Bio I
Lab: Plasmolysis

Purpose
In this lab you will be looking at how different solutions affect *Elodea* and the structure of onion cells. You will be comparing the effects of two solutions. The first consists of distilled water. The second solution is a concentration of 15% salt solution (NaCl). Using a microscope, you will be visually inspecting the cells to look for how each of these solutions affects the structure. The experiment will demonstrate the process of plasmolysis.

Materials

Red onion	pippette
Elodea	slide
Distilled water	cover slip
Large beaker	forceps
2 small beakers	microscope
15% solution of NaCl	paper towels

Procedure: Experiment #1-Onion Cells
1. Using your red onion section and forceps, remove a small section of tissue from the epidermis of the onion on the white side. Once removed, the epidermis is thin and almost transparent.
2. After you have removed a small section of the epidermis, place it on the microscope slide, add a drop of water, and place a cover slip over the top.
3. Observe the onion cells under the microscope, starting with low power and working up to high power. Do not move the slide. **Draw a diagram of what you see at high power**.
4. Measure out 50mL of distilled water into one of the small beakers. Distilled water can be found on the edge of the middle table.
5. Fill the second beaker with 50mL of the salt solution (NaCl) which can be found on the middle table.
6. Glance in the microscope and make sure that the onion cell in visible and in focus.
7. Place several drops of the salt solution on the edge of the coverslip. .
8. Immediately observe the cells. You may need to refocus the microscope.
9. Watch the cells for approximately 2-3 minutes. **Draw a picture and describe what you see happening.**
10. Next, touch the corner of a paper towel to the edge of the cover slip. This will draw away the salt solution.
11. Using the pipette, apply several drops of distilled water to the edge of the coverslip. Apply the paper towel again to the edge of the coverslip and draw up the solution.
12. Reapply the distilled water to the edge of the coverslip. Immediately observe the cells.
13. Watch the cells for approximately 2-3 minutes. **Draw a picture and describe what you see happening.**

Procedure: Experiment #2-*Elodea*
1. Prepare a wet mount of an *Elodea* leaf.
2. Repeat steps listed above #3-13 for the *Elodea*.

Analysis
1. Explain and diagram the difference between the following solutions: hypertonic, hypotonic and isotonic.
2. In your own words, describe the process of plasmolysis.
3. Plasmolysis is an explained by which type of solution: isotonic, hypertonic or hypotonic. Explain.
4. How did the salt solution affect the structure of the onion cell? The *Elodea*? Give a reason for why this occurred.
5. In the winter, grass often dies near the roads that have been covered in salt to remove the ice. Using what you have learned in this lab, what do you think is the reason the grass dies?