

LAB 1 - USE OF MICROSCOPE AND RAT DISSECTION

Welcome to anatomy and physiology lab!! Most students find lab to be the most enjoyable portion of this course, and I hope that you will be no exception. Each lab has a written outline of lab activity such as this one; you are responsible for all activities in the outline for the lab exams.

In today's lab, we will emphasize measurement of anatomical structure, introduction to microscopy, and review of body systems using the rat as a dissection specimen. This will allow you to get oriented to basic anatomy and some initial practice with dissection technique.

Outline for Lab Activity

1. *Introduction to the lab and safety rules*
2. *a. The scientific process* – Read about “The Scientific Method” in your lab manual (pages xii-xiii, preceding Exercise 1)

b. Measurements in science-- Read pages xvii-xviii in your lab manual.

Distance measurement – Practice metric measurements (Table G.1):

1 mm (millimeter) = 1/1000 meter

1 μm (micrometer) = 1/1000 mm

1 nm (nanometer) = 1/1000 μm

Practice:

12 μm = _____ mm

2 meters = _____ μm

Write a hypothesis for the correlation between leg length and height. Measure and record the height of your lab partner in centimeters. Have your partner do the same for you. Next measure leg length (knee to ankle) of the two partners. Combine your data with the class numbers and analyze your results. Think about whether your data corresponds to your hypothesis.

3. *Microscopy: Work individually with a microscope.*

- a. Before handling your microscope, review the safety precautions on page 21. Make sure you understand them and follow them every time you use the microscope. Compound microscopes are expensive items (\$1500), please handle with great care.
- b. Review basic parts of microscope. Find all features listed or illustrated on pages 22-23 on your microscope. The microscope pictured in Figure 3.1 is the same model that you will use in the lab, except for one feature. We will go over them in class, but review them with your partner first.
- c. Review and practice use of the microscope by doing the following:

Viewing a letter slide. We will work through this as a class following Activity 9 on pages 23-25. What does parfocal mean?

Perceiving depth— p.27. Activity 4. All specimens that you will view, even thin sections of prepared slides, have depth. That means that you can focus your microscopes at different levels in the specimen.

You will be given a prepared slide of threads that cross each other. Determine which thread is on top and check it with your instructor. Be aware as you focus of the *depths* of each thread of the slides.

Review and know the meaning of the following terms; the figures on pages 24-26 will be very helpful.

parfocal
working distance
field of view
calculation of total magnification (p.23-24)
depth of field

- d. Making a wet mount. Use the procedure on p. 27 -28. Use your own cheek cells and a tiny drop of methylene blue. Be careful-- it can stain your clothes!

Observe the pattern of the cells. Draw a picture. What are the stained structures you see in the slide? Do you observe any bacteria?

- e. Review the attached handout on electron microscopy. What are the two types of electron microscopes? Do they view light images? What types of specimens would typically be viewed by the two types?

3. **Body Systems** – Review pages 6-7 in your Martini textbook (lecture text). Locate the components of these organ systems on the human torso. **Make sure** that you know the component organs and some basic functions of each organ system (as directed in the handout given in lecture). Answer the questions in Review Exercise 2 in your lab manual (p. 519).

4. **Dissection of White Rat** - To review the organ systems, you will conduct a dissection of the white rat. The organ systems of this organism are similar to the human. This will give you an introduction to dissection techniques as well.

On your rat, identify all the structures labeled on the handout figure. You are responsible for learning all these structures and the ones listed below. Work in groups of 2. Use the rat photos on pages 14-17 as a guide.

Reproductive structures will be difficult to locate (consult the TA), but you will be responsible for the following specific structures:

Male - scrotum, testis, vas deferens, penis

Female - uterus, uterine horns, ovary (maybe), vagina

Do you find any serous membranes?

You will see this rat anatomy again on the first lab exam!!!

5. **Language of anatomy:**

1. You will be responsible for this material in lecture and in lab!

2. Review the anatomy terms on the “body orientations” handout given to you in class. Consult the figures on pages 4-8 in the lab manual. Practice identifying the regions on your partner.

3. Learn the serous membranes of the body (Activity p.7).

If I give you an internal organ, you should be able to describe its cavity and, if appropriate, its abdominal region. Work through activity 5 on page 19-20.

Review exercises:

Your lab text has a large section of review exercises addressing each laboratory. Review sheets for today’s lab are on pages 513-520. Complete as many questions as you can in lab.