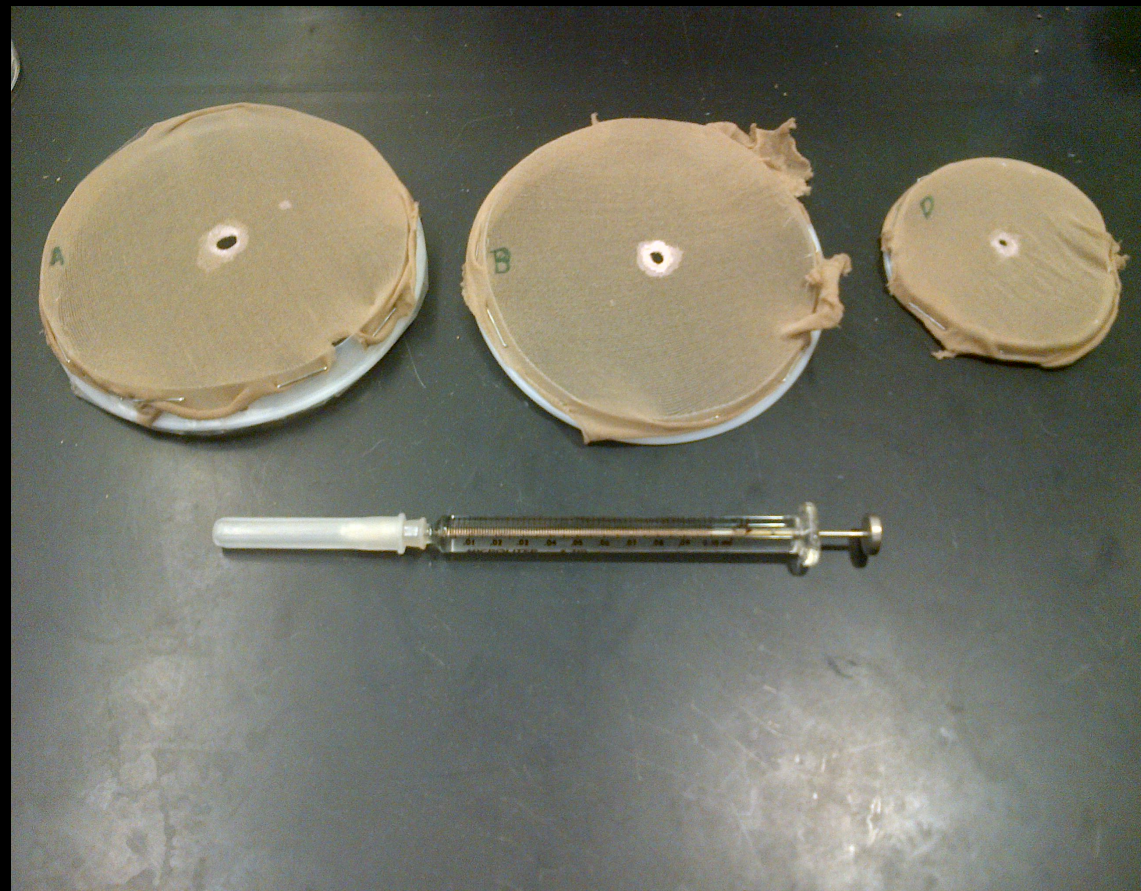


Figure 1. Apparatus used to hold cricket still during injection. Assembled with nylon stockings, nail polish and plastic cups.

### Our plan:

- Find toxin with which to upset, but not seriously injure crickets
  - Isolate and starve male crickets
  - Present with novel or familiar food, then inject with poison or control
  - Present same food to cricket after poisoning
- Modeled after Wight, Francis, and Eldridge 1990 study on hermit crabs.

**Will crickets eat food that made them sick in the past?**

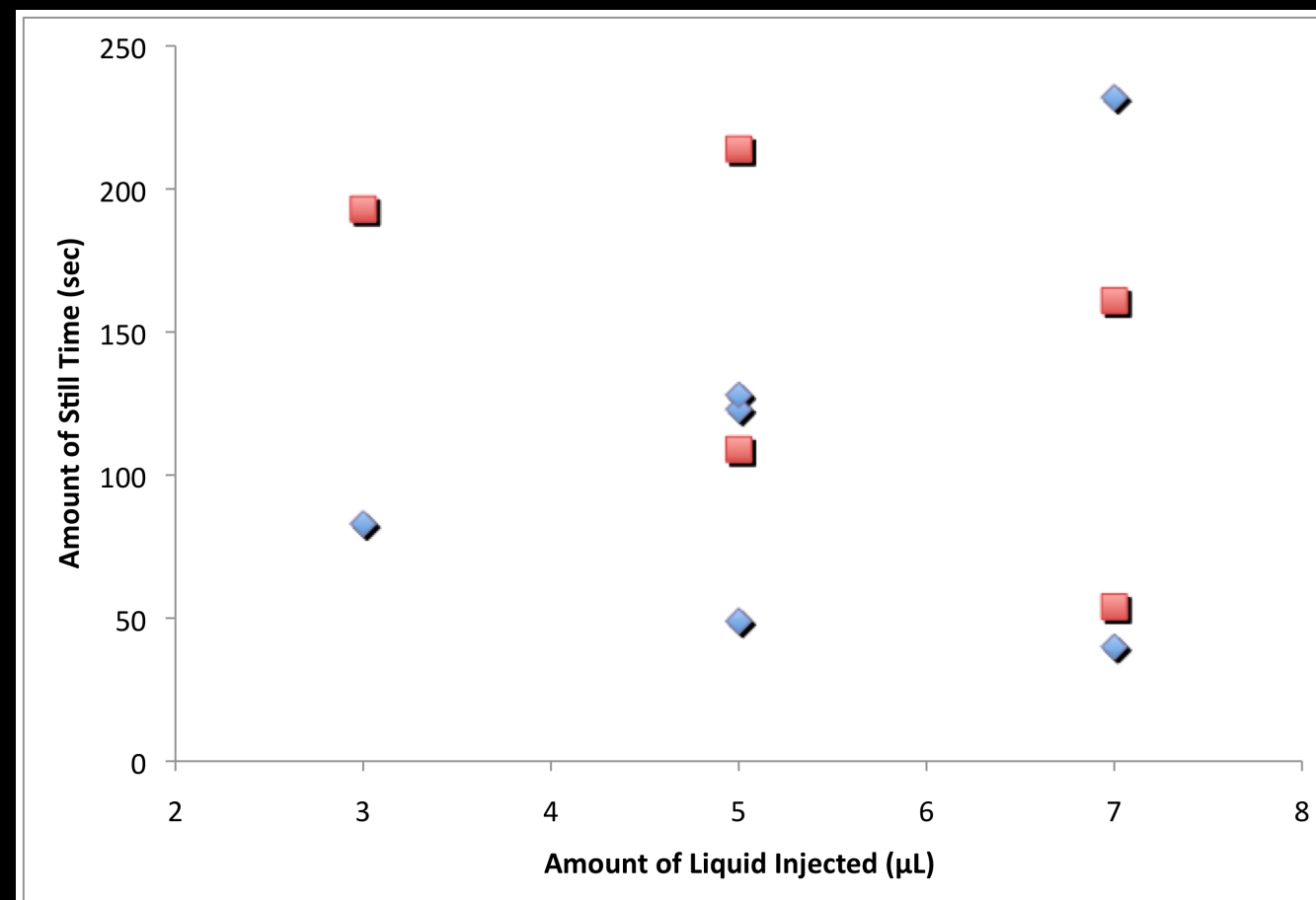
**Is behavior different for novel vs. familiar foods?**



## Results:

We observed that some crickets appeared to be moving less, or more slowly after LiCl injections.

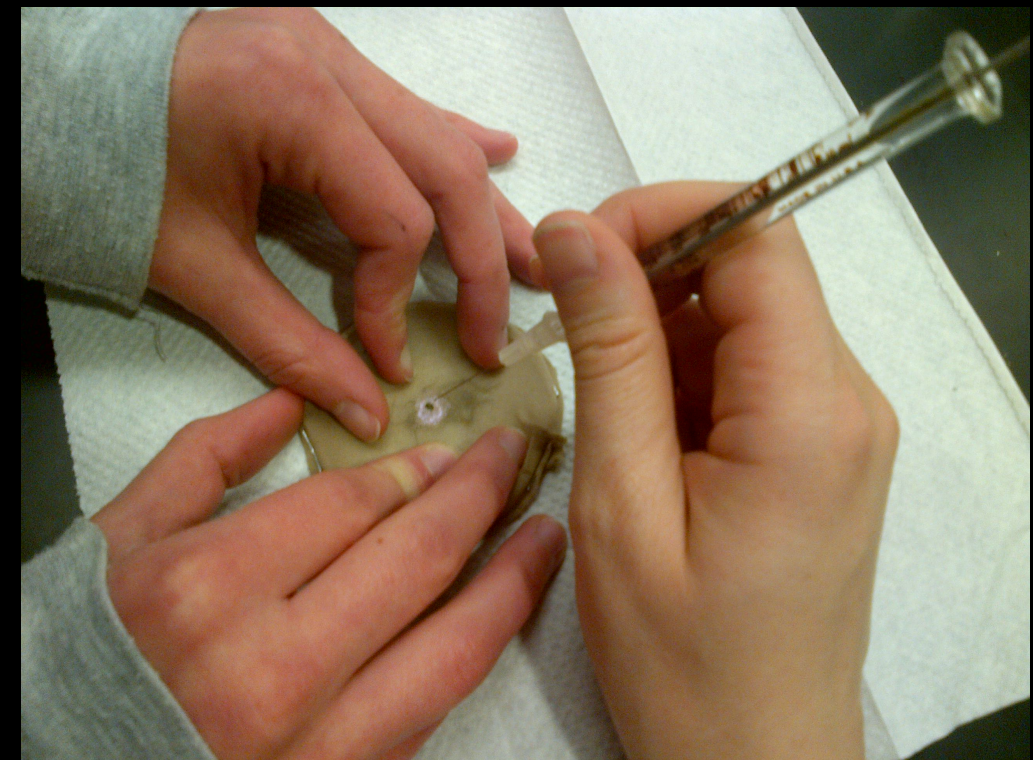
Secondary Hypothesis: LiCl induced paralysis in crickets.



12 Crickets were injected with either LiCl (our putative poison) or NaCl (control injection) to determine whether LiCl could be used as a toxin to induce food aversion.

Figure 1: The amount of time crickets stayed perfectly still was recorded with a stop watch for 5 minutes after each injection. This graph shows that LiCl did not cause more still time than NaCl.

■ NaCl  
◆ LiCl



## We Conclude that:

LiCl does not have a noticeable effect on crickets.

## Future Directions:

Repeat our injection trials with Nicotine Hydrogen Tartrate as the putative toxin. This selection is based on information from the grasshopper study Bernays, Lee (1988). In this study they used a 2% aqueous solution.

If these trials are successful in finding a negative effect of injection on crickets, then this chemical could be used to conduct our original experimental design.

Low level doses of pesticide could be tested as the next option after the Nicotine Hydrogen Tartrate.

## References:

(1) <http://en.wikipedia.org/wiki/Crickets>

Wight K, Francis L, Eldridge G (1990) Food Aversion Learning by the Hermit-Crab Pagurus-Granosimanus.

Biological Bulletin 178 (3): 205-209.

Bernays EA, Lee JC, (1988) Food Aversion Learning in Polyphagous Grasshopper Schistocerea-Americana, Phys. Ent. 13 (2): 131-137.

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