

Scientific Sketching: The Fly

This handout will serve as both the protocol for this observational lab and the lab report. Hand in your completed lab sheet when you have completed it.

If you do this lab with the attention to detail that is expected of you, you should finish in 30-45 minutes.

Introduction

Scientific drawing is a great example of using visual arts within the discipline of biology. Using microscopes to record observations is equivalent to taking data with any other tool, such as an electronic balance, spectrophotometer, mass spectrometer, etc. Using your hand and fingers, the most ancient of tools, to craft exact replicas of objects under the lenses is a difficult skill to master. Only the most practiced hands get to make a living this way, but those lucky few have found a way to encompass two passions in their lives, art and science.



As a wonderful example of scientific illustration, check out the “Eye Chart” poster above the sink in the front near the class entrance. The artist, Erika Beyer, is a Sheldon graduate who now sells her work online (www.erikabeyer.com).

I don't expect any of you to master scientific illustration as part of the class, but I do expect you to set your standards high.

See **Sheldon Science Sketch Criteria**[®] at the end of the lab for specific sketch requirements.

Procedure

1. Obtain a compound microscope for yourself. If not enough scopes are available, you will share a scope with no more than one partner.
2. Prepare your scope for viewing by turning the rotating nosepiece until the scanning power objective is pointing down. Turn on the light source.
3. Obtain a prepared slide of fly legs. Viewing the slide from the side, position it so that a leg is in the center of the circle of light. Try to position the leg so that an area where 2 segments of the leg join is at the center of the field of view. Make three sketches of the leg. (the place where 2 leg segments join is plus the adjacent leg segments is your “area of interest”)

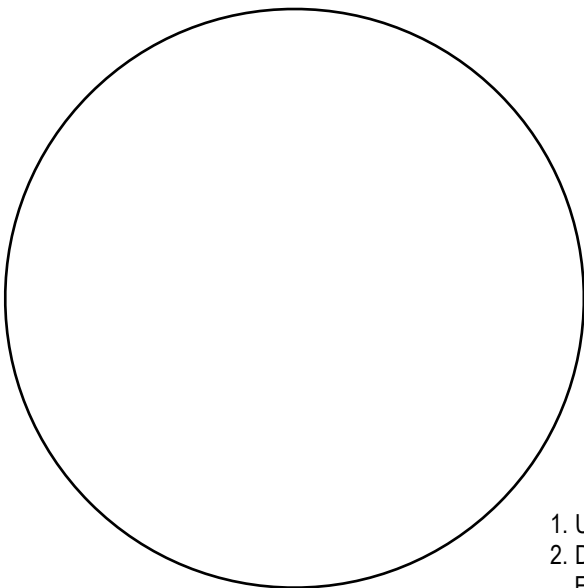
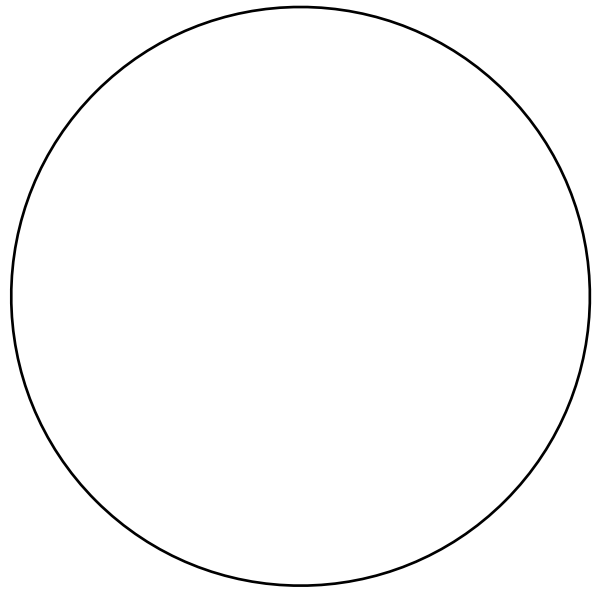
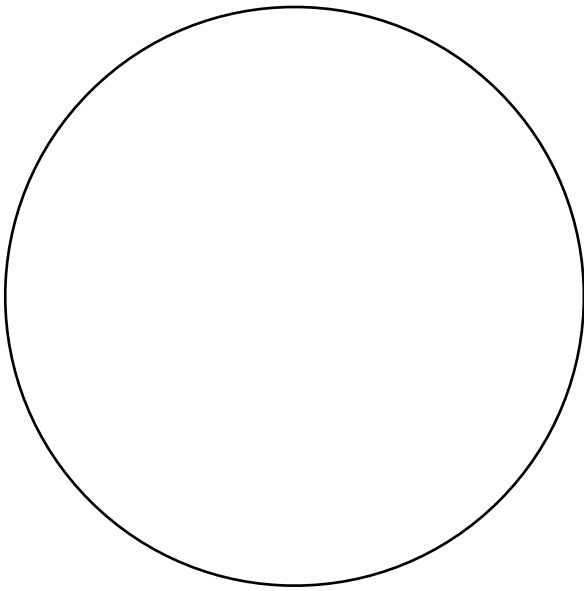
- a. first sketch at scanning power (40x)
- b. second sketch at low power (100x)
- c. third sketch at high power (400x)



Within each sketch above, the area of interest must be sketched **exactly** as it appears. You are collecting data. Take your time; each sketch may take 10-15 minutes, depending on the magnification and your skill level. The rest of the field of view should be roughly sketched in; only the general shape or form need be included.

As you sketch, show your interaction with the subject matter by writing comments making inferences about the function of the structures in your sketches. Write questions about your subject matter. Share your ideas about the wing structure and function. Making observations and asking questions means you are doing science the right way.

When you are finished, replace the leg slide where you got it.



Sheldon Science Sketch Criteria®

1. Use **pencil** for any sketched data (ink may be used for labeling)
2. Draw within a **large** field of view (FOV) (approx. 5-8cm is a good diameter for the FOV)
3. Do high **quality** work; sketch your area of interest perfectly. Make it look exactly as it appears under the microscope. The remainder of the FOV must be sketched to provide context, but the quality of the sketch may be quite rough.
4. **Label** your observations with as much of the following information as possible:
 - a. Title of the object of interest
 - b. Use a ruler to draw label lines
 - c. Include total magnification of the FOV
 - d. Include size (in μm^*) of your object of interest.
 - e. Label on the right-hand side of the drawing, if possible

*see table below for compound scope scales (note: 1mm = 1000 μm)

Objective	FOV total Magif.	FOV size (mm)
Scan	40x	5.0
Low	100x	2.0
High	400x	0.5