CELLS: The smallest living things...

**Purpose:** To gain familiarity with cell structures and to learn the differences between plant cells and animal cells. You have already learned about the parts of these cells in class; in this lab we will observe celery cells (plant cells) and human cheek cells (animal cells) under the microscope. **Remember that whenever you use the microscope you always start with the _______ X objective** (fill in the blank).

**Background:**
You are composed of cells. Cells are the basic units of both structure and function in all living things. Cells contain organelles that have very specific functions, similar to the organs in your body. Plant cells differ from animal cells in a few ways. For structural support, plant cells have a rigid cell wall surrounding the membrane. Because animal cells lack this cell wall, they have a cytoskeleton, a framework of proteins that supports the cell and gives it shape. Additionally, plant cells contain chloroplasts, which capture light energy from the sun and manufacture food. Chloroplasts are also what make plants green.

**Materials:** Microscope, glass slides, cover slips, celery, safranin, toothpicks, methylene blue, water, eye droppers

**Procedures:**
1. Peel a translucent piece of tissue from the celery (the thinner the better).
2. Use a razor to cut off a small piece from your peeling and place it in the center of a microscope slide.
3. Add one drop of safranin and one drop of water to your celery piece on the slide.
4. Place a cover slip over your slide (lower the cover slip from left to right).
   You have now created a wet mount of the celery.
5. Make sure your microscope is on the LOWEST objective, then place your prepared slide onto the microscope stage for viewing.
6. Use the coarse and then the fine adjustment knobs to bring the celery cells into focus.
7. Once the cells are in focus, you can move to the higher power objective.
   Use the fine adjustment knob to bring the cells into focus again.

***Remember to NEVER use the coarse adjustment know when using the higher power objective!***
8. Under **Observations**, draw the plant cells that you see at the higher power objective. Label your drawing with the correct magnification and as many cell structures as you can identify.

9. When you are done, return the objective lens to the lowest power and remove your microscope slide from the stage.

10. Get a clean glass slide and use an eyedropper to place one drop of water onto the center of it.

11. Decide on one person in your group to donate their cheek cells.

12. That person will GENTLY scrape the inside lining of their cheek with a toothpick. *Be careful not to cut the inside of your cheek!*

13. After collecting the cheek cells, stir the end of the toothpick in the water on your microscope slide. Some of the cheek cells will fall off of the toothpick into the water.

14. Add a drop of methylene blue to the drop of water with the cheek cells. *Be careful not to touch the end of the dropper to the slide!*

15. Place a cover slip over your cheek cells on the slide.

16. Put your new slide on the stage and use the coarse and then the fine adjustment knobs to bring the cheek cells into focus.

17. Once the cells are in focus, move to the higher power objective. Use the fine adjustment knob to bring the cells into focus again.

18. Under **Observations**, draw the animal cells that you see at the higher power objective. Label your drawing with the correct magnification and as many cell structures as you can identify.

19. Dispose of the slides as instructed and clean up your lab station.

**Observations and Data:**

- Drawing of celery cells (label magnification and any cell structures)
- Drawing of cheek cells (label magnification and any cell structures)

**Analysis Questions:**

1. Which of the following structure do **PLANT** cells have: nucleus, cell wall, chloroplasts, cytoplasm, cell membrane?

2. Which of the following structure do **ANIMAL** cells have: nucleus, cell wall, chloroplasts, cytoplasm, cell membrane?

3. How would you describe the shape of the plant cells? Of the animal cells?

4. Name two structures that are in plant cells but are NOT in animal cells.