

**Evidence 4: Homeostasis Regular**

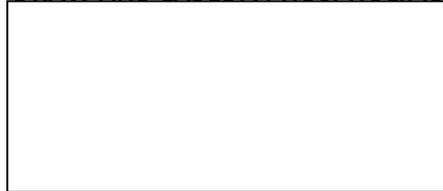
**Option 1: Worksheet**

**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) \_\_\_\_\_. The head of a phospholipid is made of an alcohol and \_\_\_\_\_ group, while the tails are chains of \_\_\_\_\_. 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.

**DRAW AND LABEL A PHOSPHOLIPID**



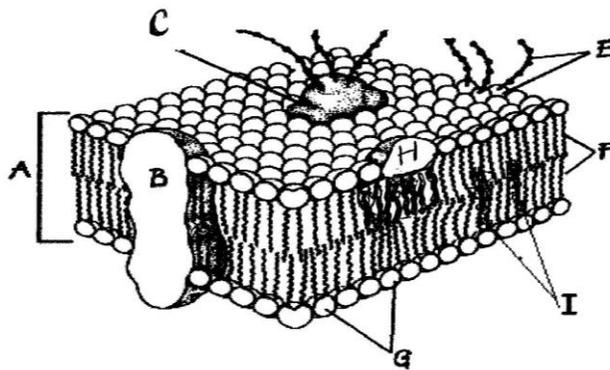
Another type of lipid in the cell membrane is \_\_\_\_\_ that makes the membrane more fluid. Embedded in the phospholipid bilayer are \_\_\_\_\_ that also aid in diffusion and in cell recognition. Proteins called \_\_\_\_\_ proteins go all the way through the bilayer, while \_\_\_\_\_ proteins are only on one side. Integral proteins are also called \_\_\_\_\_ proteins. 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 **color code and label** each part of the cell membrane.

Letter	Name/Color
A	Phospholipid bilayer (no color)
B	Integral protein (pink)
F	Fatty acid tails (orange)
G	Phosphate heads (yellow)



**Osmosis and Tonicity**

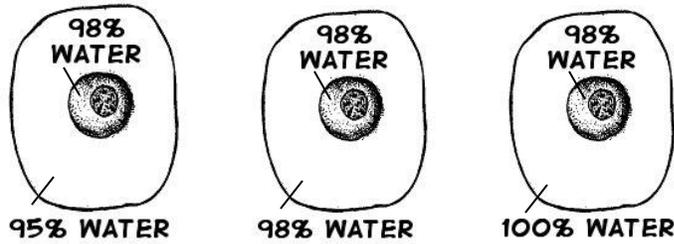
Define osmosis. \_\_\_\_\_

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

Define these 3 terms:

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

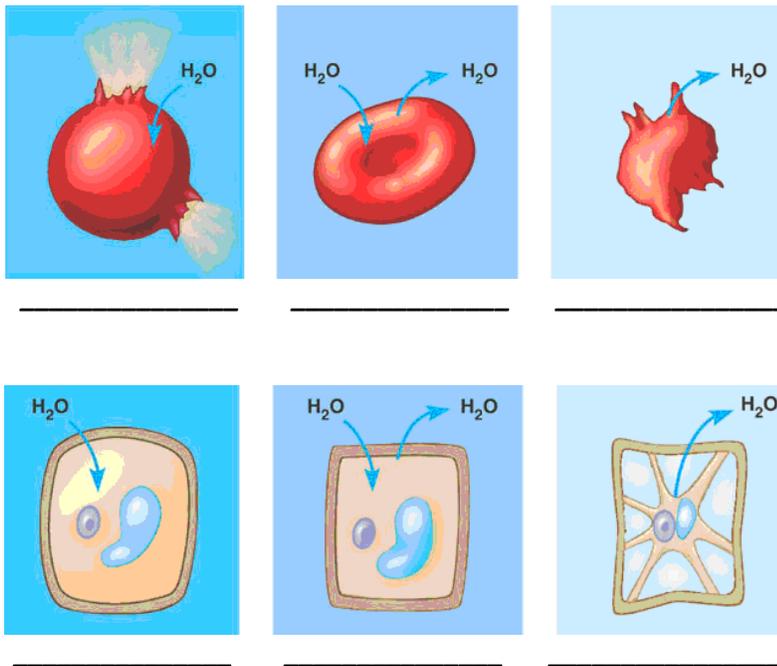
Use **arrows** to show the direction of water movement into or out of each cell. **Color and label** the cell in an isotonic environment light blue, the hypotonic environment yellow, and the hypertonic environment light green.



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*    \_\_\_\_\_ solution with a high water concentration
- \_\_\_\_\_ solution with a higher solute concentration
- C. *Hypotonic*     \_\_\_\_\_ red blood cell bursts (cytolysis)
- \_\_\_\_\_ plant cell loses turgor pressure (Plasmolysis)

Label the tonicity for each solution (isotonic, hypotonic, or hypertonic):



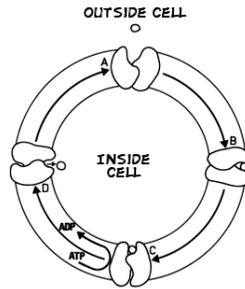
**Transport Requiring Energy**

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**.

