

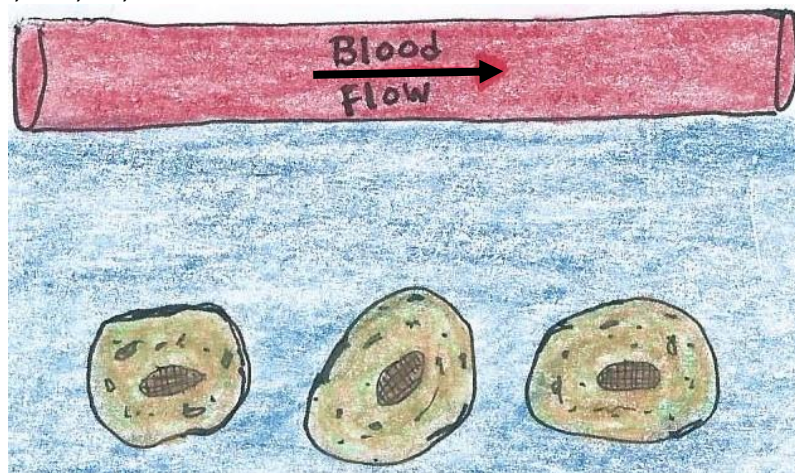
Name: _____

Physiology: Membrane Transport Worksheet

Directions: Write in and circle best answer on this sheet.

1. The cell membrane can be described as _____. What does this mean?
2. What are three important characteristics of a molecule that determine whether it can easily pass through a membrane?
 - 1)
 - 2)
 - 3)
3. Define **passive** transport:
4. List three types of passive transport and an example of what gets transported in each type.
 - 1)
 - 2)
 - 3)
5. Describe how **5** different factors can influence the *rate of diffusion* of a molecule.
 - 1)
 - 2)
 - 3)
 - 4)
 - 5)
6. Define **active** transport:
7. Draw a detailed diagram of the **Na⁺/K⁺ pump** (Na⁺/K⁺ ATPase). List all of the things that it is.
8. Draw a detailed diagram of the **Na⁺/glucose** symport plasma membrane transport system.

9. Use the diagram below to label the 3 tissue fluid compartments in the body and indicate the relative concentrations of K^+ , Na^+ , Cl^- , Ca^{2+} and Pro's in each.



10. Define **Hydrostatic Pressure (HP)** and **Colloid Osmotic Pressure (COP)**. Use the space below to describe and illustrate how HP and COP act across the walls of a capillary to generate **Transcapillary Fluid Dynamics**.

11. There are 4 molecules racing to get across a typical cell membrane. Contestants: $C_6H_{12}O_6$, CO_2 , Cl^- and $CH_3CH_2CH_2COOH$ (a fatty acid). *On a separate piece of paper*, describe the obstacles they'd encounter and the mechanisms they'd need to use to get across. Also, predict the order they'd make it across.

12. Osmosis is a special case of _____ for water.

a) filtration b) active transport c) carrier transport d) diffusion e) facilitated diffusion

13. Protein carriers resemble enzymes, except for the fact that protein carriers

a) are not proteins b) do not have binding sites c) change conformation when they bind a ligand
d) are not specific for the ligands they bind e) do not chemically change their ligands

14. Which of the following statements about the resting membrane potential is true?

a) it is usually equal to zero mV b) it is created and maintained, in part, by the Na^+/K^+ pump
c) it is created, in part, by extracellular proteins d) the inside of the cell is positive compared to the outside

15. Compare the solutions 1.0 M NaCl and 1.0 M Glucose: Which of the following statements are **true**?

1. their molarity is the same 2. the NaCl has twice the osmotic pressure 3. their osmolarity is the same
4. NaCl ionizes in solution to give two particles 5. glucose can give 6 carbons in solution
a) 1, 4 and 2 b) 1 and 5 c) 4, 3, 1 and 5 d) 1 and 2 e) 1 only