

Lab: Cell Transport

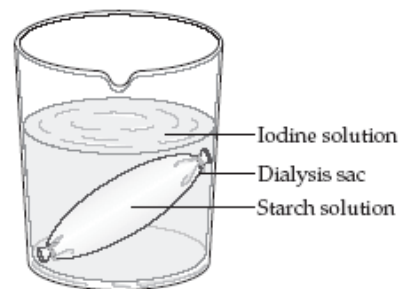
HONORS BIOLOGY: UNIT 2

PURPOSE: In this lab you will be looking at the process of **diffusion** and the process of **osmosis**. In diffusion the solute (molecules) moves from a high concentration to a low concentration. A starch solution will be placed in dialysis tubing; this tubing is composed of a membrane synthesized of cellulose and is selectively permeable like a cell membrane. In osmosis the solvent (water) moves from a high concentration to a low concentration. A plant cell will be exposed to an isotonic, hypertonic, and hypotonic solution; you will observe and record the changes in the large central vacuole.

PROCEDURE:

PART 1- Dialysis Tubing

1. Soak dialysis tubing for 3 minutes in water.
2. After 3 minutes, rub the tubing between your fingers to open it up.
3. Fold 1 cm of the tubing over then tie the end of the tubing closed with a cotton string, be sure it is tight.
4. Add 10ml of the cornstarch solution using the pipette and pipette pump.
5. Seal the other end of the tubing as you did before with a cotton string.
6. In a 600 ml beaker add 400 ml of tap water and 10 drops of potassium iodine.
7. Seal the tubing on the other side with cotton string, be sure to tie it down so that there is not a lot of air in the bag.
8. Check the bag every 15 minutes to see if any cell movement has taken place



PART II- The Elodea Leaf- The leaf of the Elodea is only two cells thick so it is easy for you to observe a single cell.

1. Make a wet mount of a single Elodea leaf using tap water. Draw the leaf on high power and label all the structures you can see.

ANALYSIS QUESTIONS:

1. Describe what happened to the starch solution in the dialysis tubing, and why the solution in the beaker did not change.
2. Differentiate between the impact of the hypotonic and hypertonic solution on the large central vacuole using correct terminology. *Be sure to include the change of turgor pressure in the large central vacuole.*
3. In the experiment with the Elodea, what is the final state the cell is trying to reach? Explain the movement of water after that state has been reached.
4. What two modifications in this lab could have been done to increase the rate of osmosis?

5. Chefs know that it is better to toss a green salad right before you eat it; however, it is best to mix the dressing into the coleslaw several hours before you eat it. Explain why the difference exists using terminology relative to the plant cell portion of this lab.