

Do not just copy these down for the abstract! These are the learning objectives, not the actual experiment objectives!

LAB #12: Animal Behavior

Objectives:

- To learn how to properly compose an AP lab report.
- To observe a living organism's behavior and to design an experiment to investigate their responses to environmental variables.

Introduction:

Ethology is the study of animal behavior. Behavior is an animal's response to sensory input and falls into two basic categories, **learned** and **innate** (inherited). Orientation behaviors place an animal in its most favorable environment. In **taxis**, the animal moves toward or away from a stimulus. Taxis is often exhibited when the stimulus is light, heat, moisture, sound, or chemicals. **Kinesis** is a movement that is random and does not result in orientation with respect to stimulus, but results in a change of the rate of movement. If an organism responds to bright light by moving away, that is taxis. If an animal responds to bright light by random movements in all directions, that is kinesis. For more information on animal behavior, you can refer to Chapter 51 of your textbook.

In this lab you will be working with terrestrial isopods commonly known as pillbugs, sow bugs, or roly-polies. These organisms are members of the Phylum *Arthropodia*, Class *Crustacea*, which also includes shrimp and crabs. Most members of this group respire through gills.

Do not just copy this down as the introduction—this is just some background info that I am giving you. When you write your report, do your own research too!

Procedure:

Part 1:

1. Place 10 pillbugs and a small amount of bedding material in a petri dish. Pillbugs generally do not climb, but if they do, you may cover the dish with the petri dish cover.
2. Observe the pillbugs for 10 minutes. Make notes on their general appearance, movements, 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 two 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. You will incorporate these notes into your discussion section of your lab report.
3. Prepare a choice chamber with one side containing moist filter paper, and the other containing dry filter paper, cut to fit each side of the choice chamber. You might have to use your creativity to get the whole setup to work properly!
4. Use a soft brush to transfer 10 pillbugs from the stock culture into the choice chamber. Place 5 pillbugs in each side of the choice chamber. Cover each side with the provided lids.
5. Count how many pillbugs are on each side of the choice chamber every 30 seconds for 10 minutes and then record your data in **Table 1**. Continue to record even if they all move to one side or stop moving.

Results:**Table 1: Pillbug Count**

Time (min.)	Number in Wet Chamber	Number in Dry Chamber	Other Notes
0.0			
0.5			
1.0			
1.5			
2.0			
2.5			
3.0			
3.5			
4.0			
4.5			
5.0			
5.5			
6.0			
6.5			
7.0			
7.5			
8.0			
8.5			
9.0			
9.5			
10.0			

Part 2: (your designed experiment)**Question:****Hypothesis:****Rationale:****Materials:****Procedure:**

Approved by teacher:**Data Table (include a title):**

Time (min.)	Number in Wet Chamber	Number in Dry Chamber	Other Notes
0.0			
0.5			
1.0			
1.5			
2.0			
2.5			
3.0			
3.5			
4.0			
4.5			
5.0			
5.5			
6.0			
6.5			
7.0			
7.5			

8.0			
8.5			
9.0			
9.5			
10.0			

Time (min.)	Number in Wet Chamber	Number in Dry Chamber	Other Notes
0.0			
0.5			
1.0			
1.5			
2.0			
2.5			
3.0			
3.5			
4.0			
4.5			
5.0			
5.5			
6.0			
6.5			
7.0			
7.5			
8.0			

8.5			
9.0			
9.5			
10.0			

Graph: Include both trials

Statistical Test: Chi Square

Conclusion:

* Accept or reject your hypothesis. * EXPLAIN why you accepted or rejected your hypothesis using data from the lab. * Include a summary of the data - averages, highest, lowest..etc to help the reader understand your results. Try not to copy your data here, you should summarize and reference KEY information. * List one thing you learned and describe how it applies to a real-life situation. *Discuss possible errors that could have occurred in the collection of the data (experimental errors)

***Attach graph to this paper. Be sure to include a title and label the axes.**

Hints For Your Lab Report:

The Results section of your lab report will include:

- Data table 1.1.
- Bar graph of Table 1.1
 - Remember, the **I**ndependent variable is what **I**, the **I**nvestigator is changing (x-axis). The dependent variable is the results—what you are measuring as a result of your change (y-axis). Include a title and proper labels/scale. You are encouraged to use Excel or other spreadsheet-based program to graph your data.

The Discussion section of your lab report will include your explanation of the results based on main concepts/principles discussed in the introduction, as well as the answers to the following questions. There are other components too—see your Lab Manual for a complete description of its contents):

1. Would you classify the isopod's response to moisture as taxis or kinesis? Explain your response.
2. How might this experiment be modified to accurately measure whether or not kinesis is shown?
3. Why were you instructed to use a bar graph and not a line graph to show the data?
4. If you suddenly turned over a rock and found isopods under it, what would you expect them to be doing? If you watched them for a few minutes, how would you expect to see their behavior change based on your data that was collected from the experiment?
5. Choose another factor that you could investigate. Make a hypothesis for what you would expect. Explain your reasoning. Then, describe how you would carry out this experiment.