



High Touch High Tech[®]

Science Experiences That Come To You

Bugs of Summer

Ingredients & Supplies:

Insect Communication (Experiment #1)

- Balloon
- Pipette / eye dropper
- Vanilla extract

Bug Trail Game (Experiment #2)

- Balloons
- Pipettes / eye droppers
- Permanent markers
- An assortment of various smells
 - Rubbing alcohol
 - Lemon juice
 - Lime juice
 - Peppermint extract
 - Orange extract
 - Soy or teriyaki sauce
 - Vinegar

Instructions – Insect Communication (Experiment #1):

Insects communicate in different ways. One way is by sound. Some make noises with parts of their bodies. Crickets chirp by rubbing one rough wing over another. Cicadas have skin on their thorax that can vibrate very fast to make a loud noise. Did you know the male cicada is the loudest insect in the world? He can be heard about ¼ mile away (4 football fields).

How do these insects hear? Crickets and some kinds of grasshoppers hear through holes in their front legs. Cicadas have ears on their abdomens.

Insects give off special chemicals called *pheromones*. Other animals can't smell this chemical. But, insects can smell these pheromones with their antennae.

You can create your own pheromones using a sweet extract from your kitchen – vanilla! (Ask an adult to help you with this activity.) You will need one balloon, vanilla extract, and a pipette.



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Using the pipette, carefully put 2-3 drops of the vanilla extract inside the uninflated balloon. Now blow up the balloon and tie it. Shake the balloon around to spread the vanilla inside it.

In just a few minutes, smell the balloon. It smells like vanilla! This is your “pheromone.” Test it out on a friend. Ask her what she can smell. How good are her “antennas” at detecting smells? Is the vanilla strong? Don’t tell her what the smell is. Find out if she can guess your pheromone!

Instructions – Bug Trail Game (Experiment #2):

For this next activity, you can really test your friends’ antennae! Find an assortment of various extracts and smells. (Ask an adult for help.) Peppermint, orange, and lemon are all great choices. Place 2-3 drops of extract in different balloons. Be creative and use many different balloons and smells! Tie all of the balloons. For added fun, use a permanent marker (Sharpie), and draw a different bug on each balloon. Now you are ready to test your friends. Find out if they can guess the different smells – your pheromones! You can create a Bug Trail Game with various smells in many colorful balloons! Each insect has a unique pheromone. Have fun!

The Science Behind It:

BUGS!! Do you love them or are you afraid of them? Lots of people think they are creepy or slimy, and others find them really cool! The more you learn about bugs, the more you’ll really like them (and not be afraid)!

Scientists that study bugs are called *entomologists*. They love bugs! Insects are the most successful group of animals on the planet. Earth is home to billions of bugs. There are more species of insects than any other animal group combined!

Insects help our planet. They pollinate crops & fertilize flowers. They recycle debris and compost dead plants and animals. Insects also provide food for birds, fish, frogs, and other small animals.

Insects belong to a very large group of animals known as *arthropods*. Members of this group include insects, crustaceans, spiders, ticks, mites and harvestmen (Daddy Long Legs). All arthropods lack bones inside their bodies. Instead they have a hard external covering called an exoskeleton. Arthropods are divided into groups based upon the number of legs, antennae, and body sections.

All insects have six legs and a pair of antennae. Most have two wings. An insect’s body is divided into three parts – head, thorax, and abdomen. Insect’s bodies are suited to their lifestyles. Their legs, wings and mouth come in many



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shapes and styles. Insects' legs are adapted for digging, running, jumping, crawling or swimming. Some insects have mouths for chewing solids and others are designed to suck plant juices or even blood. Most insects have two wings, some have four, and a few do not have any.

The pheromone smells of most insects go unnoticed by other animals because the chemicals are designed for a specific species. Humans cannot detect insects' pheromones. But, stink bugs are a different story...

Stink bugs are not native to the United States. Most likely, they hitched a ride on a crate from Asia. Unfortunately, these insects have found a home here and are multiplying. Stink bugs are not harmful to humans, but they send out a really unpleasant smell! The pheromones of the stink bug are a defensive chemical to prevent birds and other insects from eating them.

These smelly insects like to find shelter in the warmth of our houses when the weather gets cool. Don't worry- they can't hurt you. But, stink bugs got this name for a reason. Scientists are conducting experiments to find ways to keep these insects out of your home. They are working to create an artificial pheromone that may lure the stink bugs into traps. Let's hope it works!

Insects affect our lives, good and bad. Some spread diseases, ruin crops, and destroy other resources. But many insects help humans. Because there are so many insects in the world there is no way we can avoid them!

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