

Bio 117Lab
The Microscope and Tour of Cells
Lab Report

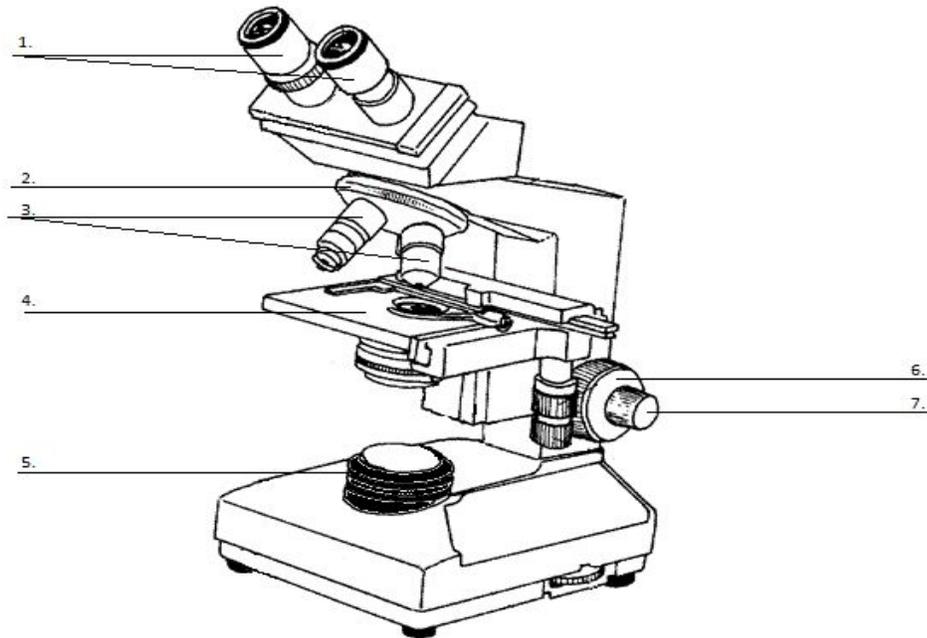
Total points:100

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Microscope

- (A) Study the diagram of the microscope.
(B) Match the terms listed below with the microscope parts labeled in the given figure (7 x 2 =14pts)



ANSWER BOX

1. Ocular lenses
2. revolving nosepiece
3. Objective lenses
4. Stage
5. Lamp
6. Coarse adjustment knob
7. Fine adjustment knob

Microscopic Images

If you cut out the letter “e” and place it on a slide this is what it looks like to the UNAIDED eye:



When you view it under a microscope on LOW power magnification, it looks like this:



C. 2. What do you notice about the images? (4 pts)

- the microscope must be broken.
- the slide was made incorrectly.
- the microscope inverted the image.

When switched to HIGH power magnification on the microscope the “e” looks like this:



B. 3. Compare the LOW power and HIGH power images. As magnification increased, what can you say about the image? (4 pts)

- you see more of it
- you see less of it
- it looks the same

B. 4. When using a microscope, your movements are backwards due to mirrors and lenses inside the microscope.

Keeping this in mind, if you were looking through a microscope at an image and you moved the slide to the RIGHT, which way will your image appear to move? (4 pts)

- to the right
- to the left
- upward
- downward

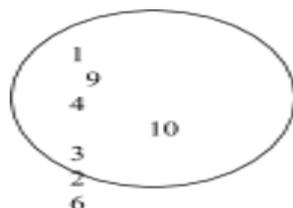
5. The ocular lens (eye piece) of a microscope in our class magnify an image 10X. The HIGH power objective lens magnifies by 40X. If the equation to calculate TOTAL MAGNIFICATION is:

$$\text{OCULAR X OBJECTIVE} = \text{TOTAL MAGNIFICATION}$$

What would be the total magnification of this microscope on HIGH power? **400** (4 pts)

6. The following diagram illustrates the field of view as if you using low power magnification. **Circle** the part of the slide (numbers) you would see if you switched from low power to high power magnification. (5 pts)

9,4,10 would be shown



A. 7. If you were using low power and wanted to look at the number 3 on high power, what should you do before you switch to high power? (4 pts)

A. Bring 3 to the center B. Focus on the number 10 without moving the slide C. Prepare a new slide with the numbers switched around.

8. How is a simple microscope different from a compound microscope? (5 pts)

A simple microscope uses the optical power of a single lens or group of lenses for magnification. A compound microscope uses a system of lenses to achieve much higher magnification of an object.

9. What is the function of the ocular lens? (5pts)

The ocular lens further magnifies the the objective lens.

10. You are asked to view a sample of pond water to find microorganisms under the microscope. Fill in the blank spaces with terms that you would follow to view the specimen. (12 pts)

Take a dropper full of pond water and place a few drops of the water on a _____, cover it with a _____ and place it on the _____. With the _____ adjustment knob and then the _____ adjustment knob focus on the object you want to view. Start viewing with _____ objective lens to locate the specimen. Then move on to _____ power _____ lens to view details..

Kingdom Plantae and Kingdom Animalia (Eukaryotes)

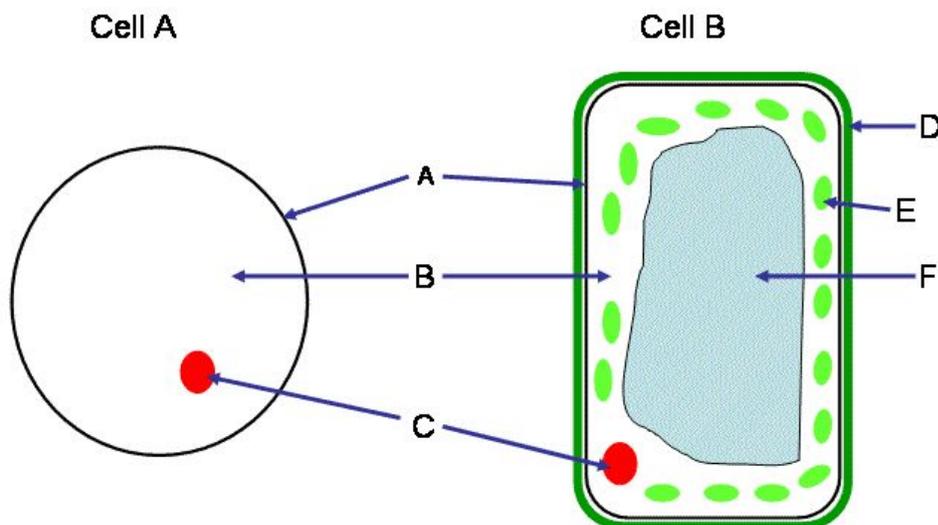
Plant cells (unlike animal cells) are surrounded by a thick, rigid cell wall.

Cheek cells are flat, irregularly shaped cells with a large nucleus visible near the center using a microscope.

11. Below are drawings of two cells Cell A and Cell B. Label the following structures: **cell wall, cytoplasm, vacuole, nucleus, cell membrane and chloroplast**

Give a **TITLE** to each drawing.

Typical Plant and Animal Cells



Title : Cell A: Plant cell (2 pts)

Title : Cell B: Animal Cell (2 pts)

Answer Box
Cell parts
6x 2= 12 prs

12. State **TWO** structural differences between plant and animal cells. (3 pts)

Two structural differences between plant and animals cells are that plant cells have chloroplasts and vacuoles.

13. What is the purpose of using the Lugol's Iodine as a stain? (3 pts)

Lugol's iodine solution is used for Gram staining and can be used as an antiseptic and disinfectant for emergency disinfection of drinking water, and as a reagent for starch detection in routine laboratory and other medical tests.

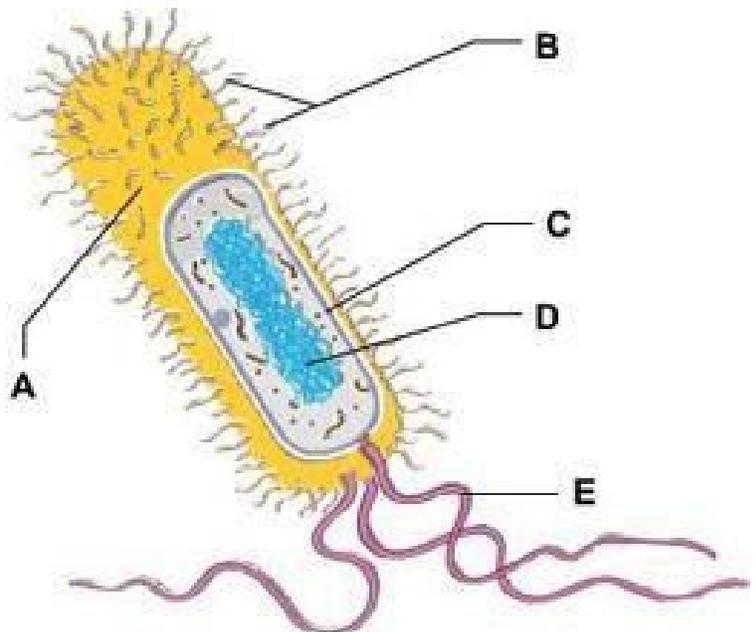
14. What is one function of the cell wall? (3 pts)

The cell wall surrounds the plasma membrane of plant cells and provides tensile strength and protection against mechanical and osmotic stress.

Prokaryotic Cells

15. Below is a drawing of a prokaryotic cell. Label the following structures: **flagella, capsule, DNA, pilus, and ribosome**
Give a **TITLE** to the drawing.

Title Labeling the Prokaryotic Cell (2pts)



- A. Capsule
- B. Pilus
- C. Ribosome
- D. DNA
- E. Flagella

16. Why is the above cell a prokaryotic cell? (2 pts)

It is prokaryotic because it has a nucleoid rather than a nucleolus.