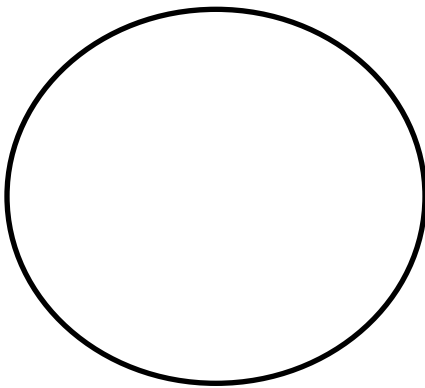


## Cell Comparison Lab

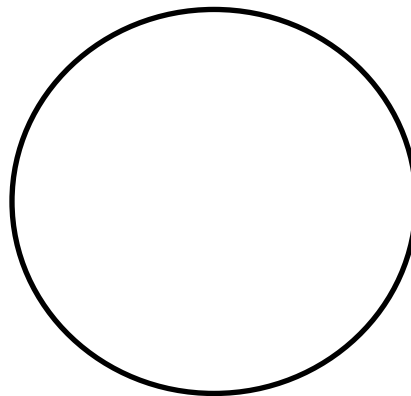
This laboratory investigation will focus on examining three different cells under the microscope: **human cheek cells, onion cells, and Elodea leaf cells** (an aquatic plant). Each cell will be viewed using three different magnifications. The purpose of this investigation is to compare and contrast the differences between the three cells. One of the cells, the human cheek cell is a eukaryotic animal cell, while the other two, onion and Elodea are eukaryotic plant cells.

**Predicting** what will happen in a laboratory investigation is also an important aspect prior to the start of an experiment. Scientists normally ask a question then state a prediction, and then follow up with an experiment in order to test their initial question/prediction/hypothesis.

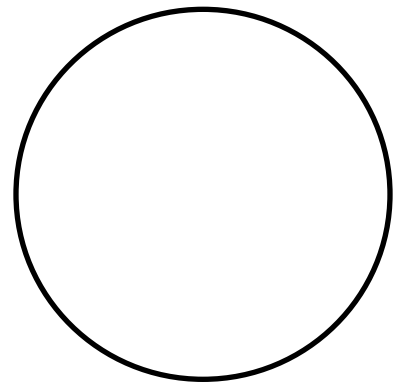
For this laboratory investigation I would like you to predict what YOU THINK all three cells will look like under the microscope based on information you already know about animal and plant cells. I would like you to draw them in the spaces provided below and label your drawing. These do not have to be in color.



Human Cheek Cell



Onion Cell



Elodea Leaf Cell

## **Materials**

Microscope  
Microscope slides  
Coverslips  
Water  
Iodine  
Methylene Blue

Droppers  
Toothpicks  
Tweezers/Forceps  
Onion  
Elodea Leaf

## **Procedure**

### *A. Data Collection*

1. You will be examining three samples under the microscope. For each sample, you must draw what you see at three magnification powers (40x, 100x, and 400x).
2. You will record your data on the data sheet using the circles to draw your samples.

### *B. Examine Human Cheek Cells*

1. Take a slide and place 1 drop of methylene blue on the center of the slide.
2. Take a toothpick and *gently* scrape the inside of your mouth
3. Place the toothpick in the methylene blue on the slide and *gently* swirl.
4. Examine the slide under the microscope at each magnification power (40x, 100x, 400x).
5. Carefully draw what you see in your field of view on your data sheet.
6. Be sure to label all structures and organelles that you can see.

### *C. Examine Onion Cells*

1. Carefully peel a sheet of onion off of the onion. Be sure that the sheet is as thin as possible.
2. Carefully place the sheet on the center of a microscope slide. Be sure that the sheet of onion cells is not folded (it must be flat).
3. Place one drop of iodine on the sheet of onion cells.
4. Place a coverslip over the onion cells.
5. Examine the slide under the microscope at each magnification power (40x, 100x, 400x).
6. Carefully draw what you see in your field of view on your data sheet.
7. Be sure to label all structures and organelles that you can see.

### *D. Examine Elodea Leaf Cells*

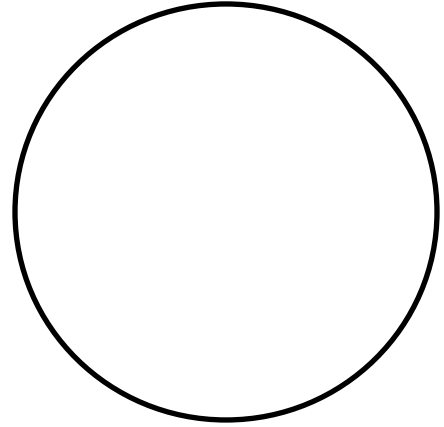
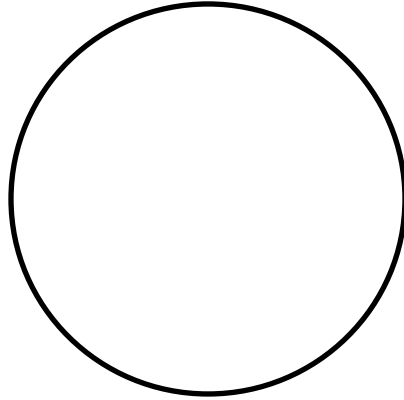
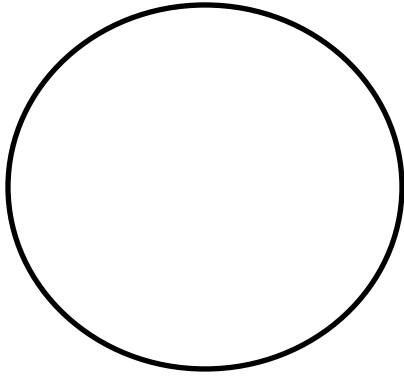
1. See me to obtain a single Elodea plant leaf.
2. Place the Elodea leaf on a microscope slide.
3. Add one drop of water to the Elodea leaf.
4. Place a coverslip over the Elodea leaf.
5. Examine the slide under the microscope at each magnification power (40x, 100x, 400x).
6. Carefully draw what you see in your field of view on your data sheet.
7. Be sure to label all structures and organelles that you can see.

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Block: \_\_\_\_\_

Biology – Mrs. Flannery

## Cell Comparison Lab Data Sheet

### Human Cheek Cells

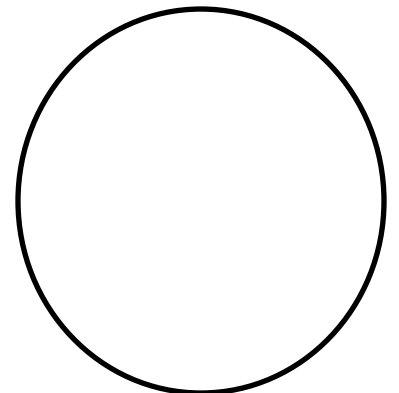
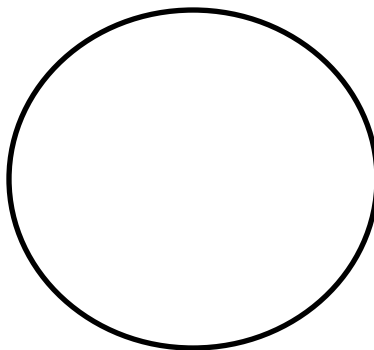
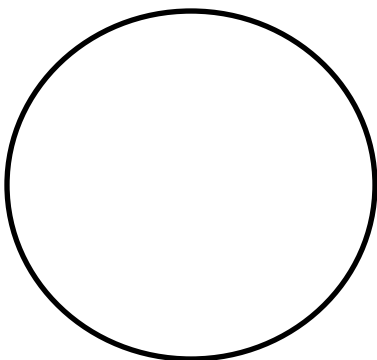


Magnification Power

Magnification Power

Magnification Power

### Onion Cells

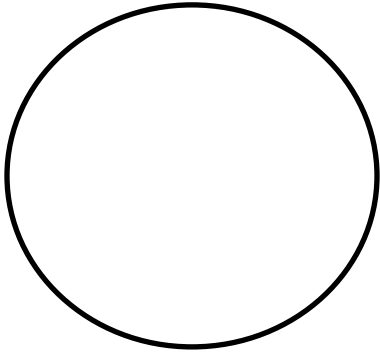


Magnification Power

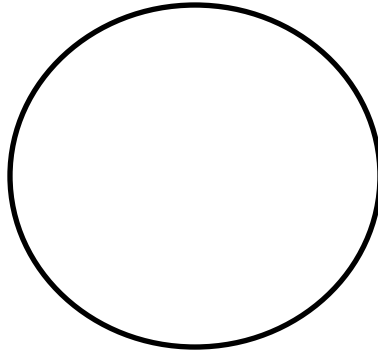
Magnification Power

Magnification Power

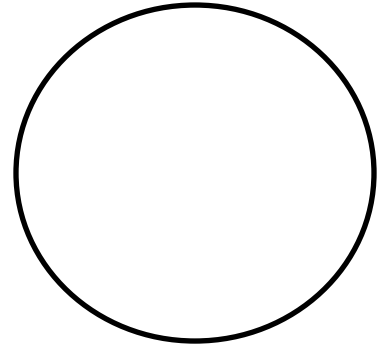
## Elodia Leaf Cells



Magnification Power



Magnification Power



Magnification Power

### **Results/Data**

Your results/data for this lab will consist of the nine drawings you made of the images you saw under the microscope. Be sure that ALL of your drawings include the following:

- Appropriate color (**not optional**)
- Image magnification is listed.
- All visible cell structures are labeled.

**Analysis Questions:** These questions must be answered using complete sentences!! TTQA

**Each Question is worth 4 points.**

1. Look at your prediction for the human cheek cells.
  - a. Was your prediction (drawing) accurate or inaccurate? Explain.  
\_\_\_\_\_  
\_\_\_\_\_
  - b. Did you draw more structures than you could see?  
\_\_\_\_\_  
\_\_\_\_\_
  - c. Why do you think that only the cell membrane and the nucleus were visible?  
\_\_\_\_\_  
\_\_\_\_\_
  - d. Are the other organelles present or do your cheek cells only contain a nucleus and cell membrane? Explain your answer.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. What was the major difference between Elodea leaves and onion cells?

---

---

3. Why do you think that onion cells do not contain chloroplasts?

---

---

4. If you look at an elodea leaf with the naked eye it appears solid green.

a. Are the elodea leaf cells solid green?

---

---

b. What gives an elodea leaf its green color?

---

---

c. Why can't our eyes see the spaces between chloroplasts?

---

---