



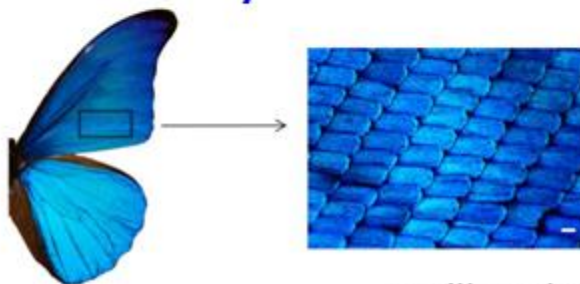
Our chemists will celebrate Chemists Celebrate Earth Week with demonstrations about:

### Be a Bee



A scent-matching game

### The Beauty of Butterflies



we'll explore the colors of butterfly wings – digital microscope and copies of electron microscope images

### Lightning Bug Flashlights



bioluminescent beetles  
Multicolored luminescence and luminol demos

### Termites – Snacking on Wood?



Betadine – starch vs sugar

### Striders - Walking on Water



Water tank and surface tension floaters/sinkers

### Taking the Sting out of Bites



Red cabbage juice – again 😊



Sue Buescher provided a demo on comparing our digestion of starch with enzymes (crackers and betadine) with termites' digestion of wood with the help of friendly protozoa.



Insect edibles for the brave to try

Termites – Snacking on Wood?





**THE BUZZ ABOUT BUGS:**  
insect chemistry

ACS  
Chemistry for Life®  
AMERICAN CHEMICAL SOCIETY

CHEMISTS CELEBRATE  
EARTH WEEK

## CHEMICAL COMMUNICATION IN BEES

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**FAN ME! I'M HOT!!**

QUEEN BEES USE CHEMICALS CALLED QUEEN MANDIBULAR PHEROMONE TO COMMUNICATE THEIR COMMANDS TO THE HIVE

**YES, MY QUEEN!!!**

- BEES USE CHEMICALS TO "TALK" WITH EACH OTHER.
- PLANTS USE CHEMICALS TO "TALK" WITH BEES.
- CHEMISTS MAKE CHEMICALS FOR FARMERS.
- FARMERS USE CHEMICALS CALLED PESTICIDES TO CONTROL PESTS ON CROPS.
- SCIENTISTS ARE STUDYING THE EFFECT OF PESTICIDES ON BEES TO MAKE SURE THEY ARE SAFE.
- WE DEPEND ON BEES TO POLLINATE MANY FRUITS AND VEGETABLES THAT ARE FULL OF ANTIOXIDANTS THAT KEEP US HEALTHY.

**TRY OUR CHEMICAL AND SCENT MATCHING GAMES!**

PRESENTED BY CINCINNATI SECTION OF THE AMERICAN CHEMICAL SOCIETY

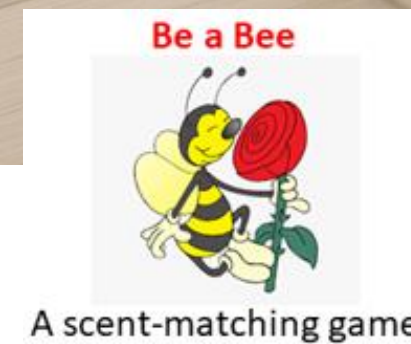
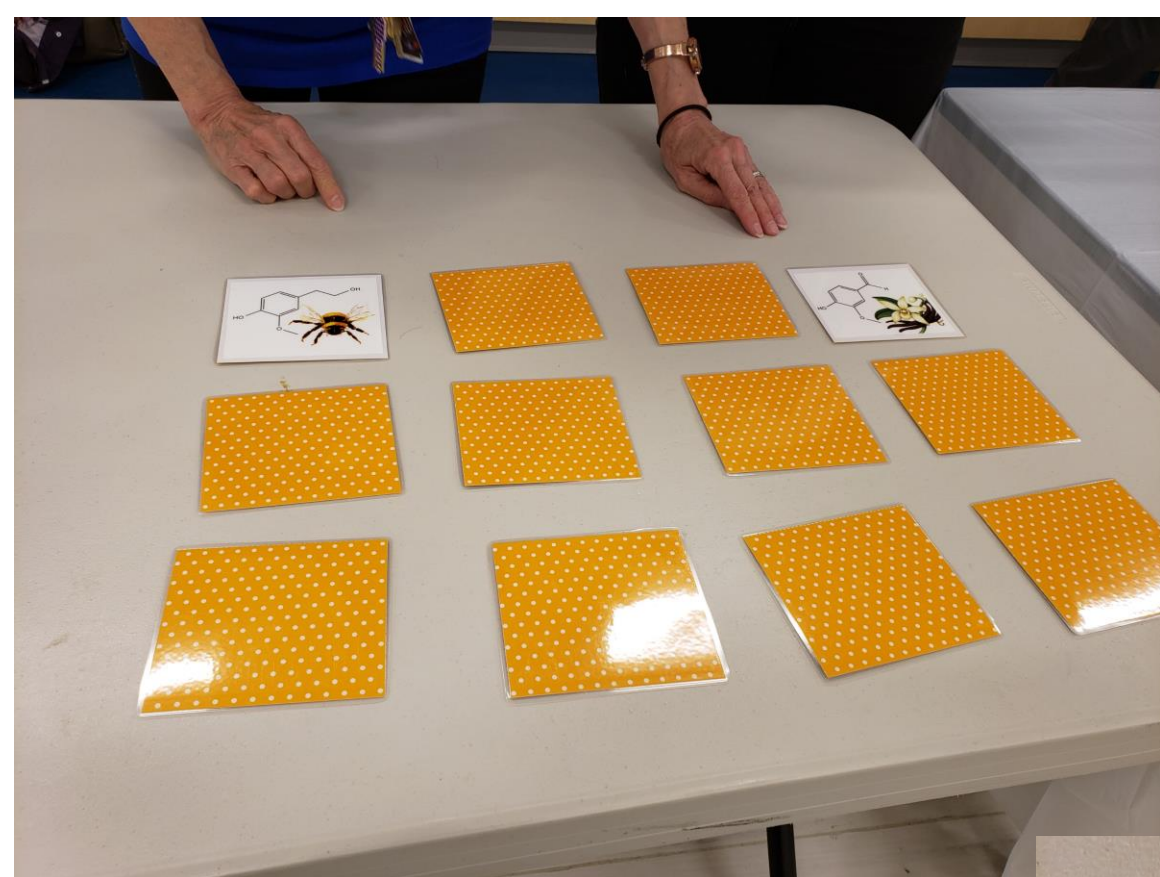
FUNDED BY WE ENGAGE 4 HEALTH, SUPPORTED BY THE NATIONAL INSTITUTE OF GENERAL MEDICAL SCIENCES (NIGMS) AWARD NUMBER R25GM129808.

Be a Bee

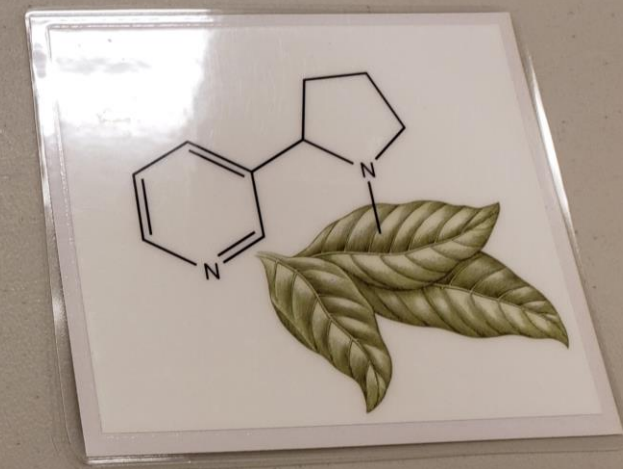
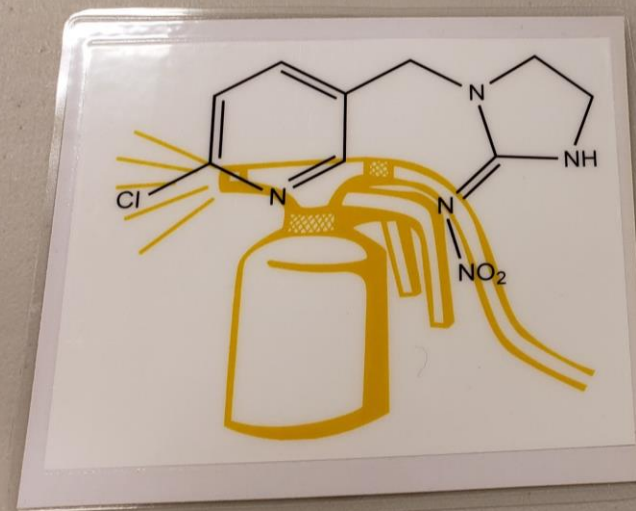


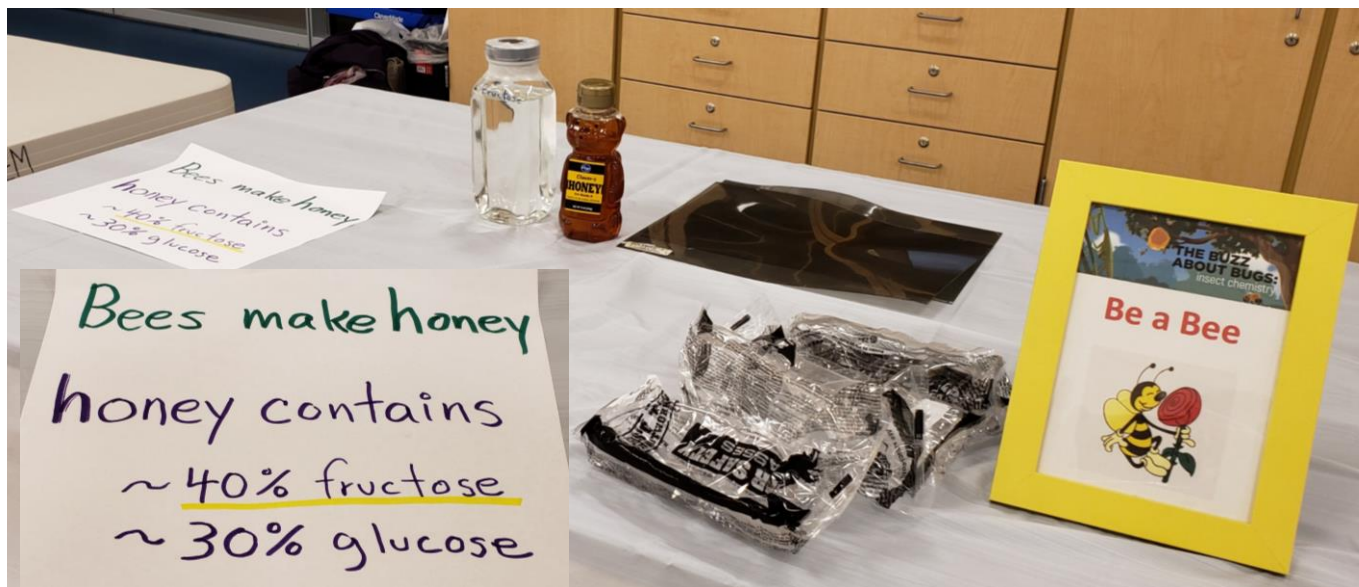
A scent-matching game

Susan Hershberger developed a fabulous demonstration about the chemical communication in bees.

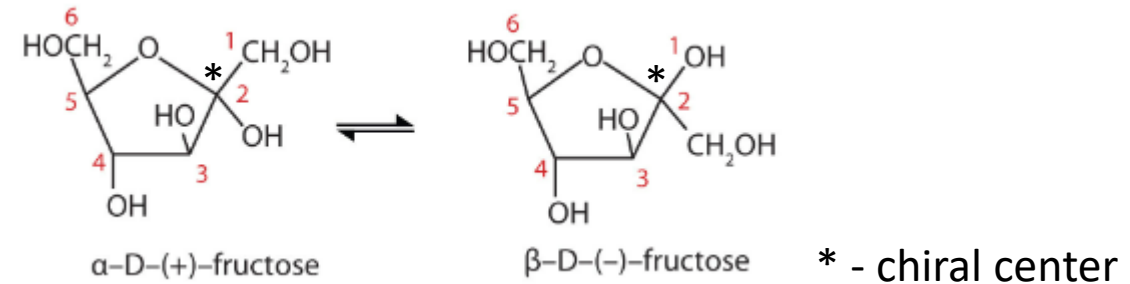


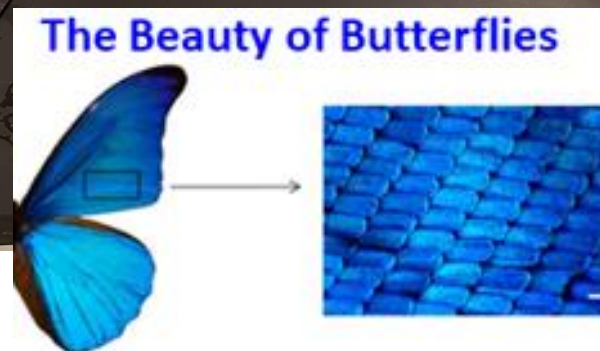
It consisted of 2 matching games – one with cards that contained typical scent molecules/pictures and one with scent samples to sniff and match.





Ed von Bargen provided a demo using honey solution and polarizers revealing the rotation of light with chiral molecules (fructose). Keep one polarizer stationary on one side of the solution and rotate the other on the other side of the solution.





Brian Pollock from the CMC provided an optical film demo on how Blue Morpho butterflies get their blue color (not a pigment, but iridescence created by the microscopic scales in the wings). He used a simple dish of water, clear nail polish, and strips of black construction paper to create thin films with similar optical properties to butterfly wings. Different thicknesses of the nail polish film created different colors that changed with the observed angle.

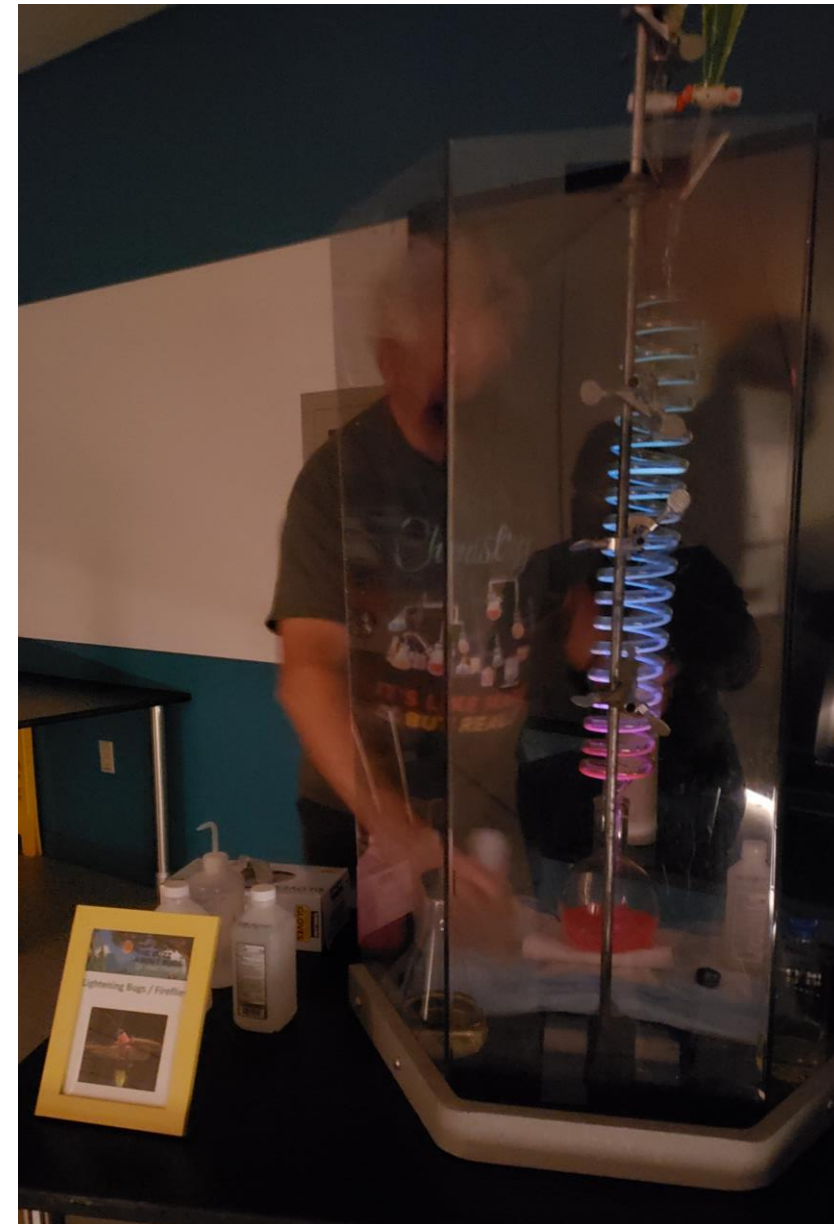


### Lightening Bug Flashlights



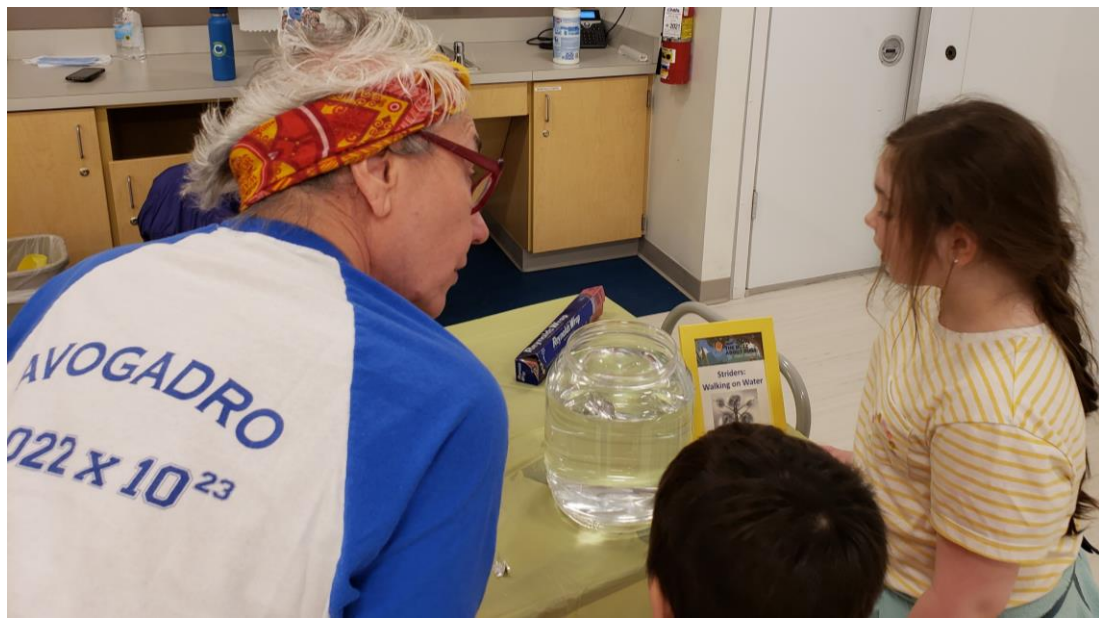
bioluminescent beetles  
Multicolored luminescence and luminol demos

Fireflies make bioluminescence using luciferin + luciferase + ATP  
In this chemiluminescence demonstration we use lucigenin +  $H_2O_2$  and transfer energy to fluorescein and rhodamine B



Ed von Bargaen compared the bioluminescence of fireflies to chemiluminescence.  
Light producing reactions are always a hit!



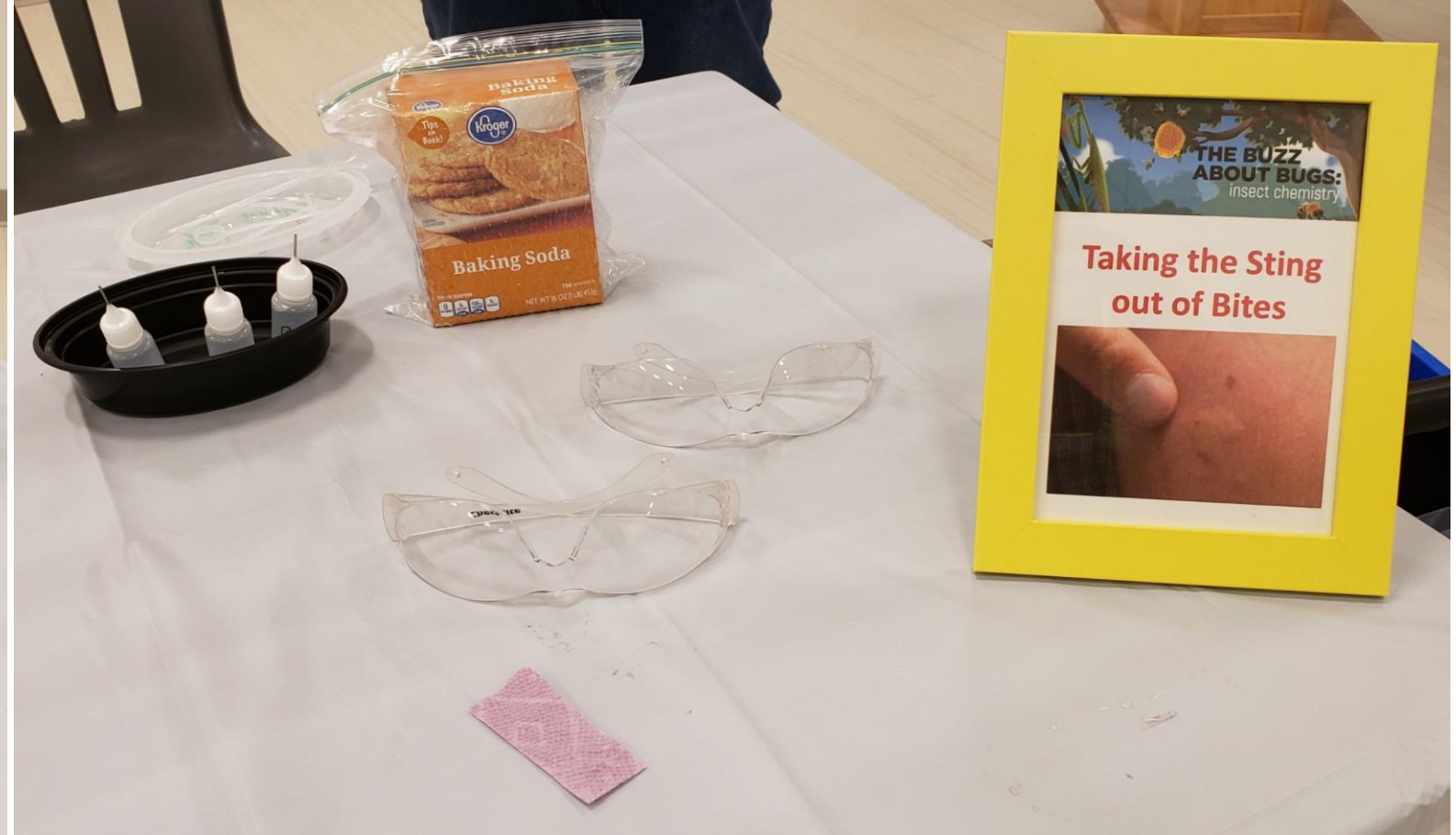


Striders - Walking on Water



Lynn Hogue and Donna Wiedemann demonstrated how striders can walk on water – surface area and surface tension. They used aluminum foil boats on water vs. heavier objects and water containers with screens over them that magically hold the water inside, until you shake or tip them.





Gloria Story and Michele Mangels compared how the reaction of histamines due to insect bites can be reduced with antihistamines (Benadryl was invented right here at UC!) using a pH demo with red cabbage juice-soaked Bounty® towels (fake skin), baking soda dropper (“sting”), and vinegar dropper (“antihistamine”).