Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CELL TRANSPORT STUDY GUIDE**

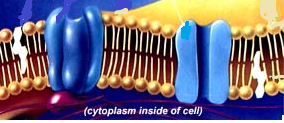
The Cell Membrane

E

D

1. Label the parts of the cell membrane using the following words:
2. Fatty acid tails

B



1. Phosphate heads
2. Hydrophobic
3. Hydrophilic

C

1. Transport Protein
2. Cholesterol

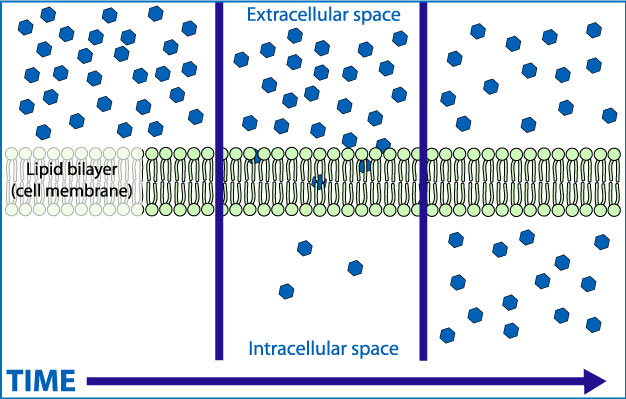
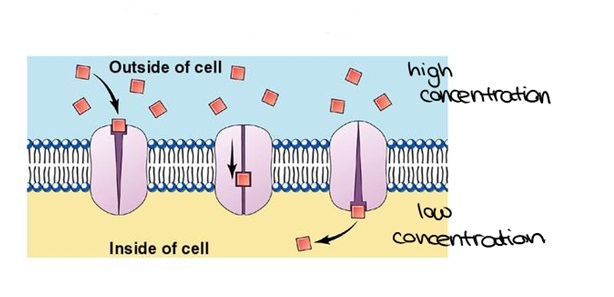
A

F

1. Another name for the cell membrane is:
   1. Lipid monolayer b. phospholipid bilayer c. protein trilayer
2. The cell membrane is made up of \_\_\_\_\_ layers of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. 3; proteins b. 2; nucleic acids c. 2; phospholipids
3. The cell membrane is described as being \_\_selectively\_\_ \_\_\_permeable\_\_\_\_\_ which means it is picky about what comes in and what goes out of the cell.
4. The model for how the cell membrane works is called the:
   1. Moving Picture model b. Flexible Artwork model c. Fluid Mosaic Model
5. A phospholipid is made out of:
   1. Carbohydrates and Proteins b. Phosphate and Fatty Acids c. cholesterol
6. The phosphate heads of the phospholipid bilayer are:
   1. Hydrophilic and polar b. hydrophobic and nonpolar c. neither
7. The fatty acid tails of the phospholipid bilayer are:
   1. Hydrophilic and polar b. hydrophobic and nonpolar c. neither
8. The phosphate heads face:
   1. Outward toward the cell’s environment and inward toward the cytoplasm
   2. Inward toward each other
9. The fatty acid tails face:
   1. Outward toward the cell’s environment and inward toward the cytoplasm
   2. Inward toward each other
10. The phosphate heads touch the cytoplasm.
    1. True b. false
11. The phosphate heads touch the cell’s watery environment.
    1. True b. false
12. The purpose of the transport proteins is to:
    1. Move molecules through the cell membrane that couldn’t normally get through
    2. Stabilize the phospholipids so they don’t stick together
    3. Move molecules to the endoplasmic reticulum
13. The purpose of the cholesterol in the cell membrane is to:
    1. Raise the cell’s pressure
    2. Stabilize the phospholipids so they don’t stick together
    3. Allow molecules to pass through the membrane

Transport of Molecules across the Cell Membrane

1. The type of transport that requires energy is called:
   1. Passive b. Active
2. The type of transport that does not require energy is called:
   1. Passive b. Active
3. Name the three types of passive transport.
   1. \_diffusion\_\_\_\_\_\_\_
   2. Facilitated diffusion
   3. \_\_Osmosis \_\_\_\_\_\_\_\_\_\_\_\_
4. Diffusion is the movement of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ across the cell membrane.
   1. Water molecules b. small molecules other than water c. large molecules
5. Diffusion moves particles from areas of \_\_\_\_\_\_\_ concentration to \_\_\_\_\_\_\_\_ concentration.
   1. High; low b. low; high c. high; high d. low; low
6. Diffusion \_\_\_\_\_\_\_\_\_\_ require energy from the cell in order to happen.
   1. Does b. does not
7. Diffusion moves particles \_\_\_\_\_\_\_\_ the concentration gradient.
   1. With b. against
8. Facilitated diffusion is the movement of \_\_\_\_\_\_\_\_\_\_\_\_ across the cell membrane.
   1. Water molecules b. small molecules other than water c. large molecules
9. Facilitated diffusion must use the help of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to get the molecules across the cell membrane.
   1. Transport proteins b. cholesterol c. phospholipids
10. Facilitated diffusion \_\_\_\_\_\_\_\_\_\_\_ require energy from the cell in order to happen.
    1. Does b. does not
11. Facilitated diffusion moves particles from areas of \_\_\_\_\_\_\_\_\_ concentration to \_\_\_\_\_\_\_ concentration.
    1. High; low b. low; high c. high; high d. low; low
12. Facilitated diffusion moves particles \_\_\_\_\_\_\_\_ the concentration gradient.
    1. With b. against
13. Which of the pictures below represents diffusion and which one represents facilitated diffusion?



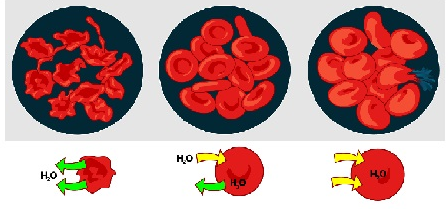
\_\_\_\_\_\_\_facilitated diffusion\_\_\_\_\_\_ \_\_\_\_diffusion\_\_\_\_\_

1. Osmosis is the movement of \_\_\_\_\_\_\_\_\_\_\_\_\_ across the cell membrane.
   1. Water molecules b. small molecules other than water c. large molecules
2. Osmosis \_\_\_\_\_\_\_\_\_\_\_ require energy to move water across the cell membrane.
   1. Does b. does not
3. Osmosis moves water molecules from areas of \_\_\_\_\_\_\_ concentration to \_\_\_\_\_\_\_\_ concentration.
   1. High; low b. low; high c. high; high d. low; low
4. Osmosis moves water \_\_\_\_\_\_\_\_\_\_\_ the concentration gradient.
   1. With b. against
5. What are the three types of solutions that a cell can be placed in, in which water can move?
   1. \_isotonic\_\_\_\_\_
   2. \_hypertonic\_\_\_\_\_\_\_\_\_\_\_
   3. \_hypotonic\_\_\_\_\_\_\_\_\_
6. In an isotonic solution, the concentration of water inside the cell is \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the concentration of water outside the cell.
   1. Higher than b. lower than c. equal to
7. In a hypertonic solution, the concentration of water inside the cell is \_\_\_\_\_\_\_\_\_\_\_ the concentration of water outside the cell.
   1. Higher than b. lower than c. equal to
8. In a hypotonic solution, the concentration of water inside the cell is \_\_\_\_\_\_\_\_\_\_\_\_ the concentration of water outside the cell.
   1. Higher than b. lower than c. equal to
9. If a cell is put into an isotonic solution, the size of the cell will \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Shrink b. expand c. stay the same
10. If a cell is put into a hypertonic solution, the size of the cell will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
    1. Shrink b. expand c. stay the same
11. If a cell is put into a hypotonic solution, the size of the cell will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
    1. Shrink b. expand c. stay the same
12. Identify each of the solutions below as isotonic, hypertonic, and hypotonic.



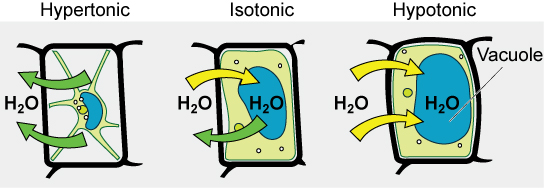
\_\_isotonic\_\_ \_\_\_hypotonic\_\_\_ \_\_\_hypertonic\_\_\_\_

1. Identify each of the red blood cells from an animal as isotonic, hypertonic, and hypotonic.



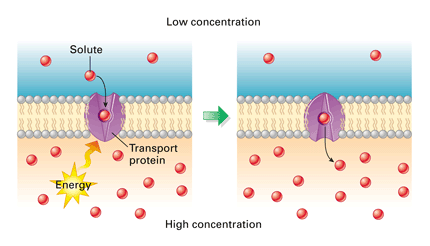
Hypertonic isotonic hypotonic

1. Identify each of the plant cells below as being in an isotonic, hypertonic, and hypotonic solution.



\_\_hypertonic\_\_\_\_ \_\_\_\_isotonic\_\_\_\_ \_\_\_hypotonic\_\_\_

1. Which of the above plant cells shows plasmolysis?
   1. First b. second c. third
2. Which of the above plant cells shows turgor pressure?
   1. First b. second c. third
3. One-celled (unicellular) organisms like Paramecium (a protest) has what kind of special organelle to pump excess water out of the cell or into the cell? \_\_\_contractile vacuole\_\_\_\_\_\_\_\_\_\_\_\_
4. Active transport:
   1. Requires energy b. does not require energy
5. Active transport moves molecules across the cell membrane from areas of \_\_\_\_\_\_\_\_\_ concentration to \_\_\_\_\_\_\_\_\_\_\_ concentration.
   1. High; low b. low; high c. high; high d. low; low
6. Active transport moves molecules \_\_\_\_\_\_\_\_\_\_\_ the concentration gradient.
   1. With b. against
7. What type of transport is shown by the diagram below and how do you know?
   1. Active b. passive



We know it is active transport because molecules are moving from high to low concentration with the use of energy.

1. A type of active transport is called \_bulk\_ transport where several particles at one time are moved across the cell membrane.
2. Two examples of bulk transport are \_endocytosis\_\_\_ (where particles are moved into the cell by the cell membrane pinching off to form a vesicle) and \_\_exocytosis\_\_\_ (where vesicles full of particles fuse with the cell membrane to release particles).
3. Two types of endocytosis are called \_\_\_phagocytosis\_\_\_\_\_\_ (cell eating) and \_\_\_\_\_\_pinocytosis\_\_\_\_\_\_\_\_ (cell drinking).