

Teacher Guide Caeno-WHAT??

Grade Level 5-8

Lesson Length
1 class period

Lesson Summary: Students demonstrate how the nervous system of the worm allows the animal to behave and respond to its environment.

Standards Alignment

Minnesota Science Standards – Alignment Matrix www.brainu.org/resources/MNSTDS

National Science Standards – Project 2061: Atlas of Science Literacy reference

- a) Scientific inquiry: Evidence and reasoning – lines of reasoning and observations and evidence (p. 17, Atlas Vol. 1)

Research on student learning: “When asked to use evidence to judge a theory, students of all ages may make only theory-based responses with no reference made to the presented evidence. Sometimes this appears to be because the available evidence conflicts with the students’ beliefs.” (p.16, Atlas Vol. 1)

- b) Scientific inquiry/Scientific theories – making sense of evidence and alternative explanations (p.21, Atlas Vol. 1)

Research on student learning: “Although most students believe that scientific knowledge changes, they typically think changes occur mainly in facts and mostly through the invention of improved technology for observation and measurement.” (p.20, Atlas Vol. 1)

Objectives—Students will

- design and conduct a controlled experiment to test the preference of *C. elegans*.
- analyze their experimental data and present their results.
- use a microscope.

Assessment Options

- Discuss students’ design and procedures testing worms for attractants.
- Evaluate lab reports.
- Ask students to present their results and conclusions to the class.

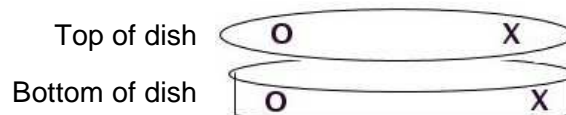
Materials

- light microscopes capable of magnification in 20x-50x range
- adult N2 worms (normal animals)
- *E. coli* growth agar dishes
- pipettes or eyedroppers
- worm pickers (toothpicks)
- different odorants to test: isoamyl alcohol (attracts), 1-nonanol (repels) - best at 10^{-2} strength
- plain, non *E.coli* containing agar plates (as a control)



Teacher Guide Caeno-WHAT??

2. Put a worm or some worms in the center of the dish. Use an eye dropper to transfer the worms.
3. Take a drop of a chemical and place it on the **top of the dish** where you placed the **X**
4. Line up the **X** and the **O** on the top and bottom of the dish, as in image below.



5. Wait at least 15 minutes to give let the worms move around some.
6. Take a look at your dish . Where did the worms move?
7. Record your results.

Test How the Worm Moves

Goal: To see how the worms move and react to being touched.

1. Take a toothpick and use it GENTLY to touch a worm on the head. How did it react?
2. How does the worm react when touched on the tail?
3. Why might the worm move differently when touched?
4. Come back together as a group and discuss why the worm acts the way it does and what its nervous system needs to have in order to sense and react to the students' investigations.