

## Bio 135 Lab: Microscopy and Mitosis

### Objectives:

1. To learn the component parts of a microscope:
2. To learn the proper care of a microscope
3. To learn the proper use of a microscope
4. To view and identify the stages of mitosis using a microscope

### Pre lab Activities:

1. Go to the virtual lab site and do the activities associated with the Microscope and Mitosis. I especially urge you to go to the virtual microscope. It will familiarize you with the major components of a microscope and will prepare you for our first in person lab session.
2. If online, view the video presentation on the microscope.
3. View materials on Virtual lab related to mitosis

### In person lab activities:

1. View video on the use of the microscope.
2. Instructor will demonstrate the use of a microscope.
  - a. Demonstrate care and cleaning of a microscope
  - b. Proper way to store the microscope.
  - c. How to place slides
  - d. Proper sequence in focusing
  - e. What to do when done with the microscope.
3. Instructor will walk through a practice use with “junk” slides to insure students can work through the process. See directions for microscope use at the end of this document
4. Make a wet mount slide using cheek scrapings from your own tissues
  - a. Take tooth pick and lightly rub off tissues
  - b. Smear this on a fresh slide
  - c. Place one drop of methylene blue on the tissues
  - d. Cover this with a plain square cover slip
  - e. Observe under the microscope at various magnifications.
5. View onion tip slides and identify the stages of Mitosis within the cells. Draw what you see.
6. Be able to identify parts of the microscope as shown on the virtual lab site.

## **How to use a Microscope:**

### **General rules:**

- a. Clean the objective and ocular only with lens tissue
- b. Always return the scope to the 4x objective, lower the stage, turn off the light, and cover back up when you are done.
- c. Never force your controls
- d. The lenses “click” into place. If you do not feel a positive click you have not centered your lens
- e. Notify your instructor of any broken slides or any other problems.

### **Step by step on how to use the scope:**

1. Select microscope
2. Take cover off scope
3. Turn on the light to insure you have a working scope. If it does not turn on notify your instructor.
4. Lower the stage. You may do this with the course adjustment knob. Do not force any movements.
5. Turn objective to 4x (the red banded objective) by rotating the nosepiece
6. Place slide, label up on stage. This is held by the stage clips against the back of the stage. It does not go under any clip but is held in place by a curved spring loaded clip.
7. Use the left right, and front to back stage controls to center image on slide over the light source
8. Look through the objective and course focus until you get a sharp image. Do not adjust this without looking through the objective lens.
9. Once you have course focused you may get more detail using the fine focus.
10. Once fully focused do not take it out of focus to do this next step which is to now turn the objective to 10 x.
11. Use the Fine focus only to sharpen this image.
12. Turn objective to 40 x
13. Fine focus and inspect your image.

### **With each new slide you will:**

14. Return objective to 4x (do this first. You could damage the slide otherwise)
15. Return stage to lowest position (do this second. If the objective is at 4x you are less likely to damage the slide)
16. Return your old slide to the box it came from

### **At the end of the day you will do steps 14-16 and**

17. Turn off light
18. Replace cover.