

## Membrane Lab

**Introduction:** The human body is about as salty as seawater. If we take seawater as an example of a solution, the salt is called the *solute* and the water is the *solvent*. Osmosis is the movement of water across a membrane from an area of lower solute concentration to an area of higher solute concentration. Cells tend to lose water (their solvent) in *hypertonic* environments (where there are more solutes outside than inside the cell) and gain water in *hypotonic* environments (where there are fewer solutes outside than inside the cell). When solute concentrations are the same on both sides of the cell, there is no net water movement, and the cell is said to be in an *isotonic* environment.

**Purpose:** To investigate the effects of a hypertonic solution on the cells of an *Elodea* leaf.

### Procedure:

1. Make a wet mount of the *Elodea* leaf.
2. Examine the cells under 100X magnification. When you have a clear view of several cells, switch to 400X. Make a labeled drawing.
3. Place a drop of the 5% Sodium Chloride solution to the edge of your cover slip while placing a small piece of paper towel along the opposite edge of the cover slip. The paper should draw out the water and draw in the salt solution.
4. Observe the effects of the solution on the *Elodea* cells. Make a properly labeled, colored drawing of the cells' appearance.
5. Replace the sodium chloride solution with distilled water in the same way that the salt solution was added. Make a properly labeled drawing of the cells' appearance.

### Questions for Discussion:

1. Why do grocery storeowners spray fresh fruits and vegetables with water?
2. Roads are sometimes salted to melt ice. What does this do to plants around the roadside and why?
3. If a shipwrecked crew drinks seawater, they will probably die. Why?
4. If a bowl of fresh strawberries is sprinkled with sugar, a few minutes later the berries will be covered with juice. Why?
5. Why can't we save water by using seawater to irrigate our crops?
6. Why does salted popcorn dry your lips?
7. Saltwater fish are hypotonic to their surroundings while freshwater fish are hypertonic to their surroundings. What must each fish do with fluids in order to compensate for the difference in salinity between the body and the surrounding environment?