

Observe: Robin Response

Question:

How will an earthworm respond to being picked up by a model robin (you!)?



Procedure:

1. Check that the materials were gathered.
2. In your lab notebook, write down your title: Robin Response.
3. In your lab notebook, write down your IV, DV, and hypothesis for this test.
Hypothesis (Use the formula: If the IV changes, then the DV will guess.)
4. Create a Data Table (IV, DV, Control, Title, Units, Repeated Trials, Averages)

5. Gently grab the earthworm's anterior end as a robin would.
(Hold it between your pointer finger and thumb).

6. Record your observations in the data table you created in your lab notebook.

7. Repeat for two more trials and record your observations.

8. Clean up and let your worm rest by covering it with a wet paper towel.

9. Turn in your procedure card and get a new one from your teacher.

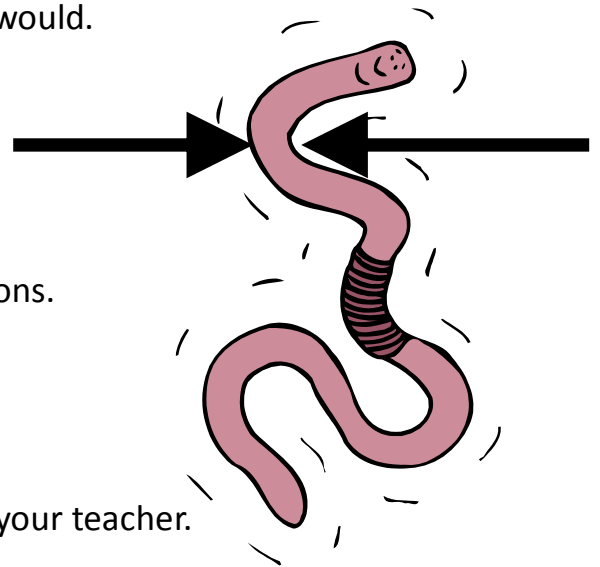
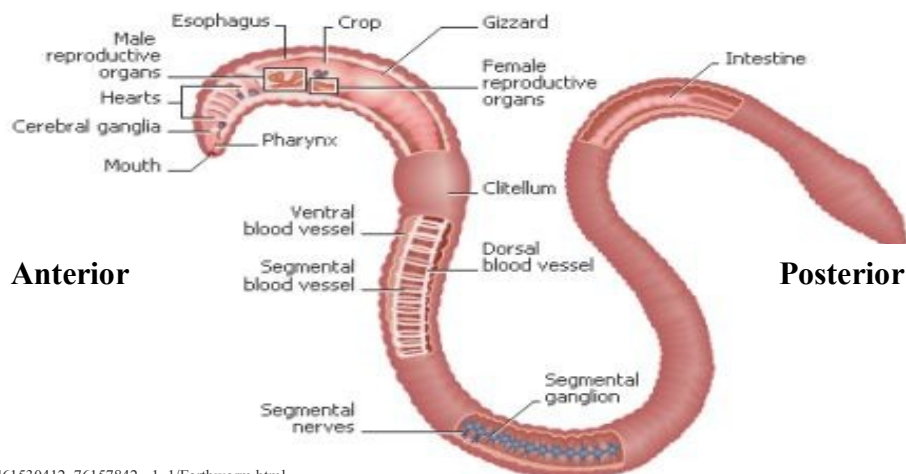


Figure 1: EARTHWORM ANATOMY



Observe: Light Sensitivity

Question:

How will an earthworm respond to light?

Procedure:

1. Check that the materials were gathered.

2. In your lab notebook, write down your title: Light Sensitivity.

3. In your lab notebook, write down your IV, DV, and hypothesis for this test.

Hypothesis (Use the formula: If the IV changes, then the DV will guess.)

4. Create a Data Table (IV, DV, Control, Title, Units, Repeated Trials, Averages)

5. Place a paper towel **on top of one half of the dissecting pan or paper plate** to create a cover. Tuck the ends of the paper towel under the pan or plate to hold it in place.

6. Place the earthworm on the exposed half., and ask your teacher to turn off the lights in the room.

7. Shine a flashlight on the anterior end of the worm.

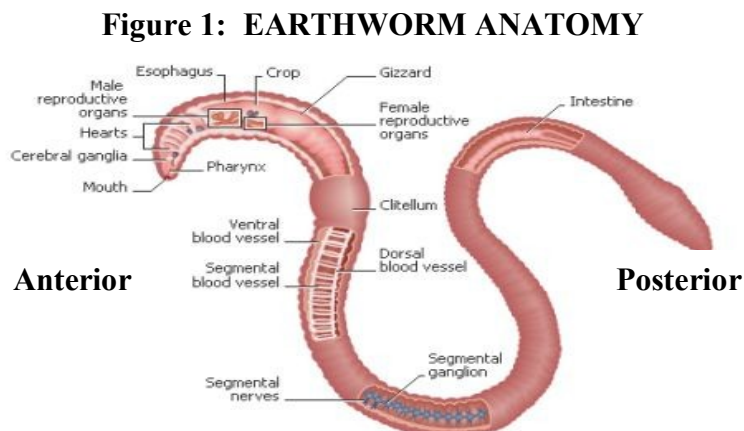
8. Record your observations in the data table you created in your lab notebook.

9. Repeat for two more trials and record your observations.

10. Repeat step 5-9 above, shining the flashlight on the posterior end instead of the anterior end.

11. Clean up and let your worm rest by covering it with a wet paper towel.

12. Turn in your procedure card and get a new one from your teacher.



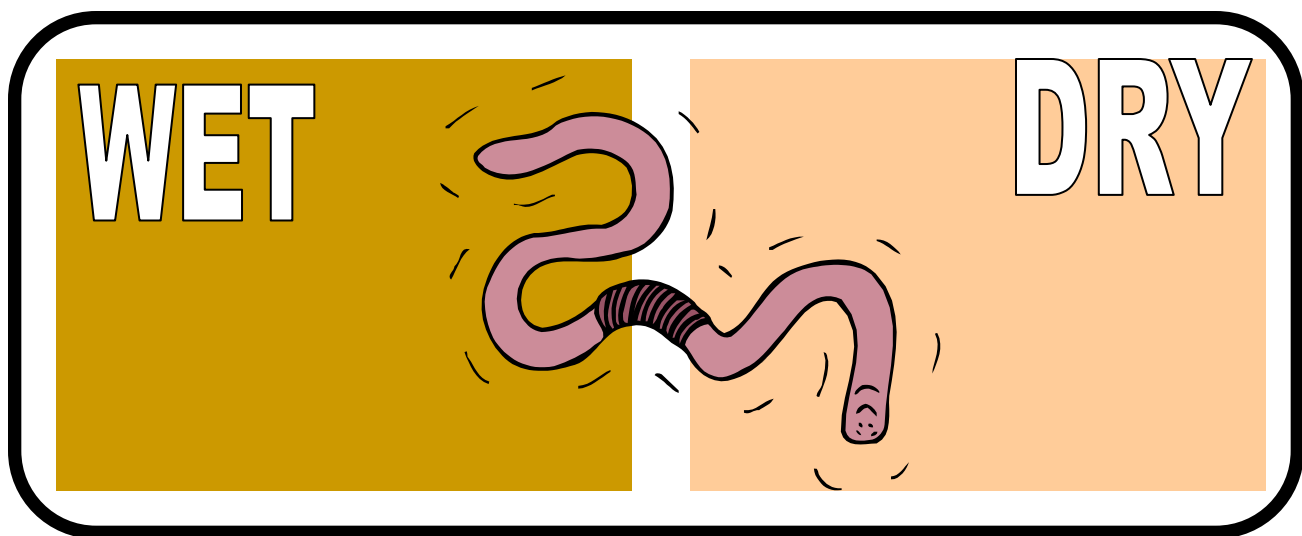
Observe: Moist or Dry Environment

Question:

Will an earthworm respond to a moist or dry environment?

Procedure:

1. Check that the materials were gathered.
2. In your lab notebook, write down your title: Moist/Dry Environment.
3. In your lab notebook, write down your IV, DV, and hypothesis for this test.
Hypothesis (Use the formula: If the IV changes, then the DV will guess.)
4. Create a Data Table (IV, DV, Control, Title, Units, Repeated Trials, Averages)
5. Place a dry paper towel on half of the dissecting tray or paper plate.
6. Place a moist paper towel on the other half.
7. Place the earthworm in the middle of the tray so that half of the worm is on the wet towel and half is on the dry towel.
8. Record your observations in the data table you created in your lab notebook.
9. Repeat for two more trials and record your observations.
10. Clean up and let your worm rest by covering it with a wet paper towel.
11. Turn in your procedure card and get a new one from your teacher.



Observe: Can an Earthworm Sense Chemicals?

Question:

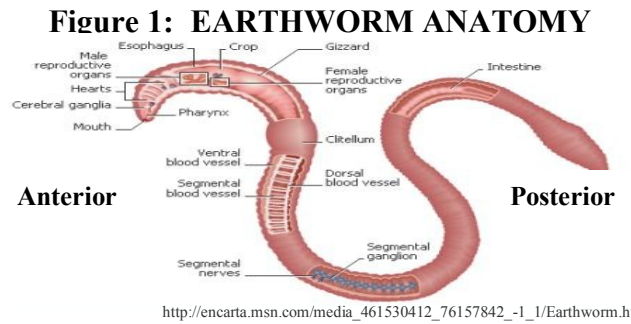
Will an earthworm respond to a chemical stimulus?

Procedure:

1. Check that the materials were gathered.
2. In your lab notebook, write down your title: Chemical Stimulus—Alcohol.
3. In your lab notebook, write down your IV, DV, and hypothesis for this test.

Hypothesis (Use the formula: If the *IV changes*, then the *DV will guess*.)

4. Create a Data Table (IV, DV, Control, Title, Units, Repeated Trials, Averages)
5. Dip one end of a cotton swab in alcohol, making sure the alcohol is not dripping from the swab.
6. With the earthworm on the moist paper towel, place the alcohol end of the cotton swab very near **BUT NOT TOUCHING** the anterior end of the earthworm.
7. Record your observations in the data table you created in your lab notebook.
8. Repeat for two more trials and record your observations.
9. Clean up and let your worm rest by covering it with a wet paper towel.
10. Repeat step 1-9 above, using vinegar as the chemical (your title for this set of data should be: Chemical Stimulus—Vinegar).
11. Turn in your procedure card and get a new one from your teacher.

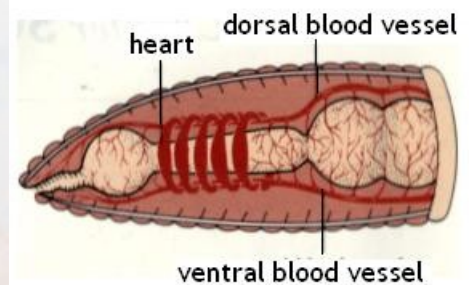


Observe An Earthworm's Heartbeat

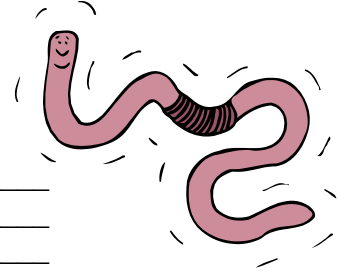
Background

So far every response observed in the earthworm has been in terms of its movements. Another way scientists gauge an organism's response to stimuli is by measuring an increase or decrease in its heart rate.

1. Look carefully along the dorsal (back) side of the worm. Locate the thick purple line running down the entire length of the back. This is the dorsal aorta, the major blood vessel of the worm.
2. Observe the dorsal aorta near the **middle** of the worm through the hand lens or dissecting microscope. Look for rhythmic contractions. Each ripple of contractions represents a single heartbeat.
3. Determine the earthworm's heart rate by counting the number of ripples that occur in twenty seconds.
4. Multiply the number of ripples by 3 to calculate the beats per minute.
5. Record your data in **Table B** on your response sheet.
6. Repeat the procedures in steps 3 -5 two more times.
7. Determine the average number of heartbeats. Record the average in **Table B**.



EVALUATION



1. All living organisms sense and respond to change. Choose an organism and describe structures and or behaviors the organism has that help it respond to stimuli.

2. How does responding to stimuli help an organism survive in its environment?

3. Give an example of a stimulus and response that helps an organism survive.

What are we going to assess here? Whatever it is, I think we should do 1-2 sets of 4/3/2/1 questions rather than these eval questions.. Feedback? :-) Thanks!

Level 1: What does "stimulus" mean? _____

Level 2: Name one stimulus and describe the worm's response.

Level 3: Explain the role of sensing and responding to stimuli for an organism (all organisms, not just worms).

Level 4: Give an example of a stimulus and response that helps an organism survive (not a worm), and explain why this is necessary for survival.