Animal Behavior Lab:
Rollie-Pollie Time

Pillbugs (sowbugs, woodlice, rollie-pollies) are small, armoured (hard-shelled) terrestrial isopods resembling a miniature armadillo. Isopods mean "the legs are alike"--of which they have seven pairs. Isopods are not insects but are members of the Class Crustacea (other members of this class are crabs and lobsters) of the Phylum Arthropoda.

Although these animals are common, they are rarely seen in the daytime because they prefer dark, moist, places--under rocks, boards, bricks, and debris. Only at night do they emerge and wander about. Think about the conditions where you found the pillbugs when you were collecting them.

These creatures react strongly to moisture, temperature, and light. Most isopods react normally when humidity is high, the light is dim, and the temperature is close to indoor conditions or slightly lower. An isopod, then in its favorite habitat, walks around slowly, feeds casually, and moves in and out from under objects nearby. When the conditions are unfavorable, isopods behave differently. (reference: Michigan Entomological Society)

Procedure

Observation and Drawings.

1. Place 10 pillbugs in a petri dish from the stock culture.
2. Observe the pillbugs for 10 minutes. Make notes on their general appearance, movements about the dish, and interactions with each other. Notice if they seem to prefer one area over another, if they keep moving, settle down, or move sporadically. Note any behaviors that involve 2 or more pillbugs. Try to make your observations without disturbing the animals in any way. Do not prod or poke or shake the dish, make loud sounds, or subject them to bright lights. **You want to observe their behavior, not influence it or interfere with it.**
3. Draw three detailed sketches of a single pillbug showing side, top and bottom views. Make sure to include measurements on the sketch.

Kinesis in Pillbugs

4. Prepare a choice chamber. Line one chamber with a moist (moist, not wet!) piece of filter paper and the other with a dry piece of filter paper.

5. Use a spoon or soft brush to transfer 10 pillbugs from the petri dish into the choice chambers. Avoid getting any of the substrate from the petri dish in the choice chambers. Place 5 pillbugs in each side of the choice chamber. Cover the chambers.

6. Count how many pillbugs are on each side of the choice chamber every 30 seconds for 10 minutes. **Make sure to not disturb them when taking counts and during the entire lab. No loud noises and do not loom over the choice chambers.**

7. Record your data in a table that you created in your lab book. Continue to record even if they all move to one side or stop moving.

8. Gently return the pillbugs to the petri dish and then to the stock culture.

Analysis

9. Create a line graph plotting time vs. number of individuals in chambers.

10. Answer the following questions on a separate piece of paper.
    a. Explain the physiological reasons for the behavior that you observed.
    b. When would be the best time and place to collect pillbugs? Explain.
    c. Is the isopod's response to moisture best classified as taxis or kinesis? Explain.

Student Designed Inquiry Experiment.

1. Develop a research question based on a variable that applies to an adaptation that the pillbugs would use in their natural habitats. Suggestions include: temperature, pH, background colors, light, food types, etc.

2. Develop a hypothesis based on your variable. This should be in the correct "If……, then…." Format

3. List the materials. This should be a bulleted list

4. Develop a protocol that will test your variable. This should be a numbered list that describes what you and your partner will do in the lab. This is just a rough draft and expected to be modified as you complete the lab.

5. Create a typed data table.

6. Upload this entire protocol to turnitin.com before 11pm.

7. Analysis: You will attach a computer generated graph to the packet after the data is collected.