



Animal Behavior: How Do Animals Respond to Stimuli?

Taxis is the term that describes the movement of a plant or animal in response to a stimulus, for example heat or food. These responses arose over time through evolution. By observing how an organism responds to a stimulus, scientists can make inferences about how the organism behaves in the wild. For example, scientists can use an understanding of an animal's responses in pest management. Codling moth are a major pest for apple growers. Apple growers often use traps containing synthetic apple compounds to control the moths. This application is an example of chemotaxis (movement in response to a chemical stimulus).

Watch Video 1

Observe

Did the fruit flies prefer the honey or the apple cider vinegar? Why do you think this was?

The fruit flies preferred the vinegar. This is probably due to it smelling like over ripe fruit, which is their normal food source.

Identify an Experimental Design Flaw

The experiment used wingless fruit flies. What would have been the difficulty of using winged fruit flies instead?

Winged fruit flies would have been harder for the experimenter to load into the container. Also, since they move faster, it would be more difficult to accurately count how many flies were in each region of the tube.

Refine/Expand the Experiment

How do you think the fruit flies detect the various compounds? How could you expand the experiment to test your hypothesis?

The fruit flies most likely used smell to detect the vinegar. To rule out the use of eyesight, I could repeat the experiment in the dark with the tube only being brought into the light at the very end to make the measurement.

Watch Video 2



Practice Scientific Reasoning

With reference to information in **Video 2**, explain why you should not touch a nocturnal animal if you see it out during the day.

A nocturnal animal out during the day is not typical behavior. The animal might be distressed, such that it is willing to brave the daylight to find food or water. Another possibility is that the animal is sick, and the disease is causing it to act strangely.

Connect to Your World

Bees perform a waggle dance to provide other bees directions to a food source. The bees prefer to use the sun as a reference point when performing this dance. What other points of reference might a bee use to communicate this information when it is not sunny?

Bees could use Earth's magnetic field as another reference point.

Learn More by Exploring This Link

<https://evolution.berkeley.edu/evolibrary/home.php>

At Home Extension

You can build a simple insect trap by inserting a funnel into the neck of a bottle. Build two such devices and place a different bait inside of each to see which is preferred by insects in your area.

In School

If you would like to combine this activity with an in-school experience, try the following laboratory kit:

<https://www.flinnsci.com/experimental-design-with-pillbugs---guided-inquiry-kit/fb1624/>