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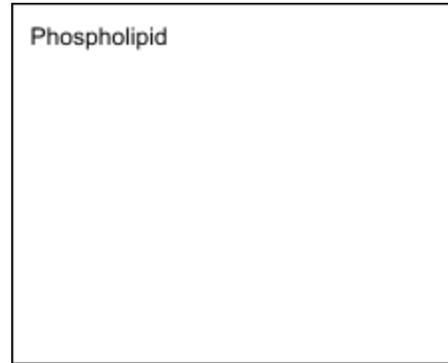
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Cell membrane structure and cell transport study guide

Phospholipid structure

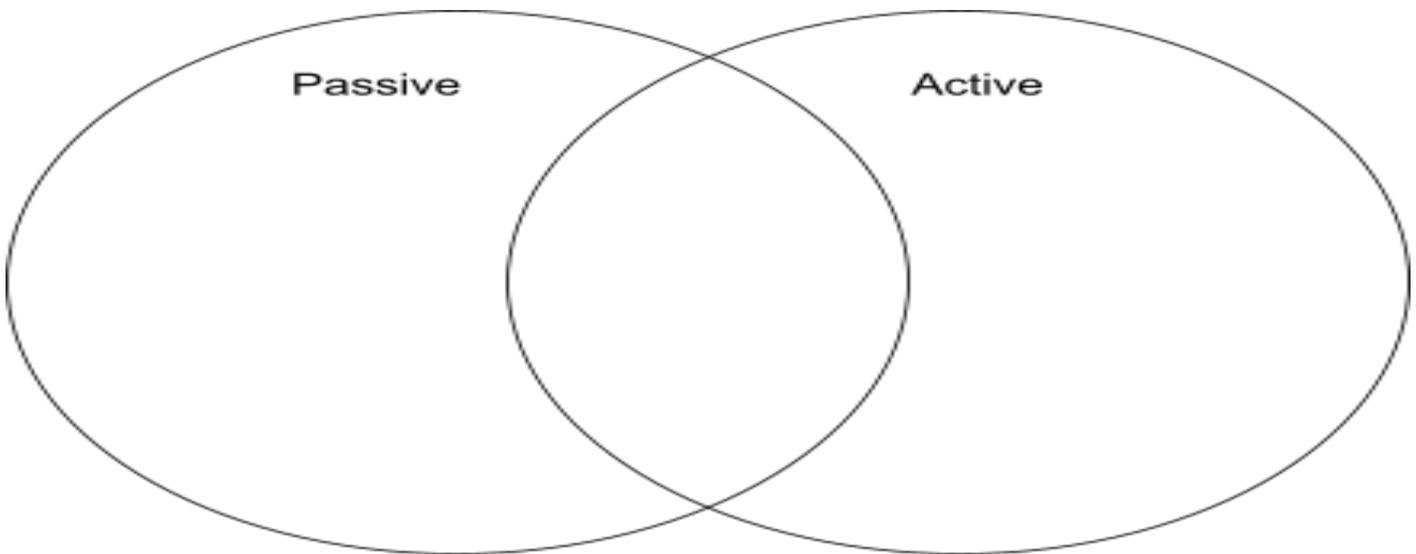
Draw a phospholipid and label its parts using these words:

1. Hydrophobic
2. Hydrophilic
3. Phosphate group
4. Fatty acid tails



Cell transport methods - Active vs. Passive

Fill out the venn diagram for active and passive transport



Draw diagrams to represent the two types of passive transport. In your drawings label:

1. The phospholipid bilayer
2. Membrane proteins
3. Nonpolar molecules
4. Polar molecules
5. Large molecules

Draw a diagram for active transport and describe two reasons this method would be used instead of passive transport.

Osmosis - an example of facilitated diffusion

To start, define the following terms in your own words:

Term	Definition	Example
Solute		
Solvent		
Solution		

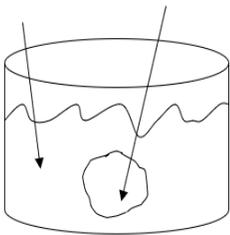
Imagine a cell has been dropped into **sugar water solutions**.

- The solute is _____
- The solvent is _____

Then, use this information to answer the following problems. For each, determine the % concentration of the solute and the solvent for the solution outside the cell (environment) and for the inside of the cell.

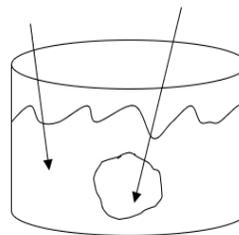
- A. Tell whether the solution **outside the cell** is hypotonic, hypertonic, or isotonic.
- B. Draw the direction of the movement of **water** (into cell, out of cell, into & out of cell in equal amounts).
- C. Tell what will happen to the cell (shrink, swell or stay the same).

20 % solute 80 % solute
 ___ % solvent ___ % solvent



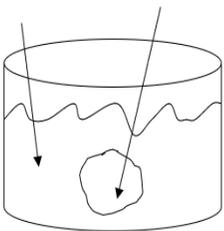
- A. _____
- B. _____
- C. _____

40 % solute 30 % solute
 ___ % solvent ___ % solvent



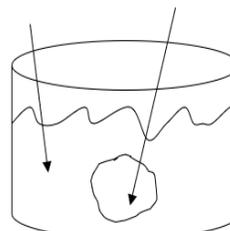
- A. _____
- B. _____
- C. _____

___ % solute ___ % solute
 10 % solvent 90 % solvent



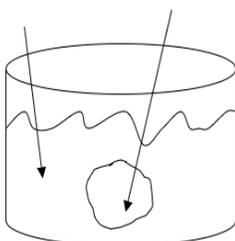
- A. _____
- B. _____
- C. _____

50 % solute 50 % solute
 ___ % solvent ___ % solvent



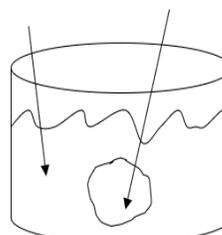
- A. _____
- B. _____
- C. _____

80 % solute ___ % solute
 ___ % solvent 10 % solvent

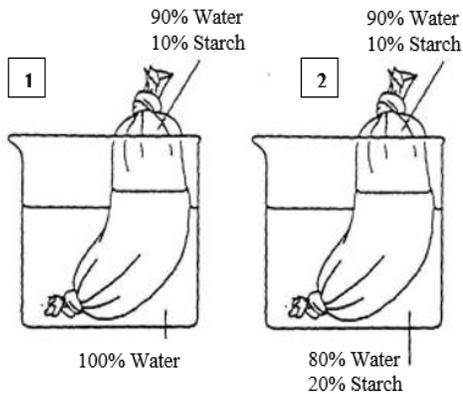


- A. _____
- B. _____
- C. _____

___ % solute 30 % solute
 70 % solvent ___ % solvent



- A. _____
- B. _____
- C. _____



Look at the the beakers to the left. Take note the concentrations of various substances in the beakers and in the bags. Water molecules can pass through the bags, but starch cannot pass through.

- A. Draw arrows in the diagrams to show the direction in which water will move (into the cell or out of the cell).
- B. Which of the beakers has a hypotonic solution?

C. What will eventually happen to the bag in beaker 2?

It will _____ (shrink, swell, stay the same).

Intravenous solutions (a solution injected into a patient via an IV) must be prepared so that they are isotonic to red blood cells. A 0.9% salt solution is isotonic to red blood cells.

- a. Explain what will happen to a red blood cell placed in a solution of 99.3% water and 0.7% salt.

Draw it out to help you visualize this cell in the solution

What will happen to the cell?

- b. What will happen to a red blood cell placed in a solution of 90% water and 10% salt?

Draw it out to help you visualize this cell in the solution

What will happen to the cell?

When we talk about the solutions in the bags and in the beakers, what does it mean when we say a cell is using osmosis to maintain or reach **equilibrium**?

What happens to the motion of molecules after equilibrium is reached?

Plant cells have a cell wall. Why might this prevent plant cells from bursting when they are placed in a hypotonic solution?

1. What happens to a normal animal cell when it is placed in a hypotonic solution?
2. If the cell wall surrounds the plant cell, why might the cell not burst when placed in a hypotonic solution?