

Featured Creatures

How do Creatures Find Food to Survive?

Planaria (also known as flatworms) are a group of aquatic animals found throughout the world in both saltwater and freshwater. Planaria have a simple yet unique body structure, showing a distinct head with eyespots that are sensitive to light. Planaria also have a digestive system that includes a mouth, a pharynx, and a gastrovascular cavity. While planarians are typically used in regeneration experiments, in this experiment you will observe their interactions with *Daphnia magna*. Work in pairs.

Time Requirements

Setup and initial observation: 5 minutes

Final observation: 10 minutes

Procedure

1. Using 1 pipet, place 2 to 3 planaria into 1 side of the petri dish.
2. Fill that side of the dish with spring water to the height of the divider. Be careful not to spill water over the divider.
3. Using a fresh pipet, place 4 to 5 *Daphnia magna* into the other side of the petri dish.
4. Fill the second side of the dish with spring water to the height of the divider, taking care not to spill water over the divider.
5. Each group member will observe *either* the planaria or the *Daphnia* for 1 to 2 minutes. Pay attention to how each species moves and if the organisms cluster together or travel independently. Take notes in the Observations section.
6. After the observation period, share your findings with the other group members.
7. Using the spring water, add water to the **planaria** side of the petri dish until the water exceeds the low side of the divider. Make sure not to fill the plate so

Materials

(per group)
2 to 3 Planaria
4 to 5 *Daphnia magna*
2 Pipets with Tips Cut Off
1 Petri Dish, 2-Compartment
2 Hand Lenses
Spring Water
Timer or Watch

high that the *Daphnia* can move from side to side. Only the planaria should be able to travel between the compartments (Fig. 1).

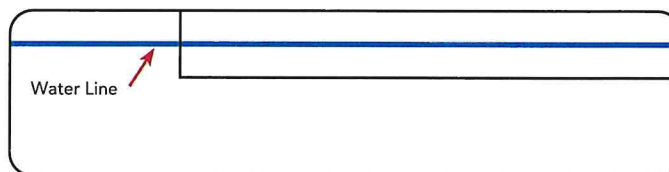


Figure 1: When you add water to the plate to allow the planaria to cross, add water until it crests the low side but does not top the high side.

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Carolina Workshop Resource

Procedure (continued)

8. Observe both sets of organisms for 10 minutes, taking notes in the provided space. Every 2 minutes, draw the approximate locations of each organism on the provided templates and note how many of each organism are still in the petri dish.
9. During your observations, pay special attention to when a planarian and a *Daphnia* interact.
10. What did you observe? What questions do you have?

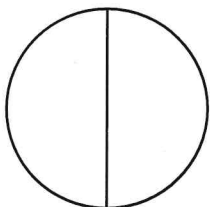
Observations

Initial observations: _____

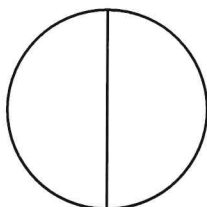
Observations during feeding:

2 minutes: _____
4 minutes: _____
6 minutes: _____
8 minutes: _____
10 minutes: _____

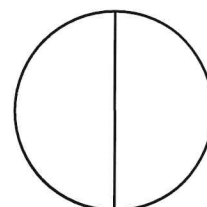
Final observations and conclusions: _____



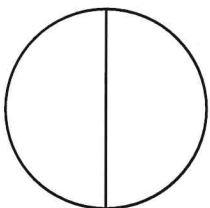
Time: **0 min** Planaria: _____ Daphnia: _____



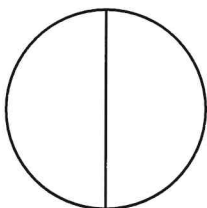
Time: **2 min** Planaria: _____ Daphnia: _____



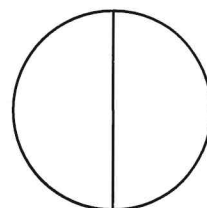
Time: **4 min** Planaria: _____ Daphnia: _____



Time: **6 min** Planaria: _____ Daphnia: _____



Time: **8 min** Planaria: _____ Daphnia: _____



Time: **10 min** Planaria: _____ Daphnia: _____

Featured Creatures

Making Sense of Senses

Termites are wood-consuming eusocial insects, meaning the members of the colony are organized into different castes, or groups, that have different responsibilities. Workers are the most numerous members of a colony and perform the important tasks of building the colony, caring for young, and foraging for food. In this experiment, you will form and test a hypothesis about termite trail-following behavior. Variables to test include pens, pencils, markers, or depressions left by the handle of a paintbrush.

Time Requirements

Planning and setup: 5 minutes

Testing: 10 minutes

Procedure

1. Working alone and using what you know about termites, write down a hypothesis about what may lead to termite trail-following behavior.
2. Select 3 writing implements and/or the handle of a paintbrush to test. Record your selections in the appropriate blanks in the Data Table. (Attempt to have a unique set of 3 implements compared to the other members of your group.)
3. On the blank piece of paper, draw 3 shapes that intersect each other in at least 1 spot (see Fig. 1 for an example of shapes). The shapes should be large; use the entire piece of paper.
4. Using the paintbrush, gently place the termites in the center of 1 shape.
5. Observe as the termites travel the paper for 10 minutes. Make special note if they follow a trail, how many follow each trail, and begin to form conclusions about what trail(s) the termites are following and how the termites are following the trail(s).
6. Gently place the termites back into their containers using the paintbrush.

Materials (per person)

5 to 7 Termites
1 Blank Sheet of Paper
1 Paintbrush
Various Writing Implements

7. Discuss your results with your group and compare conclusions.

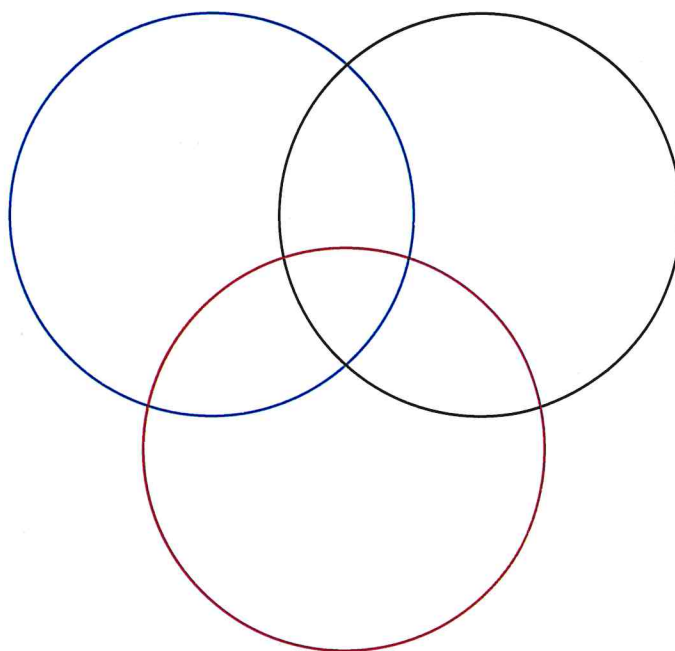


Figure 1: One potential shape for testing.

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Carolina Workshop Resource

Experiment Data

Hypothesis: _____

Data Table

Implement 1	Implement 2	Implement 3
Implement type:	Implement type:	Implement type:
Color:	Color:	Color:
Brand:	Brand:	Brand:
Number of followers:	Number of followers:	Number of followers:

Other implements tested in group: _____

All implements that were followed: _____

Similarities between followed implements: _____

Differences between followed implements: _____

Similarities between non-followed implements: _____

Differences between non-followed implements: _____

Discussion Questions

1. Which implement(s) did the termites follow? _____
2. Why do you think the termites followed certain lines from specific implements? _____

3. What *similarities* are there between the implements the termites followed? _____

4. What *differences* are there between the implements the termites followed? _____

5. Based on what you know about termite workers, what are some advantages of this trail-following behavior for worker termites? _____

6. Did you accept, reject, or revise your hypothesis? _____