

Name _____

Date _____

BIOLOGY:

CELL LAB

INTRODUCTION

When the different types of cells are viewed under the microscope, different cell parts can be seen. Certain living cells are best for showing parts like a nucleus or cell membrane. Cell from autotrophic producers (plants) will show parts such as chloroplasts and cell walls. Most consumer organisms do not have these cell parts.

PURPOSE

To identify and observe various cells and to compare animal and plants cells.

In this investigation you will:

1. observe a variety of living and once living materials under the microscope.
2. determine if these materials do or do not show a cellular type of organization.
3. study and locate under the microscope six specific cell parts- cell wall, cell membrane, cytoplasm, nucleus, nucleolus, and chloroplast.
4. compare the cell parts found in plants and animals.

MATERIALS

- | | |
|----------------------|-------------------------|
| 1. microscope | 7. methylene blue stain |
| 2. microscope slides | 8. toothpicks |
| 3. coverslips | 9. onion bulb |
| 5. water | 10. <u>Elodea</u> leaf |
| 6. iodine stain | |

PROCEDURE

A. Preparing a Wet Mount

Wet mounts are used to study fresh, living materials. They can be used only for a short time because they will dry out, but they are useful for observing qualities such as color, movement, or behavior that cannot be observed in dead, preserved materials.

1. Obtain a microscope slide and coverslip
2. Place a small piece of hair or a cut out letter on the slide and add a few drops of water to the slide
3. Touch the coverslip to one edge of the drop, and gently lower the coverslip until it covers the sample.
4. If you have been careful, the slide will not have any bubbles. If not you will see circles of various sizes with very dark edges when you look at your sample. If there is a lot of bubbles clean off the slide and try again.
5. Practice this technique several times, and draw a picture of your best mount before you proceed.

DRAW YOUR BEST MOUNT HERE:

B. Onion Cells

The outer "skin" of the onion is ideal for cell study because it is composed of single layers of cells. As you study these cells, you are looking at functioning units of living materials.

1. Cut an onion lengthwise. Remove a thick scale and peel some of the transparent tissue from the inner surface.
2. Place a small square of the tissue on a slide and add a drop of Iodine stain to the slide.
3. Add a coverslip examine a number of cells under under the microscope using LOW POWER.

a. What is the shape of the cells ?

b. Are all the cell similar in shape ?

4. Choose one cell that is clear and switch to **HIGH POWER** objective. Draw the onion cells under high power. Label the following parts: cell wall, nucleus, nucleolus, nuclear membrane

C. Human Cheek Cells (animal cells)

In this section you will examine the cell structure of human epithelial (cheek) cells. Note the differences between these animals cells and the green plants cells you will observe in the next section.

1. Use a clean toothpick to scrape the inside of your cheek gently.
2. Stir the scrapings into a drop of tap water and add a drop of Methylene Blue stain. Add a coverslip.
3. View the cell under low power and locate some of the cells that have spread out rather than bunched up.

The cells you are looking for are pale blue and have a very dark nucleus. You may see some that are folded over so that you can see how flat they are

4. Switch to high power and take a closer look at one of the cells

a. Describe the shape of the cheek cells

b. How do you think their shape is relate to their function ?

b. In the space provided draw a single cheek cell under high power. Label the following structures: **cell membrane, cytoplasm, and the nucleus.**

D. Elodea (plant) cells

Elodea is a common water plant that is green because it contains the pigment chlorophyll. In p
photosynthesis this pigment absorbs light and converts it into chemical energy.

1. Prepare a wet mount of the Elodea leaf. Use the whole leaf.
2. Observe the leaf under low power of the microscope.
3. Then select a portion of the leaf where the cells are particularly distinct. Center this portion in the middle of the field of view.
4. Bring it into focus under high power. Use the fine focus knob to observe cells at various depths.
5. Observe the small, oval, green bodies that appear in the cells. These are chloroplasts. As you observe the chloroplasts, watch carefully for chloroplast movement. It may require several minutes of observation.

a. Are any of the chloroplast moving ?

b. If you see movement are all the chloroplast moving in the same direction?

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c. In what way do cheek cells differ from Elodea cells ?

6. Draw some of the cells of an Elodea leaf in the space provided. Use arrows to indicate the direction of the chloroplast movement. Label the following structures: **cell wall, chloroplast, cytoplasm, nucleus.**