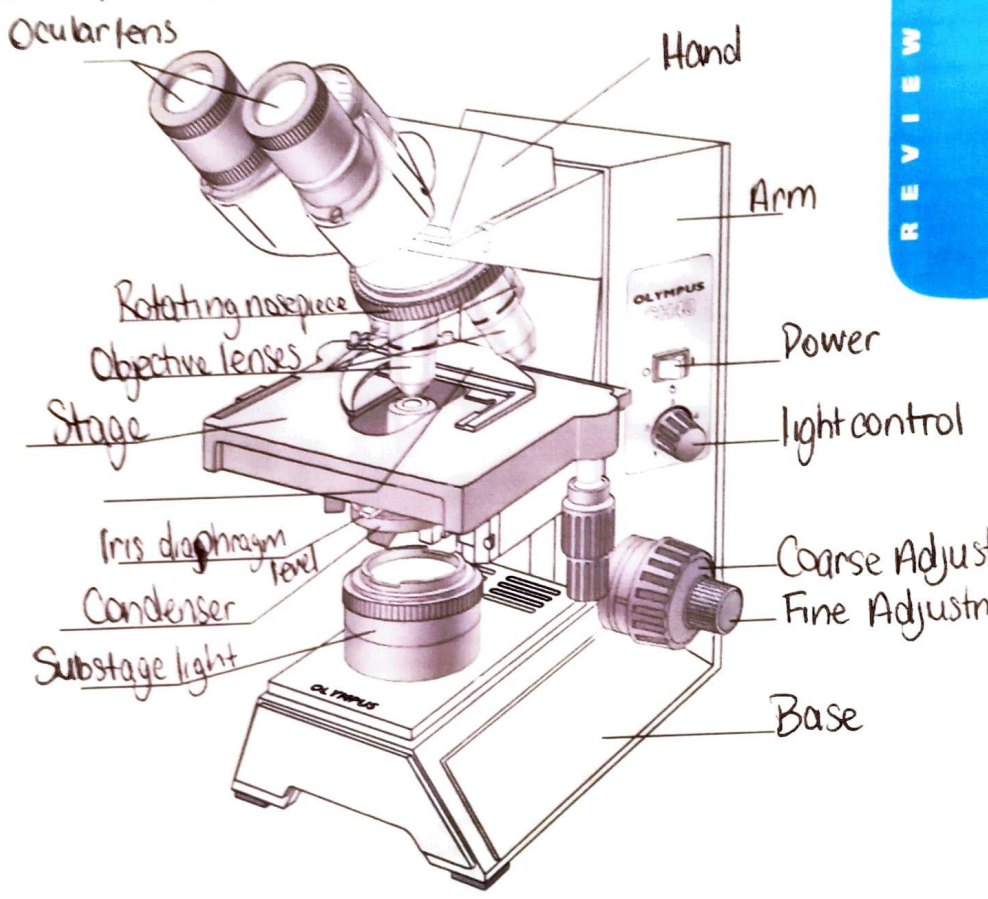


Name Stephanie Bavello
Lab Time/Date 2:30-5:00pm
3/7/21

The Microscope

Care and Structure of the Compound Microscope

1. Label all indicated parts of the microscope.



2. Explain the proper technique for transporting the microscope.

When transporting hold in an upright position with one hand on the arm and the other supporting its base

3. The following statements are true or false. If true, write *T* on the answer blank. If false, correct the statement by writing on the blank the proper word or phrase to replace the one that is underlined.

- F. special grit-free lens paper* 1. The microscope lens may be cleaned with any soft tissue.
 _____ *T* 2. The microscope should be stored with the oil immersion lens in position over the stage.
 _____ *T* 3. When beginning to focus, use the lowest-power lens.
 _____ *T* 4. When focusing, always focus toward the specimen.
 _____ *T* 5. A coverslip should always be used with wet mounts and the high-power and oil lenses.

4. Match the microscope structures in column B with the statements in column A that identify or describe them.

Column A

- J* 1. platform on which the slide rests for viewing
G 2. used to increase the amount of light passing through the specimen
i 3. secure(s) the slide to the stage
b 4. delivers a concentrated beam of light to the specimen
C 5. used for precise focusing once initial focusing has been done
f 6. carries the objective lenses; rotates so that the different objective lenses can be brought into position over the specimen

Column B

- a. coarse adjustment knob
 b. condenser
 c. fine adjustment knob
 d. iris diaphragm
 e. mechanical stage
 f. nosepiece
 g. objective lenses
 h. ocular
 i. spring clips
 j. stage

5. Define the following terms.

virtual image: Real image of specimen is magnified by the ocular lens that can be seen by the eye

resolution: The ability to discriminate two close objects as separate

Viewing Objects Through the Microscope

6. Complete, or respond to, the following statements:

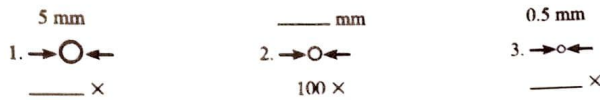
- Working distance* 1. The distance from the bottom of the objective lens to the specimen is called the _____
Left 2. Assume there is an object on the left side of the field that you want to bring to the center (that is, toward the apparent right). In what direction would you move your slide? _____
Field 3. The area of the specimen seen when looking through the microscope is the _____
95X 4. If a microscope has a 10× ocular and the total magnification at a particular time is 950×, the objective lens in use at that time is _____ ×.
more contrast 5. Why should the light be dimmed when looking at living (nearly transparent) cells?
parfocal 6. If, after focusing in low power, only the fine adjustment need be used to focus the specimen at the higher powers, the microscope is said to be _____.
2 mm 7. If, when using a 10× ocular and a 15× objective, the field size is 1.5 mm, the approximate field size with a 30× objective is _____ mm.

8. If the size of the high-power field is 1.2 mm, an object that occupies approximately a third of that field has an estimated diameter of _____ mm.

7. You have been asked to prepare a slide with the letter *k* on it (as shown below). In the circle below, draw the *k* as seen in the low-power field.



8. Figure out the magnification of fields 1 and 3, and the field size of 2. (Hint: Use your ruler.) Note that the numbers for the field sizes below are too large to represent the typical compound microscope lens system, but the relationships depicted are accurate.



9. Say you are observing an object in the low-power field. When you switch to high-power, it is no longer in your field of view.

Why might this occur? The magnification made the object become smaller and out of view. The depth of the field changed

What should be done initially to prevent this from happening? Determine the depth of field before viewing object

10. Do the following factors increase or decrease as one moves to higher magnifications with the microscope?

resolution: increases amount of light needed: increases
 working distance: decreases depth of field: decreases

11. A student has the high-dry lens in position and appears to be intently observing the specimen. The instructor, noting a working distance of about 1 cm, knows the student isn't actually seeing the specimen.

How so? The student is not using the right magnification

12. Describe the proper procedure for preparing a wet mount.

Place a drop of saline in the center of slide, use end of toothpick and scrape the inner lining of cheek, transfer cheek scrapings to saline, add a drop iodine, hold cover slip with fingertips so bottom edge touches one side of fluid drop, carefully lower onto the preparation

13. Indicate the probable cause of the following situations arising during use of a microscope.

a. Only half of the field is illuminated: The lens is not correctly rotated into place. Slide is not correctly positioned and does not move when mechanical stage moves

b. Field does not change as mechanical stage is moved: The slide is not correctly positioned in the clamp on the mechanical stage