

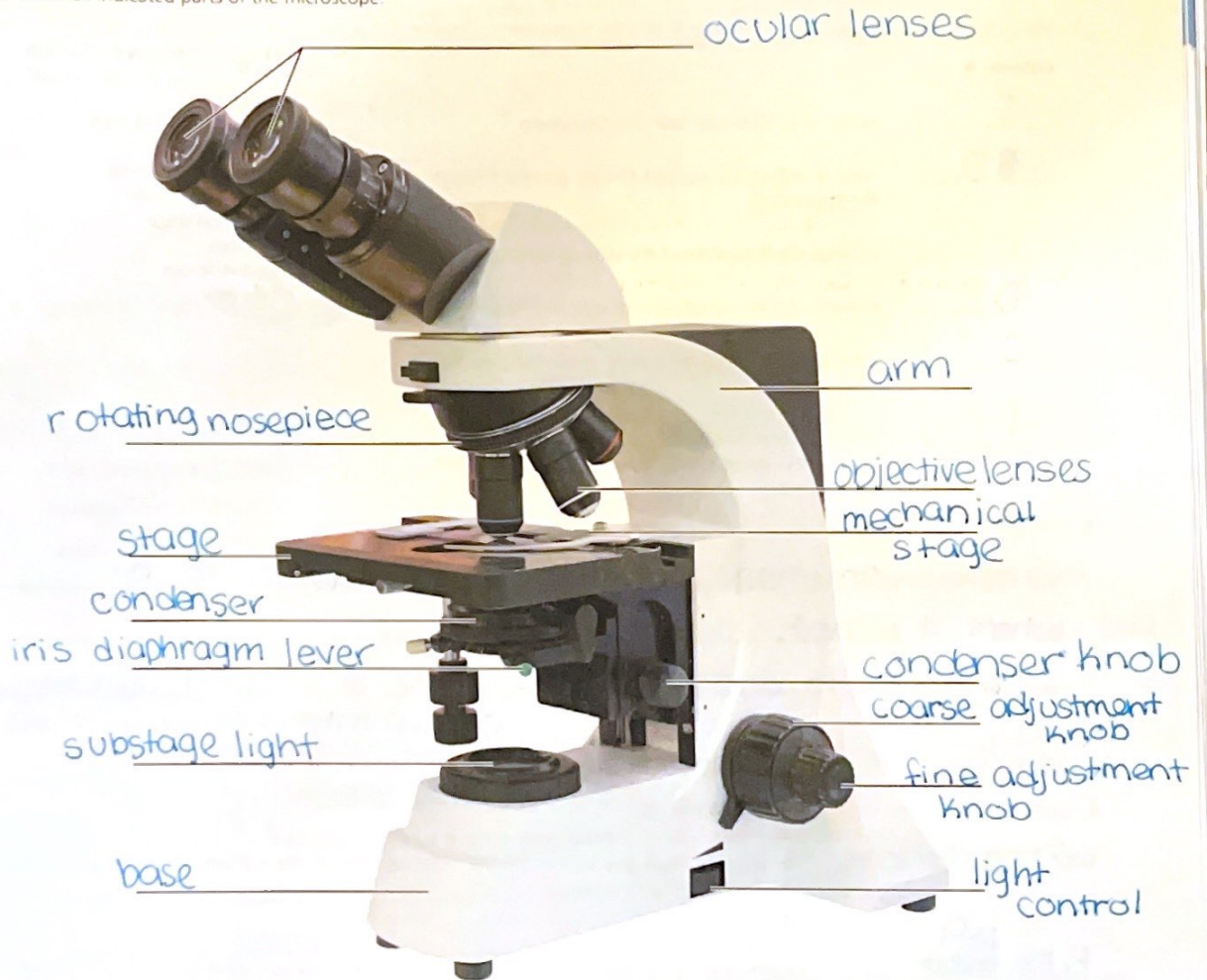
3 REVIEW SHEET

EXERCISE The Microscope

Name Ariana medonjanin Lab Time/Date _____

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 the microscope, hold it in an upright position with one hand on its arm and the other supporting the base.

3. Each of the following statements is either 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- grit-free lens paper 1. The microscope lens may be cleaned with any soft tissue.
- f- lowest power obj 2. The microscope should be stored with the oil immersion lens in position over the stage.
- true 3. When beginning to focus, use the scanning objective lens.
- f- away 4. When focusing on high power, always use the coarse adjustment knob to focus.
- f- with wet mounts 5. A coverslip should always be used with wet mounts.

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

Column A

- I 1. platform on which the slide rests for viewing
- B D 2. used to adjust the amount of light passing through the specimen
- e 3. controls the movement of the slide on 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 lever
- e. mechanical stage
- ~~f.~~ nosepiece
- g. objective lenses
- h. ocular lens
- ~~i.~~ stage

5. Define the following terms.

total magnification: an image that is erect and appears to be where it's not.

resolution: ability to discriminate two closely situated 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 surface of the slide is called the _____.
- to 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 slide seen when looking through the microscope is the _____.
- 95 4. If a microscope has a 10× ocular lens and the total magnification is 950×, the objective lens in use at that time is _____ ×.

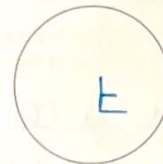
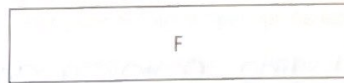
to provide more

contrast

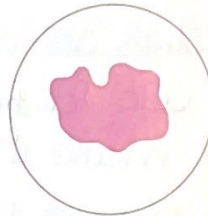
parfocal

0.75mm

5. Why should the light be dimmed when looking at living (nearly transparent) cells?
6. If, after focusing in low power, you need to use only the fine adjustment to focus the specimen at the higher powers, the microscope is said to be parfocal
7. You are using a 10× ocular and a 15× objective, and the field diameter is 1.5 mm. The approximate field size with a 30× objective is _____ mm.
8. If the diameter of the low-power field is 1.5 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 *F* on it (as shown below). In the circle below, draw the *F* as seen in the low-power field.



8. Estimate the length (longest dimension) of the object in μm :



Total magnification = 100×

Field diameter = 1.6 mm

Length of object = _____ μm

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? because in low power you have a wider field of view and when you switch to a higher power it narrows your view and it becomes out of focus

What should you do initially to prevent this from happening? center the object you want to view as much as possible before switching to a higher power and increase mag. slowly

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

resolution: increase amount of light needed: increase

working distance: decrease depth of field: decrease

11. A student has the high-power 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? A high-dry lens is a high power, non-oil immersion lens looking at dust and its out of focus

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

- ① the object is placed in a drop of water on a clean slide
- ② a coverslip is held at a 45° angle with the fingertips
- ③ it is lowered carefully over the water and the object

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

a. Only half of the field is illuminated: blockage in the light path

b. The visible field does not change as the mechanical stage is moved: mechanical contact between the specimen and the objective lense

14. **+** A blood smear is used to diagnose malaria. In patients with malaria, the protozoa can be found near and inside red blood cells. Explain why a microscope capable of high magnification and high resolution would be needed to diagnose malaria.

Structures inside a cell including protozoa are very small and cannot be seen with low magnification.

15. **+** Histopathology is the use of microscopes to view tissues to diagnose and track the progression of diseases. Why are thin

slices of tissue ideal for this procedure? thin slices are used so that pathologists can clearly see individual cells for their assessment.

too many layers of cells make it difficult to focus and hard to see what changes have occurred in the tissues.