ONLINE 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:

- observe a variety of living and once living materials under the microscope.
 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

Website: https://www1.udel.edu/biology/ketcham/microscope/scope.html

PROCEDURE

- A. Tour of how to use the microscope.
 - 1. Open above website and enable flash player on your browser.
 - 2. Click on the arrow that says "start tour". It is very important that you go through the tour before beginning with the slides.
 - 3. Complete all steps and instruction, make sure everything on the list is checked before moving on.
- B. Onion Cells (plant cell)

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. Switch views where you can see the entire microscope.
- 2. Choose the onion root tip cell slide (hover over slides for the name to appear).
- 3. Make sure to center the red circle in your view and increase power to 40 to answer questions below.
 - a. What is the shape of the cells?
 - b. Are all the cells similar in shape?

4. Choose one onion cell that is clear and switch to **HIGH POWER (100)** objective. Draw the onion cells under high power. Label the following parts: <u>cell wall</u>,

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. Switch view so you can see the entire microscope and set the power to 4.
- 2. Find the cheek cell slide and click it.
- 3. Set it so that the cell is in the middle of the light. Make sure the tray is all the way up.
- 4. Switch views so that you are looking through the microscope. Find the cells and adjust your focus before increasing the power.
 - a. 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
 - b. Switch to high power (40) and take a closer look at one of the cells. You will have to adjust the fine focus each time you increase power. Answer questions below.
- 5. Describe the shape of the cheek cells.
- 6. How do you think their shape is relate to their function?
- Increase the power to 100 on a single cell. You may need to adjust the amount of light and focus. In the space provided draw a single cheek cell under high power. Label the following structures: cell membrane, cytoplasm, and the nucleus. You can use the draw program in google docs or paint on your computer to make the drawing.

D. Elodea (plant) cells

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

energy.

Elodea Leaf: https://makeagif.com/i/Rv6yte

- 1. Click the above website (ctrl + click) to see the GIF of an elodea leaf.
- 2. 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?
 - c. In what way do cheek cells differ from Elodea cells?
 - Draw some of the cells of an <u>Elodea</u> leaf in the space provided. Use arrows to indicate the direction of the chloroplast movement. Label the following structures: **cell wall, chloroplast, cytoplasm, nucleus.** You can use the draw tool in google docs or another program to draw the cell. Insert your picture below.