

Directions: There are three parts to this lab. In Part I, you will be examining prepared slides of various cells and cell organelles. In Part II, you will be mounting and examining plant cells. Finally, in Part III, you will be collecting and examining your own cheek cells. Following this lab, you will complete a lab report in your lab notebooks combining all of this information.

### Part I: Prepared Slides

Procedure:

1. Obtain the following slides: mitochondria, Golgi complex, generalized animal cell, generalized plant cell, typical bacteria, saccharomyces, and at least one additional bacteria of your choosing (be sure to record the names of the bacteria you choose).
2. Examine the slides, using proper microscopic techniques, and create a detailed drawing of what you see.
3. Label the visible parts of each specimen. For eukaryotic cells at minimum this should include: cell membrane, nucleus, and cell wall (where present). For prokaryotic cells, this should include the cell membrane and nucleoid.

Questions for Part I:

1. How are bacteria cells similar to the plant and animal cells you observed?
2. How do the bacteria cells differ from the animal and plant cells you observed?
3. Research the bacteria you selected and provide some information about it.

### Part II: Plant Cells

Procedure:

1. Create a wet mount of onion cells by removing a small piece of the onion skin.
2. Sketch the onion cell under all three magnifications and label the cell wall, cell membrane, cytoplasm, and nucleus in each picture.
3. Estimate the number of cells you see under medium and high magnification.
4. Predict what will happen when a salt solution is added to the slide.
5. Add the salt solution to one end of the coverslip, then place a piece of paper towel on the opposite end to draw the salt solution under the coverslip.
6. Repeat steps 1-5 for an Elodea leaf. Label any additional structures not found in onion cells in your drawings.

Questions for Part II:

1. What is the function of a chloroplast? Why were they not seen in the onion cells?
2. What are two structures found in plant cells but not in animal cells and what are their functions?
3. What are three structures found in both plant and animal cells and what are their functions?
4. Describe the shape and location of the chloroplasts.
5. Which type of cell was smaller: onion cells or Elodea cells?
6. Construct a Venn Diagram comparing and contrasting onion and Elodea cells.

### Part III: Animal Cells

Procedure:

1. Carefully scrape the inside of your cheek with a flat toothpick.
2. Smear the toothpick on a glass slide.
3. Put one drop of methylene blue on the smear of cheek cells and apply a coverslip. (Use care adding methylene blue. It will stain skin and clothes.)
4. Sketch the cells under all three magnifications and label the cell membrane, cytoplasm, and nucleus.
5. Be sure to carefully clean up all lab equipment.

Questions for Part III:

1. What is the Cell Theory?
2. Why is the methylene blue necessary?
3. List two organelles that were not visible but should have been in the cheek cells and describe their function.
4. Is a cheek cell prokaryotic or eukaryotic? How do you know?
5. The mouth is the first site of chemical digestion in humans. Your saliva starts the process of breaking down the food you eat. Keeping this in mind, what organelle do you think would be numerous inside the cells of your mouth? Explain your reasoning.