

Fly Lab / Epistasis Assignment:  
Instructions and Worksheet

Name: \_\_\_\_\_

This exercise is designed to help you get accustomed to working with the BiologyLabs Online and to investigate the phenomenon of epistasis in conjunction with this week's lab.

Instructions:

1. Read the Background and Introduction material for the FlyLab in your BiologyLabs Online manual.
2. Log on to the BiologyLabs Online website at [www.biologylabsonline.com](http://www.biologylabsonline.com). To gain access to the FlyLab, follow the instructions on the first page (insert) of the manual. You will have to enter the **Activation ID** and enter a password.
3. Go to the FlyLab online module and follow the instructions for the first assignment entitled: "Getting to know the FlyLab: Performing Monohybrid, Dihybrid and Trihybrid Crosses". Feel free to play around and make additional crosses. You should be able to get comfortable with the way the lab module functions.
4. Follow the instructions for the assignment called "Epistasis". Follow the instructions carefully and make sure you understand what is happening. Then answer the questions below.
5. This worksheet is due at the beginning of your next lab. No late papers will be accepted.

Notes:

1. The BiologyLabs Online are designed to run with the Netscape browser. If your computer has some other browser, you may run into minor problems. Some of these problems may be corrected by switching back and forth between the **Summary of Results** window and the **Chi-Square Analysis** window. Or, if you are using your own computer, you can download and install Netscape – its free. **Do not download and install programs on University computers.**
2. There are a few errors in the manual, especially about where the various buttons are located. Don't panic. Just look around to find them. Part of the point of this exercise is for you to get comfortable with the online labs.

Answer the following questions:

1. For the first cross in the Epistasis exercise, what are the genotypes of the parents?
2. Write down the phenotypes and the genotypes of the F<sub>1</sub> generation. **Keep track of both genes, even if the computer doesn't.** What do these results tell you about the vestigial (VG) mutation? What do these results tell you about the incomplete wing vein (RI) mutation?

3. Write down the phenotypes of the F<sub>2</sub> generation:

Is this what you expected? Why or why not?

4. If the F<sub>2</sub> phenotypes you observed are different from what you expected, can you formulate a hypothesis to explain the observation? (Hint#1: what phenotypes are missing? Go back to the window that shows pictures of the F<sub>2</sub> generation. Is there anything about these flies that you notice? Hint#2: use the “ignore sex” button. There is no sex linkage in this experiment.) Describe/explain your hypothesis:
5. Once you have formulated a hypothesis, go to the Chi-Square analysis window and test your hypothesis. Report the value of the Chi-Square test statistic and the P-value for your test. What do you conclude?
6. If you reject your hypothesis, formulate a new one and test it. Briefly describe your best hypothesis:
7. Perform the second cross described for the Epistasis assignment. Is the apterous wing mutation dominant or recessive?