**Introduction to Ethology: Isopod Behavior Lab and Experimental Design**

Ethology is the study of animal behavior, and often focuses on animal response to various stimuli. These stimuli, called taxa, could be temperature, moisture, movement, or gravity dependent, but come in many forms. In this lab, you will be conducting an experiment predesigned for you, and then designing an experiment to investigate how isopods (affectionately dubbed rolly-pollies or pill bugs) react to the environment around them. Isopods are arthropods in the same sub-phylum as shrimp, lobsters, and other crustaceans. As you examine the isopods you have collected, you will notice several similar characteristics with these organisms. Your job today is to play the role of isopod ethologist. Determine some aspect of isopod life you would like to investigate and design an experiment around it. **You must clear your experiment with me before you begin.**

Your lab notebook must contain the following elements:

**Exercise A: General observations of isopod behavior**

1. You are going to collect your own isopods from outside. Record (bulleted list or notes is fine) where you locate your isopods, what kind of environment they were in, and what they were doing when you found them.

2. Record observations of what the isopods are doing now that you have collected them. What might you infer from their behavior?

3. Make a detailed sketch of an isopod and label your drawing.

**Exercise B: Orientation in Isopods**

You are now going to examine isopod behavior based on one specific taxa: moisture content. Obtain the materials needed from the front table and carefully cut a piece of paper towl to fit one choice chamber. Wet (but don’t soak! Wring it out!) the paper towel and place it in one chamber. Observe isopod behavior and movements for **ten minutes.**

1. Create a data table that will demonstrate isopod movement over the course of ten minutes (hint: it might be easiest to count how many isopods are on each side of the choice chamber at each minute mark).

2. Generate a graph in your lab report that clearly shows how isopod movement changed over time. Label your axes and indicate what your dependent and independent variables are.

3. Answer the following:
 a. What do your data suggest about how isopods orient themselves with respect to
 moisture in their environment? Explain.
 b. How might the observed behavior be advantageous to the survival of the species?

**Exercise C: Student Designed Experiments on Isopod Behavior**

1. State the factor to best tested. **GET APPROVAL FROM MS PAXSON BEFORE BEGINNING YOUR EXPERIMENT.**

2. Based on your experience with isopods, state your hypothesis.

3. List the materials you will use for this experiment.

4. Write a detailed, step by step procedure. If someone were to replicate your experiment, what, precisely, would they need to do?

5. Clearly state your independent and dependent variables.

6. Generate a table that you can use to record your results.

7. Create at least one graph to display your data.

8. State your conclusions in a well-developed paragraph in terms of the hypothesis tested.

**Conclusion questions:**Answer the following *in complete sentences*.

1. Was your hypothesis supported or not? (Remember: hypotheses are never “correct” or “proven,” just supported!)

2. What factors other than the variable you were testing may have influenced your isopod’s behavior?

3. Do you feel this experiment was reliable? What could you change to improve your results?

4. Find at least one other pair to compare results with. Make sure this pair conducted a significantly different experiment than you. Make notes describing what you learned, then answer the following:
 a. Describe your idea of the ideal isopod environment.
 b. How do you think isopods locate appropriate environments?
 c. Can you think of anything that humans might do that impact isopod health and
 behavior? Describe at least one human action and how it might affect our
 many-legged friends.