

Name:

Date:

Period:

Cells: Living Cells Lab

Introduction

Cells are the unit of structure and function in all organisms. All cells are similar but there are differences in structure (how the cell is put together) because of the cell's function (its job). In this skills lab you will observe two types of cells; one from your mouth and the other a prepared slide which your teacher has chosen. Observe the structure of these cells and relate it to their function.

Prelab Questions:

Based on what you know about plant and animal cells, which organelles and structures would you expect to find? Fill in the chart below to demonstrate your understanding.

	cell membrane	cell wall	cytoplasm	nucleus	mitochondria	centrioles	chloroplasts	vacuoles
onion								
Elodea								
cheek								
Animal sperm or egg cells								

Hypothesis:

This is a skill based lab. There are no hypotheses to make.

Purpose:

Read through the entire lab and write your own purpose. Include the following sentence prompts:

1. The purpose of this lab is to...

2. We will do this by ...

Part A: Animal Cell Procedure

Cheek Cells Read your data section for required sketches and observations

1. Obtain a cheek cell sample. Your teacher will demonstrate how to do this safely.
2. Place sample on a microscope slide with a drop of water (if needed) then place a cover slip on it.
3. Stain the slide with Methylene or Toulodine Blue. Place one drop of stain on edge of cover slip and a piece of paper towel on the other side.
4. Observe first under low power then switch to high power.
5. Read your data section for required sketches and observations.

Part B: Plant Cell Procedure

Onion Cells Read your data section for required sketches and observations.

1. Hold an onion quarter so that the concave surface faces you. Snap it backwards to separate the transparent, paper thin layer of cells
2. Peel off a small section and lay it flat on a microscope slide
3. Place a drop of Lugol's iodine solution at one edge of the cover slip. Touch the tip of a piece of paper towel to the opposite edge of the cover slip.
4. Focus again under low power.
5. Focus under high power.

Elodea/ Anacharis (fresh water plant)

Read your data section for required sketches and observations.

6. Remove a young leaf from the tip of an elodea plant. Place it bottom side up on a clean slide. Add a drop of water & place a cover slip over it.
7. Focus slide under low power. Try to find an area (try the edge of the leaf) with few layers so you can focus clearly on a group of cells. Observe the cells.
8. Focus slide under high power. Observe an average cell.
9. Remove slide from microscope
10. Place a drop of 5% salt solution at one edge of cover slip. Touch the tip of a piece of paper towel to the opposite edge of the cover slip.
11. Focus under high power.

Data

Create a data section by leaving room for each of the requested sketches and observations.

Make sure you LABEL EACH SKETCH BY CELL TYPE AND MAGNIFICATION!!!

1. Cheek Cell, Low Power
 - sketch your cheek cell slide. There should be many cells on this slide.

2. Cheek Cell Medium or High Power (based on your microscope's resolution)
 - Sketch your cheek cell slide. There should only be a few cells on this slide.
 - LABEL the cell membrane, nucleus, cytoplasm, and endoplasmic reticulum.

3. Onion Cell, Low Power

- Sketch your onion cells. There should be many cells on this slide.

4. Onion Cell, High Power

- Sketch your onion cells. There will still be many cells, but fewer.
- LABEL the cell wall, cell membrane, vacuoles, cytoplasm and nucleus

5. Elodea Cell, high power before adding salt

- LABEL the cell wall, cell membrane, cytoplasm, nucleus and chloroplasts.

6. Elodea Cell, high power after adding salt.

- LABEL the cell wall, cell membrane, cytoplasm, nucleus and chloroplasts.
- Make an observation about how salt water changed the cell:

Analysis

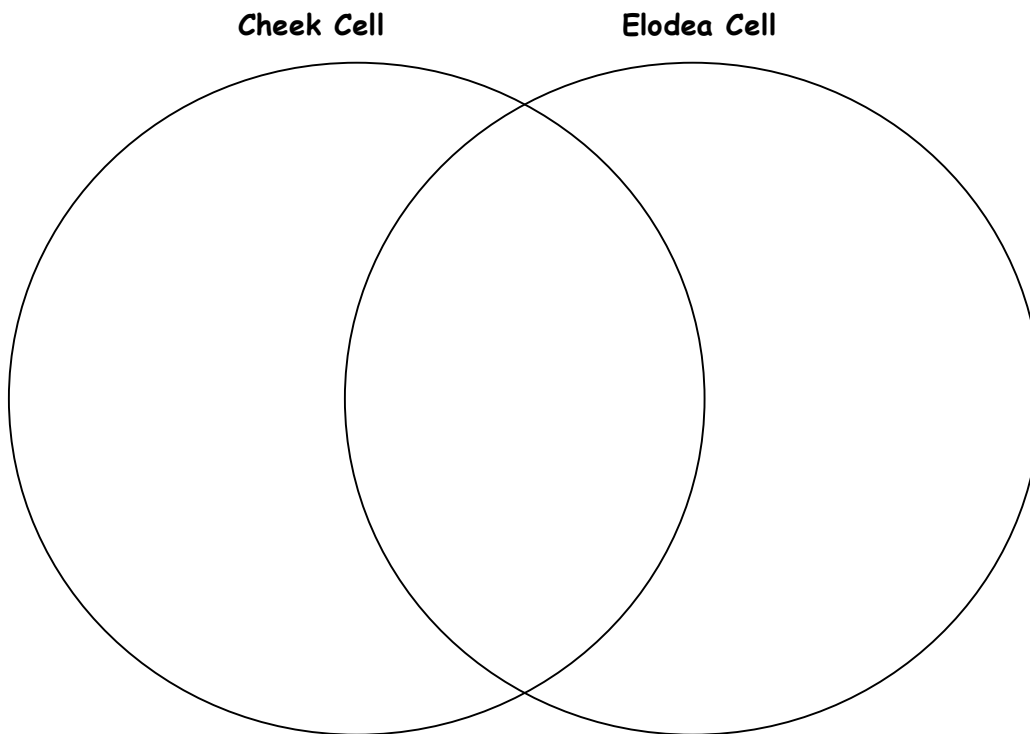
1. Organelles are not always visible under a light microscope. Which organelles could you NOT see for each cell type?

Animal

Plant

2. Why are animal cells more rounded than plant cells?

3. Would you expect all human cells to look like cheek cells? Why or why not?
4. Remember that iodine is an indicator for starch. Why did we use iodine on the onion cells?
5. Describe what happened to the elodea cell in fresh water and then in salt solution. What do you think happened?
6. Compare & contrast the cheek cell with the elodea cell.



Conclusion

A scientific conclusion is an objective discussion of the results. By the end of the year, you will be expected to write your own conclusions. For the first few labs, please complete these sentence prompts to write your conclusion. Write as a complete paragraph and attach to this lab packet.

- The purpose of this lab was to...
- The specific skills that we learned were
- We observed that animal cells were...
- We observed that plant cells were....
- Some of the differences between plant and animal cells are...
- The most challenging thing about using a microscope for me is...