

Define the Following

1. Cell Membrane
2. Lipid Bilayer
3. Transmembrane Protein
4. Phospholipid
5. Hydrophilic
6. Hydrophobic
7. Internal
8. External
9. Selectively Permeable
10. Concentration Gradient
11. Solute
12. Solvent
13. Passive Transport
14. Diffusion
15. Equilibrium
16. Facilitated diffusion

17. Protein Channels

18. Osmosis

19. Isotonic

20. Hypertonic

21. Hypotonic

22. Active Transport

23. Protein Pumps

24. Bulk Transport

25. Exocytosis

26. Endocytosis

27. Phagocytosis

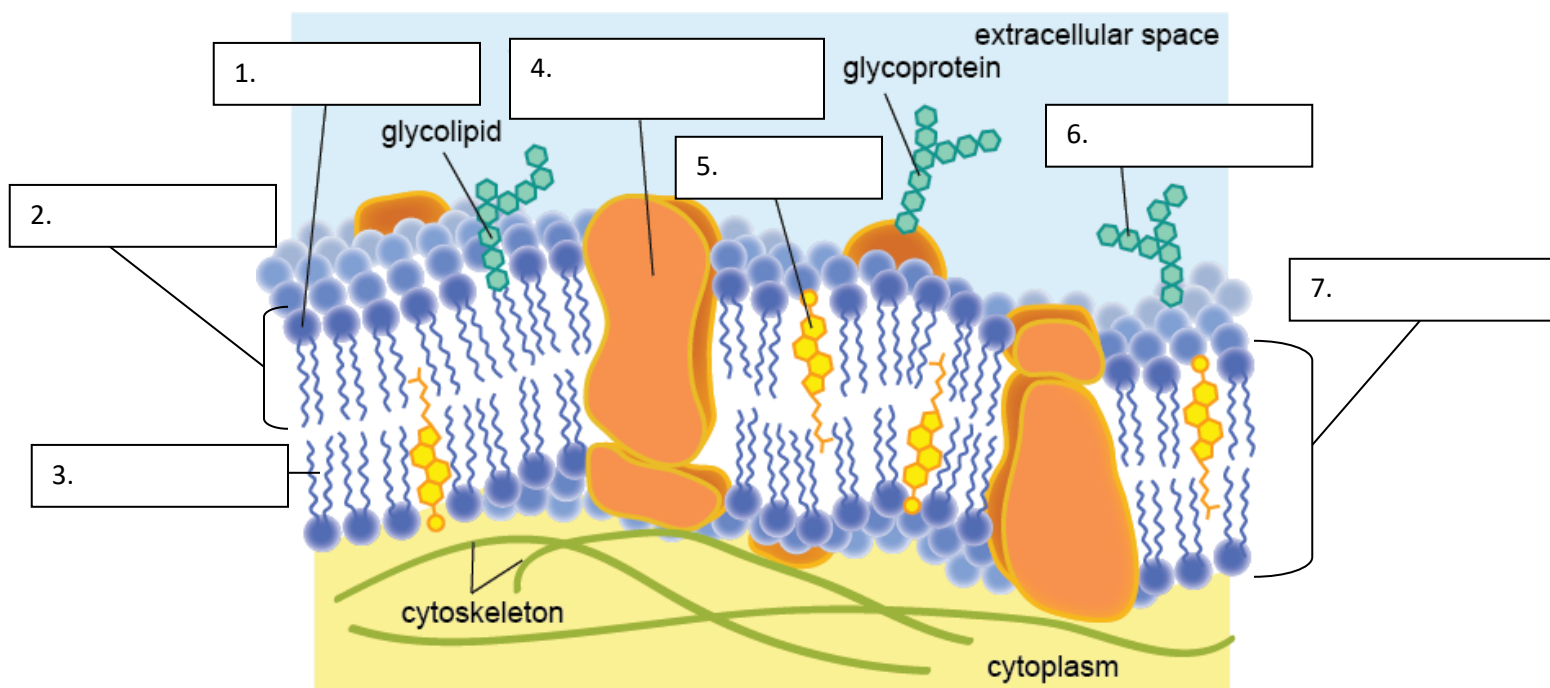
28. Pinocytosis

29. Homeostasis

30. Buffer

Membrane Structure

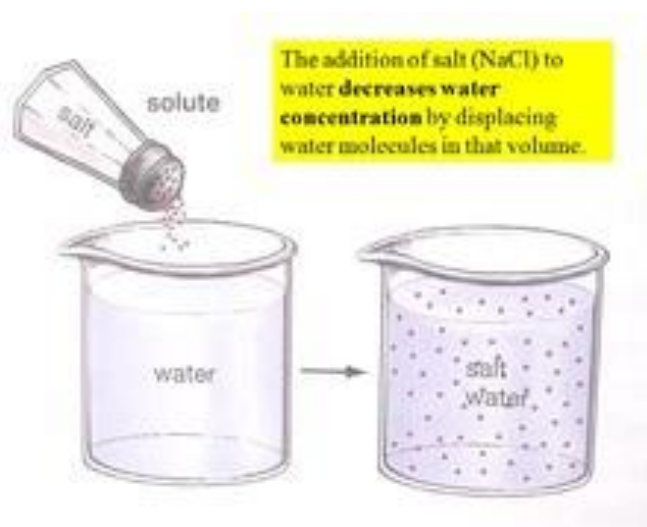
1. Label the cell membrane structure below. Then, briefly describe the function of each piece.



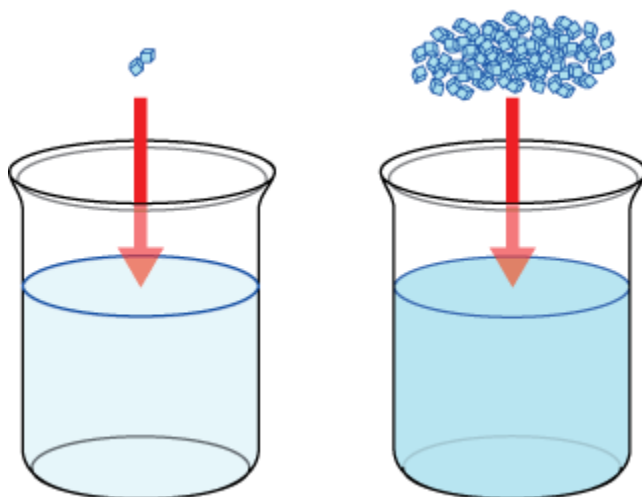
2. The cell membrane consists of hydrophilic heads and hydrophobic tails. Explain the terms hydrophilic and hydrophobic. How do these two properties maintain the structure of the cell membrane?
3. Define the term “lipid” and provide an example.
4. What does the term “fluid mosaic model” tell us about the cell membrane?
5. The cell membrane is described as being “selectively permeable.” What does this mean?

Solutions

1. Define the terms “solute” and “solvent” that make up a solution.
2. In the example below, salt and water are mixed to create a solution of salt water. Determine between the salt and water which would be the solvent, and which would be the solute.

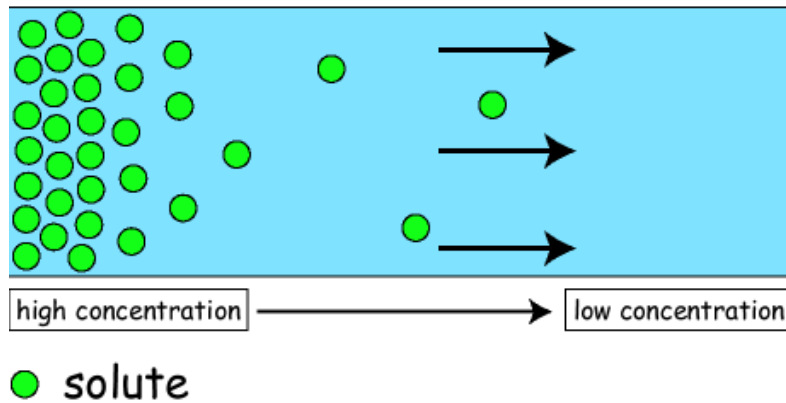


3. What do we mean by “concentration?”
4. Look at the diagram below. Which example has the highest concentration of salt?

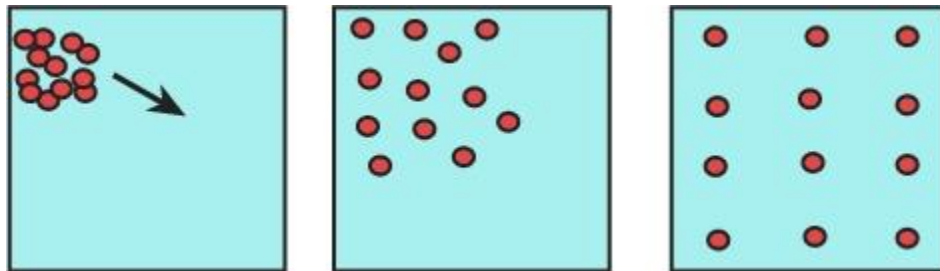


Diffusion

1. The picture below represents a concentration gradient, in which molecules move from high to low concentration. Is this active or passive transport?

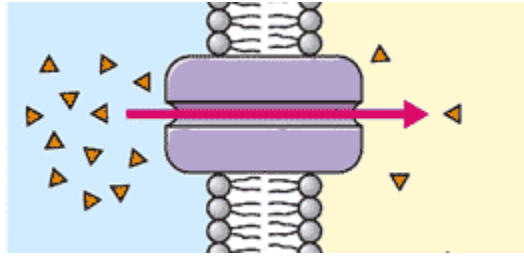


2. Describe what is happening in the picture below using the terms "diffusion," "concentration" and "equilibrium."



3. Explain the movement of molecules once equilibrium is reached. Do the molecules stop moving?

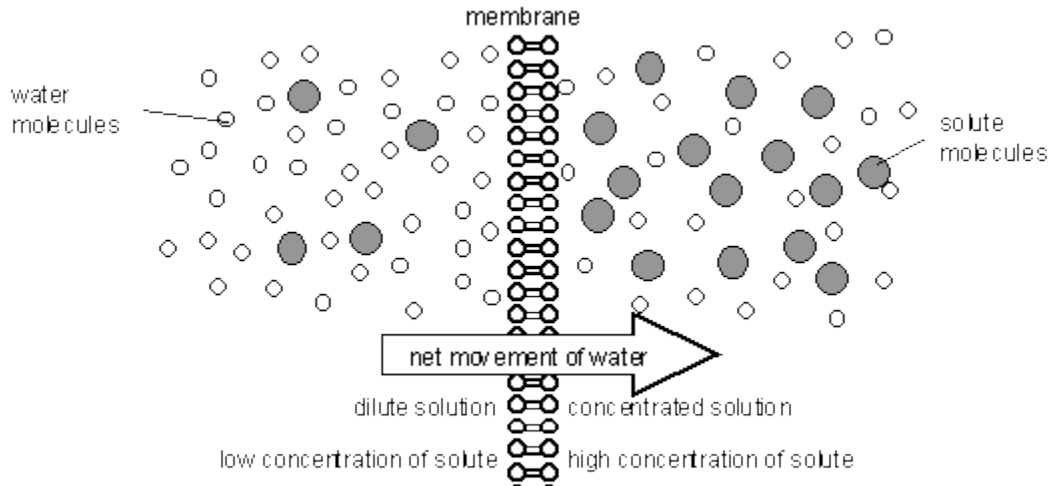
4. Sometimes, molecules will be too large to pass through the cell membrane freely. In this case, passive transport of these molecules occurs from high to low concentration with the assistance of channel proteins, as shown below. This type of diffusion is called _____.



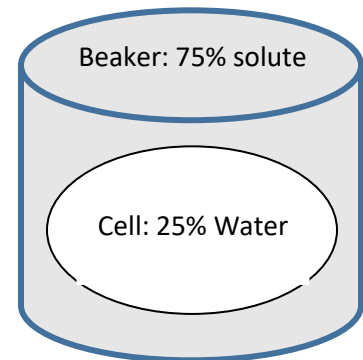
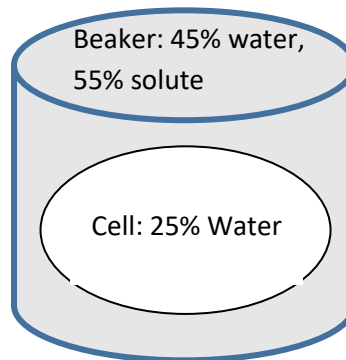
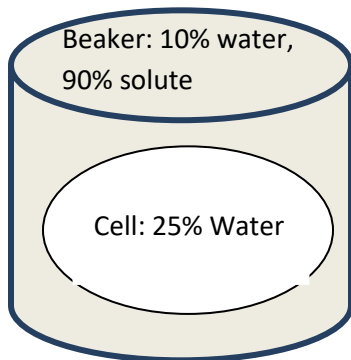
Osmosis

1. Define osmosis. Is it passive or active transport?

2. In the diagram below, explain WHY the water molecules move in the direction that they do.



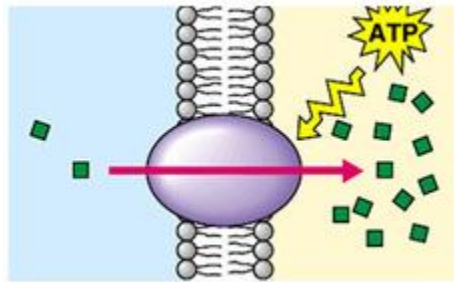
3. In each solution below, determine the direction of water movement and whether the cell would shrink, swell, or remain the same. Then, label each solution as hypertonic, hypotonic, or isotonic.



4. Plant cells prefer hypotonic environments. Why is this the case, and what organelle is involved in this?

Active Transport

1. What is ATP?
2. When a cell must use ATP to transport molecules from low to high concentration against the gradient, as shown in the diagram below, this is called _____ transport.



3. Which part of the cell membrane works to actively transport molecules into the cell?
4. Draw a diagram that represents endocytosis and exocytosis, both forms of active transport. Provide a brief description of what is taking place below your diagram. Explain phagocytosis and pinocytosis.

Homeostasis

1. Define "homeostasis."
2. Provide an example of how your body maintains homeostasis (Hint: weather changes).
3. What is the purpose of buffers within cells? How do they help to maintain homeostasis?
4. How do the properties of the cell membrane help the cell maintain homeostasis?