

## Cell Boundaries & Transport

### I. Composition of the Cell Membrane & Functions

The cell membrane is also called the \_\_\_\_\_ membrane and is made of a phospholipid \_\_\_\_\_. The phospholipids have a hydrophilic (water attracting) \_\_\_\_\_ and two hydrophobic (water repelling) \_\_\_\_\_. Phospholipids can move \_\_\_\_\_ and allow water and other \_\_\_\_\_ molecules to pass through into or out of the cell. This is known as simple \_\_\_\_\_ because it does not require \_\_\_\_\_ and the water or molecules are moving \_\_\_\_\_ the concentration gradient. **SKETCH AND LABEL a phospholipid coloring the heads red and the tails blue.**

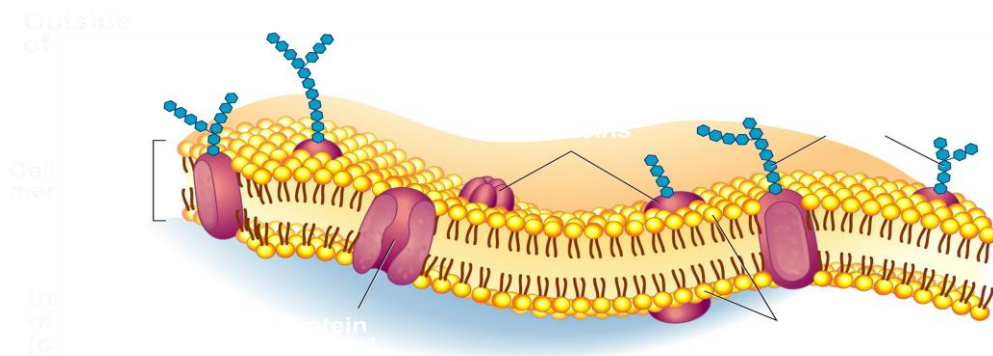
### PHOSPHOLIPID

Another type of lipid in the cell membrane is \_\_\_\_\_ that makes the membrane more fluid. Embedded in the phospholipid bilayer are \_\_\_\_\_ that also aid in diffusion and in cell recognition. Large molecules like \_\_\_\_\_ or carbohydrates use proteins to help move across cell membranes. Some of the membrane proteins have carbohydrate \_\_\_\_\_ attached to help cells in recognize each other and certain molecules.

List 4 functions of the cell or plasma membrane:

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

Correctly identify and label the parts of the cell membrane



## II. Diffusion & Osmosis

Define osmosis. \_\_\_\_\_

In which direction does water move across membranes, with or against the concentration gradient? \_\_\_\_\_

Define these 3 terms:

- a. isotonic- \_\_\_\_\_
- b. hypertonic \_\_\_\_\_
- c. hypotonic \_\_\_\_\_

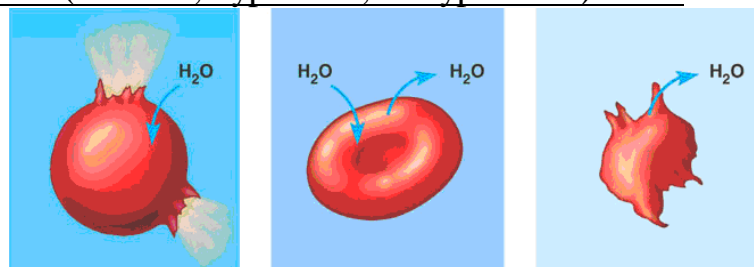
Use arrows to show the direction of water movement into or out of each cell. Color and label the cell in an isotonic environment light blue, the hypotonic environment yellow, and the hypertonic environment light green.



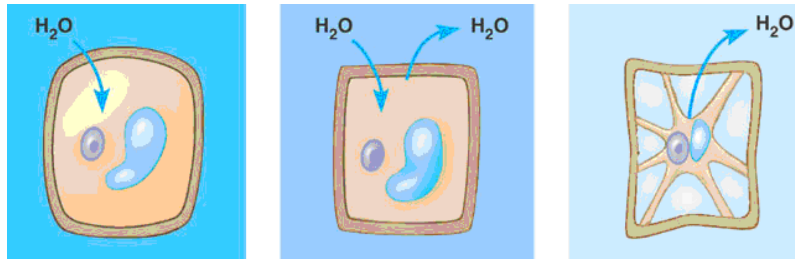
Match the description or picture with the osmotic condition:

- A. Isotonic \_\_\_\_\_ solution with a lower solute concentration
- \_\_\_\_\_ solution in which the solute concentration is the same
- B. Hypertonic \_\_\_\_\_ condition plant cells require
- \_\_\_\_\_ condition that animal cells require
- C. Hypotonic \_\_\_\_\_ red blood cell bursts (cytolysis)
- \_\_\_\_\_ plant cell loses turgor pressure (Plasmolysis)
- \_\_\_\_\_ solution with a higher solute concentration
- \_\_\_\_\_ plant cell with good turgor pressure
- \_\_\_\_\_ solution with a high water concentration

Label each solution (isotonic, hypotonic, or hypertonic):



\_\_\_\_\_



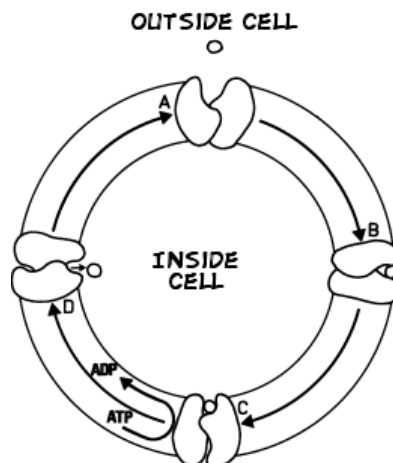
### III. Active Transport

What type of transport is represented by the following picture?

What energy is being used? \_\_\_\_\_

In which direction (concentration gradient), is the movement occurring?

Color the internal environment of the cell yellow. Color and Label the transport proteins red and the substance being moved blue.



One type of active transport is called the \_\_\_\_\_ pump which helps muscle cells contract. This pump uses \_\_\_\_\_ to move ions \_\_\_\_\_ the concentration gradient. The protein that is used to pump the ions through is called a \_\_\_\_\_ protein and it changes its \_\_\_\_\_ to move the ions across the cell membrane. Label and color the carrier proteins red and the ions green.

