Microscope Lab
Comparing Plant and Animal cells

Objectives:

- Become familiar with the parts of a microscope
- Determine the total magnification of the microscope.
- Explain how to properly handle the microscope.
- Recognize the differences in structure between plant and animal cells
- Identify and observe cells and cell structures

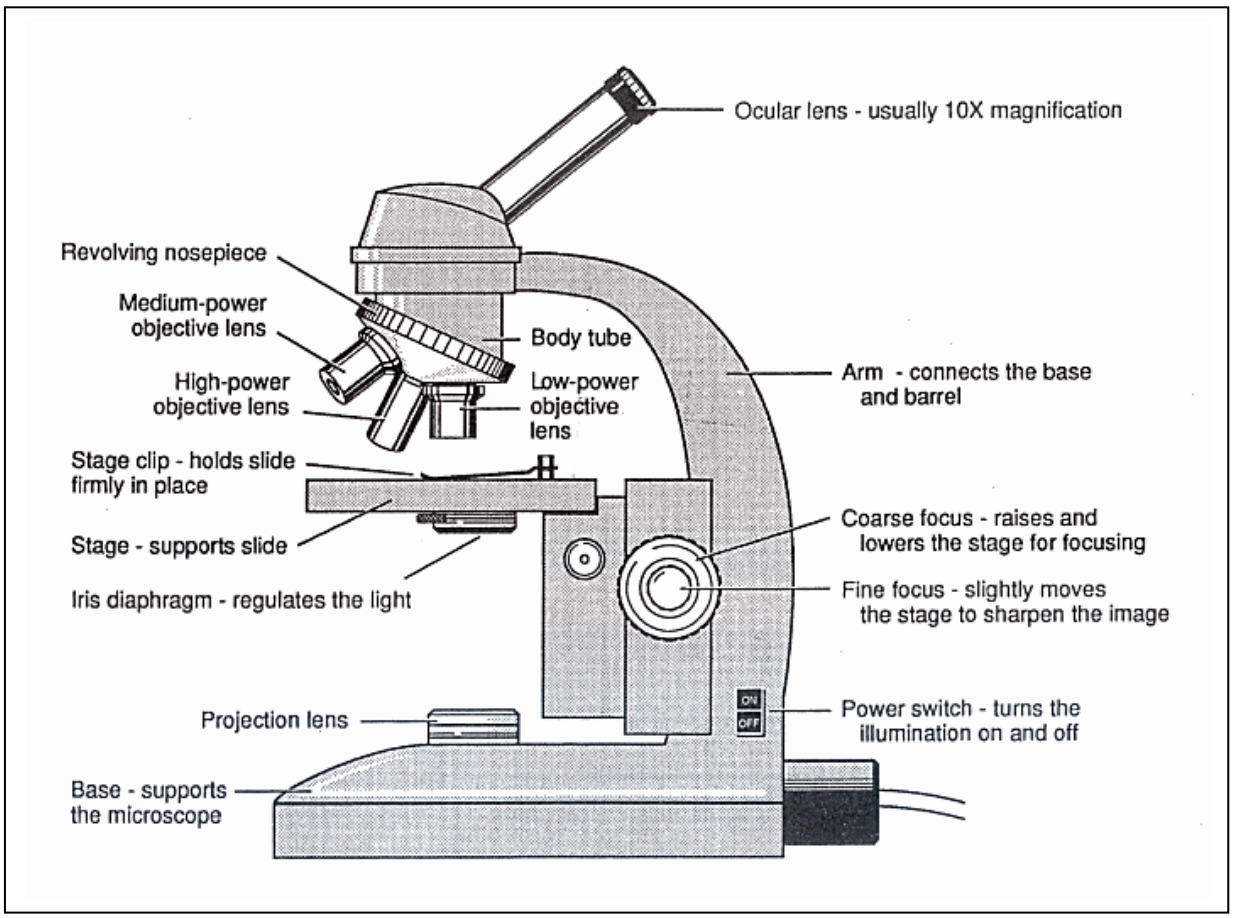
Materials:

microscope	water	medicine dropper
slides	newsprint	methylene blue
coverslips	onion	flat edged toothpick
Prepared slides		

Procedure:

Part I. Microscope Handling

1. **Carry the microscope with both hands** --- one on the arm and the other under the base of the microscope.
2. **Examine the microscope and give the function of each of the parts** listed in the diagram.



Part II Using a Microscope

1. Place your prepared slide on the stage. Use the stage clips to secure the slide on the stage.

2. Using the coarse-adjustment knob, lower the low power objective as far as it will go without hitting the slide. Watch the objective lens as you do this. **Never lower the objective while looking through the eyepiece**.
   Caution: Never use the coarse adjustment when focusing using the high power lens. This could break or damage the lens

3. Look through the eyepiece. Adjust the low power objective by turning the coarse adjustment toward you. The slide will soon come into view. To avoid eyestrain, keep both eyes open while looking through the microscope. Turn the fine adjustment to bring the image into sharp focus. You may wish to move the diaphragm to adjust the amount of light so that you can see the object more clearly.

Part III Making a Wet Mount

4. Cut a small piece of newsprint that contains a lowercase ”e”. Using a medicine dropper, place a drop of water in the center of the slide. Place the newsprint in the drop of water. Lower the cover-slip onto the slide from a 45° angle to prevent the formation of air bubbles.

5. Place your wet mount on the stage of the microscope and position it so that the letter “e” is facing you as you would read it. Use the stage clips to secure the slide on the stage.

6. Using the coarse-adjustment knob, lower the low power objective as far as it will go without hitting the slide. Watch the objective lens as you do this. **Never lower the objective while looking through the eyepiece**.
   Caution: Never use the coarse adjustment when focusing using the high power lens. This could break or damage the lens

7. Look through the eyepiece. Adjust the low power objective by turning the coarse adjustment toward you. The letter “e” will soon come into view. To avoid eyestrain, keep both eyes open while looking through the microscope. Turn the fine adjustment to bring the image into sharp focus. You may wish to move the diaphragm to adjust the amount of light so that you can see the object more clearly.

8. Optional only upon completion of above. Use different objects- strand of hair, cloth fibers, colored newsprint, insect legs, etc. to practice making wet mounts.

Part III Questions

1. What magnification is printed on the lens of the low power objective?_____ high power objective?_____

2. How does the letter "e" as seen through the microscope differ from the way an "e" normally appears? _____
   _____

3. What happens to the "e" as you move the slide to the right? _____
   _____

4. What happens to the "e" as you move the slide up? _____
   _____

5. Explain why a specimen to be viewed under the microscope must be thin. _____
   _____

Part IV Plant and Animal Cells

1. Cut an onion lengthwise. Remove a thick scale and peel the delicate transparent tissue from the inner surface of the scale. Cut a square of the tissue and mount it in a drop of water. Make sure not to wrinkle the tissue. Add a cover-slip to the wet mount. Look at the living cells under low power and then remove the slide from the microscope.

2. Place a drop of methylene blue stain next to the cover-slip of the wet mount. Next, place a small piece of paper towel next to the cover-slip on the side opposite the drop of methylene blue stain. As the towel absorbs the water, the methylene blue stain will be drawn under the cover-slip. Remove and discard the piece of paper towel. **Note: You may want to repeat this process with a drop of water if the stain is too dark or if the stain did not move completely across the slide.**

3. Gently scrape the inside of your cheek with the broad end of a clean toothpick. Prepare a wet mount of the material that you have scraped making sure to add a cover-slip. Stain the cheek cells with methylene blue stain using the same procedure as above. Select one cell under low power that shows the contents clearly. Switch to high power to examine the cell. Use the fine adjustment to observe the cell at various depths looking very carefully at the outer edge of the cytoplasm.

Part IV Questions

1. What is the basic shape of the onion cell?_____
2. Are all the onion cells similar in shape? _____
3. When you add a drop of methylene blue, what effect does the stain have on the cells? _____
   _____
4. Describe the shape of the cheek cell. _____
5. How does the edge of the cheek cell compare with the edge of the onion cell? _____
   _____
6. What cell parts are found in plant cells that are not found in animal cells? _____
   _____
7. What is the basic unit of structure of all living things? _____