NAME:_____ DATE: _____ Prd: ____

Evidence 4: Homeostasis

Option 2: On line Lab

Online Build a Plasma Membrane

Directions: Go to the following site http://tinyurl.com/zuzd7d8 or you may click the link on www.biologybynapier.com "Build Plasma Membrane".

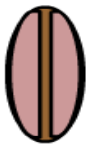
1. Provide two different biomolecules found in the plasma membrane and describe their roles.

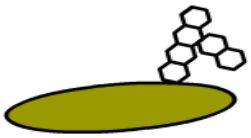
2. List 3 different types of proteins found within the plasma membrane.

3. What type of molecules can travel straight through the membrane?
   What type of molecules must use the help of a protein?

4. Draw the picture of a phospholipid bilayer in the box below and label the hydrophilic and hydrophobic region. Also label the polar head and non-polar fatty acid tails.

5. Under the picture, name the different structures of the plasma membrane and provide their function.




Name _____ _____ _____ _____ _____

Function _____ _____ _____ _____ _____

_____ _____ _____ _____ _____

Osmosis Lab

A cell membrane permits some materials to pass through while keeping other materials out. Such a membrane is called a selectively permeable membrane. Under normal conditions, water constantly passes in and out of this membrane. This diffusion of water through a selectively permeable membrane is called osmosis. Like other substances, water diffuses from a region of higher concentration to a region of lower concentration. When the transfer of water molecules in and out of a cell reaches the same rate, a state of equilibrium is reached.

If the concentration of water molecules is greater outside a cell, then the solution is hypotonic to the cell. Water will move into the cell by osmosis. The pressure against the inside of the cell membrane will steadily increase. If the pressure becomes great enough, the cell membrane will burst.

A solution is isotonic to the inside of the cell when there is the same concentration of water molecules on the inside and outside of the cell membrane. To maintain equilibrium, water molecules move into and out of the cell at the same rate.
Suppose a living cell is placed in a solution that has a higher salt concentration than the cell has. Such a solution is hypertonic to the cell, because there are more salt ions and fewer water molecules per unit volume outside the cell than inside. Water will move from the region of higher water concentration (inside the cell) to the region of lower water concentration (outside the cell). The selectively permeable membrane does not allow salt ions to pass into the cell. The cell shrinks as the cell loses water.

In this Virtual Lab you will place a red blood cell, an Elodea cell, and a Paramecium in hypotonic, isotonic, and hypertonic solutions. You will examine how and why these cells gain or lose water in the different solutions.

Summarize The Passage Above:

_____
_____
_____
_____
_____

Procedure:

1. Got to the following website
   http://glencoe.com/sites/common_assets/science/virtual_labs/LS03/LS03.html

   (Or go to google and type in Virtual Osmosis Lab. Click on GLENCEO Link)

2. Select one of the three cells pictured at the top of the screen and drag it into one of the beakers.

3. Observe the process of osmosis. Determine whether water, represented by animated blue arrows, moves into, stays in equilibrium, or moves out of the cell. Observe what happens to the shape and size of the cell.

4. Record your observations in the Table.

5. Move the cell to a different beaker or choose a different cell. Observe the process of osmosis again and record your observations in the Table.

6. Repeat this activity with all three cells and all three solutions. Use your Journal to compare your observations.

Data/Observations

Cell Type	Hypotonic Solution	Isotonic Solution	Hypertonic Solution
Red Blood Cells			
Elodea Cells			
Paramecium Cells			

Post lab questions

1. Did water move into the cell or out of the cell while it was surrounded by hypotonic solution?

2. In which direction did the water move through the cell membrane when the cell was surrounded by the hypertonic solution?

3. Compare and contrast what happens to an animal, a plant, and a Paramecium cell in a hypotonic, an isotonic, and a hypertonic solution by completing the table below. Use the terms turgid, plasmolyzed, lysis, crenate where appropriate.

	Animal Cell	Plant Cell	Paramecium Cell
Hypotonic solution			
Isotonic solution			
Hypertonic solution			

4. Could Elodea or Paramecium from a freshwater lake be expected to survive if transplanted into the ocean? Explain.

5. If you were to grill a steak, would it be better to put salt on it before or after you cooked it? Explain why, in terms of osmosis.

6. Why does salad become soggy and wilted when the dressing has been on it for a while? Explain why, in terms of osmosis.

7. An effective way to kill weeds is to pour salt water on the ground around the plants. Explain why the weeds die, using the principles discovered in this Virtual Lab.