

Your name:

Your partner(s):

Spring 2014 Biology 155

### Lab: Isopods: First Day of Choice Experiments

Please type your answers to the questions on the last page. Remember to include your name. After the page with your typed answers, staple the other pages. You don't have to retype anything from pages 1 - 4.

### **Due Wednesday April 9**

35 pt.

Goals of this lab are to practice using good experimental design, to observe animal behavior, to learn about the purpose of statistical tests, and to use what we learn from the experiment to come up with new research questions.

### CHOICE CHAMBER EXPERIMENT A: WET VS. DRY

#### MATERIALS per person

- One “choice” apparatus with two chambers.
- Two pieces of filter paper for choice chambers.  
Please note—we are running low on filter papers, so don't throw any away until the end of your experiments.

Place one or two pieces of filter paper in each chamber. Wet paper in one chamber—no loose drops in chamber—sow bugs can drown.

Obtain a sow bug. Carefully use a piece of filter paper to pick up the sow bug and let it crawl into the chamber.

#### Pilot study:

Drop your isopod between the two chambers. Over a \_\_\_\_\_ minute period, record how much time the isopod spends on each side.

Make initial observations on the behavior of your isopod.

Return isopod and save the filter paper.

(1 pt) How long do you think the observation periods should be?

(2 pt.) Should any variables be standardized, or at least measured to see if they are correlated with the outcome?

(1 pt) What is our question?

(1 pt) What kind of statistical test will we use to test the question? What website will we use?

Experiment:

After we talk about the method as a class to work on problems, repeat experiment A to collect data that we will use. Use a new isopod for each of two trials of \_\_\_\_\_ minutes.

Fill in the table on the worksheet for the two trials.

(1 pt) Experiment A:

Individual data, Wet vs. Dry:

	Trial 1	Trial 2
Isopod Type (Sow or Pill)		
Isopod size		
Recently molted? (Y or N based on color)		
Data for wet side		
Data for dry side		
Which side did your isopod favor?		

(1 pt) Other observations on behaviors:

(1 pt) Class data, Wet vs. Dry

(ignore all ties)

Favor wet \_\_\_\_\_

Favor dry \_\_\_\_\_

Total \_\_\_\_\_

In graphpad.com statistics calculator <http://graphpad.com/quickcalcs/binomial1.cfm> orVassarstats <http://www.vassarstats.net/> for a t-test

Number of “successes” you observed: number favoring wet \_\_\_\_\_

Number of trials or experiments: Total \_\_\_\_\_

On sign test page, leave probability at 0.5

OUTPUT: “two tail P value” \_\_\_\_\_

What do you conclude from experiment A?

CHOICE CHAMBER EXPERIMENTS B: LIGHT VS. DARK

Wet the second piece of filter paper with the same degree of wetness as the first one.

Test the isopods as before with a dark sleeve over one of the chambers. You will need to drop the isopod in the chamber before putting the sleeve on.

Repeat the experiments as above for \_\_\_\_\_ minutes, using a new isopod for each trial of \_\_\_\_\_ minutes. Do two different isopods *per partnership*. (One per person).**Experiment B:**

(1 pt.) Individual data Dark vs. Light

	Trial 1	Trial 2
Isopod Type (Sow or Pill)		
Isopod size		
Recently molted? (Y or N based on color)		
Data for dark side		
Data for light side		

Which side did your isopod favor?		
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(1 pt) Other observations of behaviors:

(1 pt) Class data, Dark vs. Light for species: \_\_\_\_\_

Favor dark \_\_\_\_\_

Favor light \_\_\_\_\_

Total \_\_\_\_\_

In graphpad.com statistics calculator <http://graphpad.com/quickcalcs/binomial1.cfm> for a sign test or Vassarstats <http://www.vassarstats.net> for a t-test

Number of “successes” you observed: number favoring dark \_\_\_\_\_

Number of trials or experiments: Total \_\_\_\_\_

On sign test page, leave probability at 0.5

OUTPUT: “two tail P value” \_\_\_\_\_

What is your conclusion from experiment B?

Work with your partner to come up with three possible ideas for follow-up studies. We’ll discuss these in class:

(2 pt) 1.

(2 pt) 2.

(2 pt) 3.

Biology 155 Isopod choice experiments –Lab write-up INSTRUCTIONS

**Attach your other pages and type your answers to these questions.**

(35 pt total with other pages)

Take individual and class data sheets home. Answer the questions on the dark vs. light data only. Please type the answers to these questions.

1. (3 pt) State the hypothesis—what you would expect the results to be in the light vs. dark experiment if you never did the experiment but read the article on sow bugs.
2. (3 pt) Describe methods briefly. The methods should be detailed enough that another person could repeat your study.
3. (2 pt) Summarize your extra observations on the isopod behaviors—not everything, just the highlights.
4. (2 pt) Was your hypothesis supported, strongly supported, not supported much, etc.? Use your p value to choose the appropriate language.
5. (3 pt) Mention any ways that you could change the procedures/methods to make them better (to make them more standardized, for example, or to eliminate confounding factors). Do not use the idea “do more trials”.
6. (5 pt) What is the new hypothesis that you decided to investigate? Do you need to prepare materials?