

CHEEK AND ONION CELL LAB

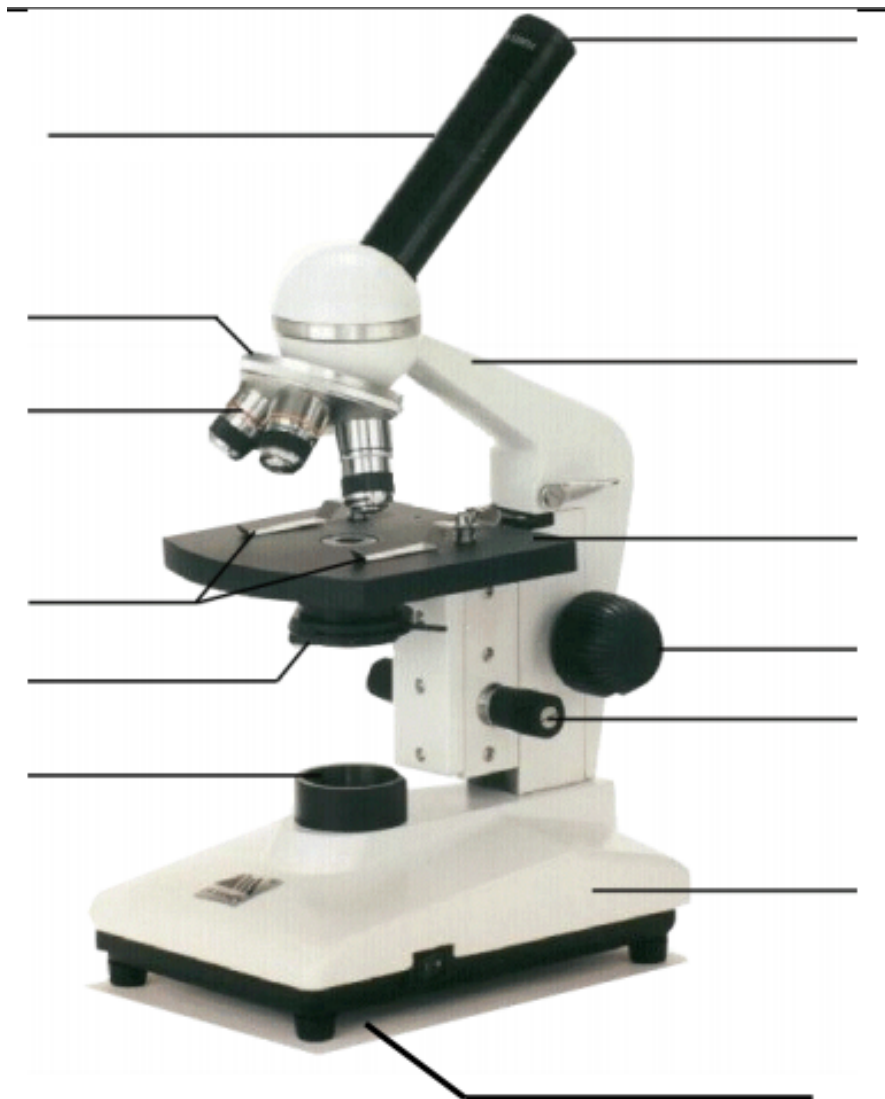
Background

Today for this laboratory we will be using a compound light microscope. A microscope, from the Greek for “small instrument for viewing,” is an instrument used to view objects that are too small to be easily seen with just our eyes – such as human and plant cells.

Before We Start

Take a moment to label the parts of a compound light microscope.

Arm	Ocular Lens	Power Switch	Objective Lenses
Base	Revolving Nose Piece	Course Focus Knob	Fine Focus Knob
Iris Diaphragm	Projection Lens	Stage	Stage Clips



Introduction:

Many things that are viewed using a microscope, particularly cells, can appear quite transparent under the microscope. The internal parts of the cells, the organelles, are so transparent that they are often difficult to see. Biologists have developed a number of stains that help them see the cells and their organelles by adding color to their transparent parts. Today we will be using methylene blue.

Materials:

- Microscope
- Eyedropper
- 2 flat slides
- 2 cover slips
- Toothpick
- Cheek cells
- Onion cells
- Stain (methylene blue)
- Paper towel

Procedures:

1. There are two different stations in this lab. You do not need to visit them in any particular order, but the directions follow for each.

2. **Cheek Cell Station:**
 - a) Place a drop of water onto the middle of a glass slide.

 - b) Use a toothpick to lightly scrape the inside of your cheek, and then roll the toothpick around in the drop of water. (Don't worry; these cells are constantly being shed from your mouth so they will not be missed!) You must IMMEDIATELY throw the toothpick away in the trash when you are done.

 - c) Add ONE drop of the stain methylene blue (this will help stain the cells so you can see them) and cover the liquid on the slide with a cover slip.

 - d) Place the slide on the microscope. Use the Scanning/Low power/ 4x objective to focus, look at the stained slide under the microscope. You probably will not see the cells at this power. Sketch what you see in your lab packet and place the magnification next to the drawing.

 - e) Switch to low power. Cells should be visible, but they will be small and look like nearly clear blobs (stained cells will be easier to see). Solid dark objects are probably not cellular. Sketch what you see in your lab packet.

 - f) Once you think you have located a cell, switch to a high power and refocus. Sketch what you see in your lab packet.

 - g) Clean up after yourself before you move to the next lab station.

3. Onion Lab Station:

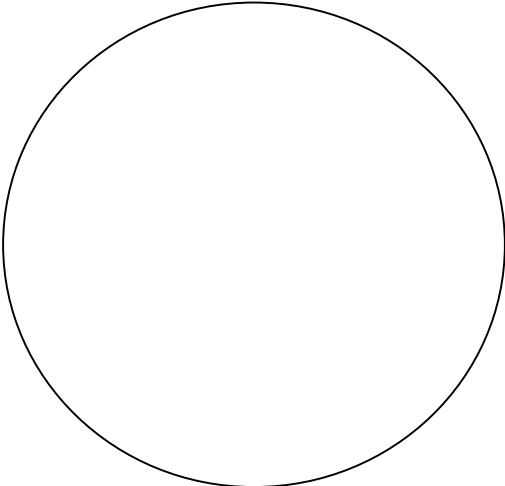
- a) Get a glass slide and cover slip for yourself and make sure they are both thoroughly clean.
- b) Using one of the cut sections of onions at your station, remove the single layer of epidermal cells from the inner (concave) side of the scale leaf (The thinner the better).
- c) Place the single layer of onion on a glass slide. Make sure that you do not fold it over or wrinkle it.
- d) Place a drop of iodine stain on your onion tissue.
- e) Put the cover slip on the stained tissue and gently tap out any air bubbles.
- f) Observe the cells under 4x, 10x, and 40x. Sketch what you see in your lab packet.
- g) Clean up after yourself before you move on to the next lab station.

DATA:

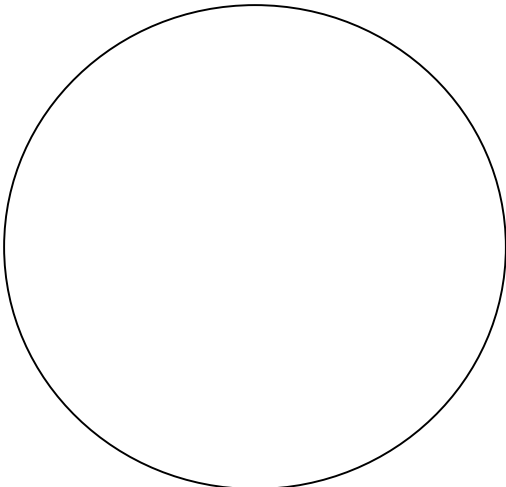
CHEEK CELLS

In the circles below, draw what you see through the microscope. On the HIGH magnification, **label the nucleus, cytoplasm, and cell membrane**. Draw your cells to scale and include the magnification. Underneath each circle, **write down anything you observed** about your cheek cells.

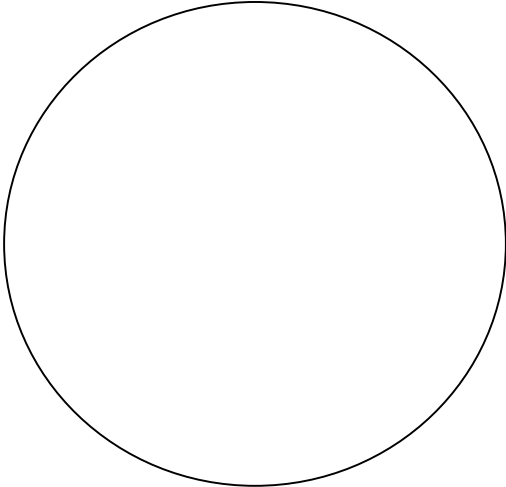
Scanning (____x)



Low (____x)



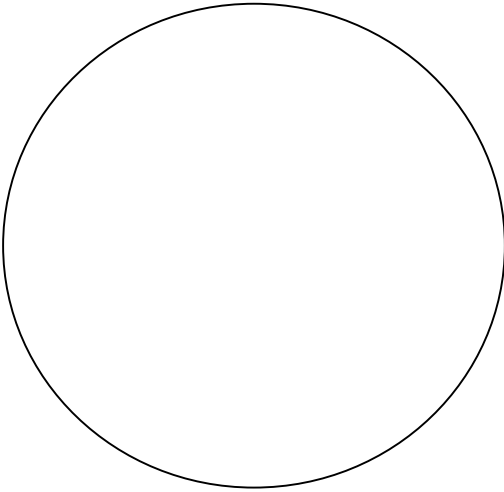
High (____x)



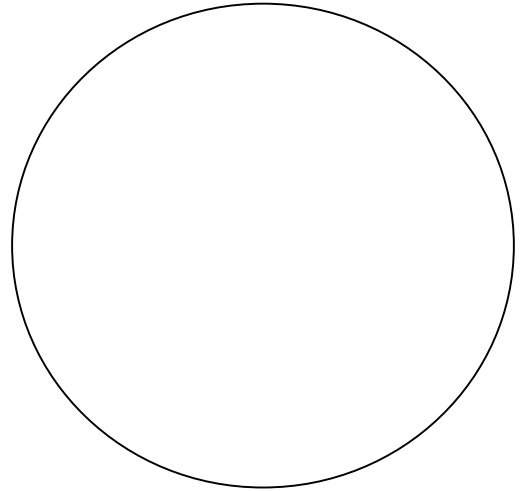
ONION CELLS

In the circles below, draw what you see through the microscope. On the HIGH magnification, label the nucleus, cytoplasm, and cell wall. Draw your cells to scale and include the magnification. Underneath each circle, **write down anything you observed** about the onion cells.

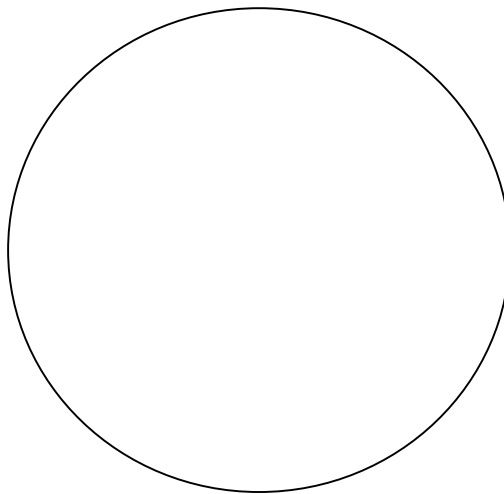
Scanning (_____ x)



Low (_____ x)



High (_____ x)



Analysis:

The light microscope used in this lab is not powerful enough to view other organelles in the cheek cell. Fill out the table below to show what we could and could not see through our microscope.

Cheek Cells

What Organelles COULD be Seen?	What Organelles COULD NOT be Seen?

Onion Cells

What Organelles COULD be Seen?	What Organelles COULD NOT be Seen?

Conclusion:

In complete sentences, answer the following questions.

1. What type of cell did the cheek cell represent? What about the onion cell?
2. What were the shapes of the two different types of cells?
3. Why did we have to stain the cells?