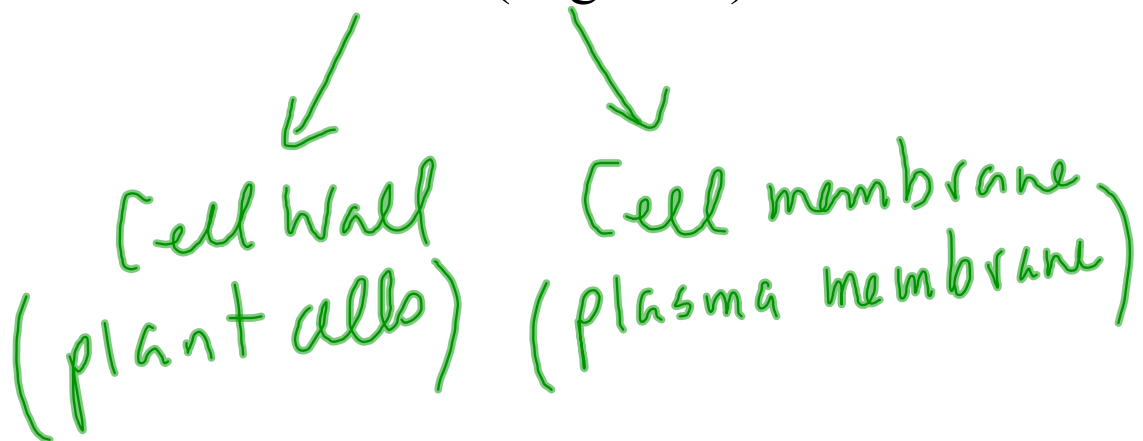


Cell Boundaries

Section 7-3 (Page 182) ✓



Cell Wall

The main function of the cell wall is to provide support and protection for the cell.

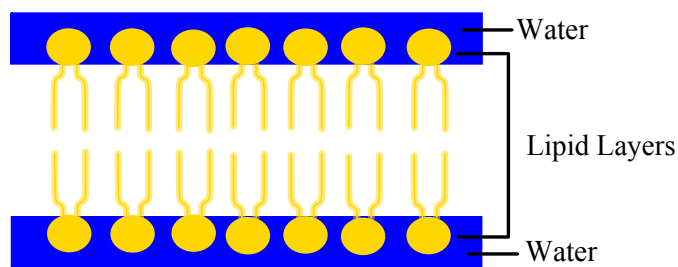
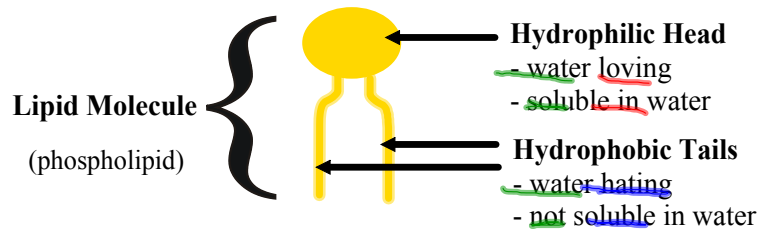
Cell walls lie outside the cell membrane. Most cell walls are porous enough to allow water, oxygen, carbon dioxide and certain other substances to pass through easily.

Plants cell walls are composed mostly of cellulose, a tough carbohydrate fiber.

Cell Membrane

The cell membrane regulates what enters and leaves the cell **and** also provides protection and support. Scientists describe their understanding of the cell membrane as the "fluid mosaic model".

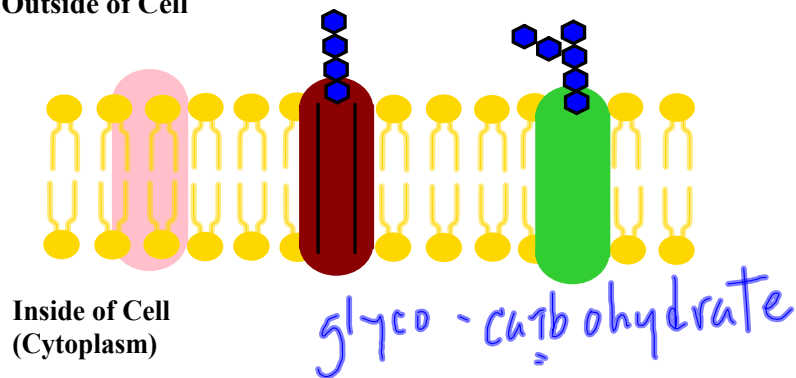
Nearly all cell membranes are made up of a ^{fit} lipid bilayer.



The lipid molecules are mobile and contribute to the movement within the cell membrane. ✓

Fluid Mosaic Model

Outside of Cell



See Figure 7-12 (Page 182)



Construction of the Cell Membrane



The online link includes information about the types of protein embedded in the cell membrane: fibrous proteins, channel proteins, pore proteins and glycoproteins. The first three are not covered in the text so you may want to make a few notes about them in your scribbler.

Concentration of a Solution

Every living cell exists in a liquid environment that it needs to survive. Cell membranes regulate the movement of dissolved molecules from the liquid on one side of the membrane to the liquid on the other side.

concentration of a solution = mass of solute in a given volume of solution

Salts and sugars are common solutes.

H₂O is a common solvent

concentration = $\frac{\text{mass}}{\text{volume}}$

→ solute
→ solvent

$$\frac{12 \text{ g salt}}{3 \text{ L water}} = 4 \text{ g/L}$$

↳

$$\frac{12 \text{ g salt}}{6 \text{ L water}} = 2 \text{ g/L}$$

Types of Transport

Passive Transport

movement of materials across a cell membrane without the use of cellular energy

diffusion

osmosis

facilitated diffusion



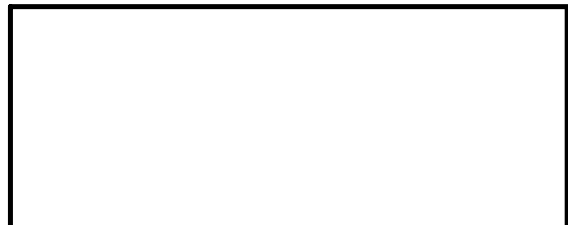
Active Transport

movement of materials across a cell membrane with the use of cellular energy

molecular transport

endocytosis


exocytosis



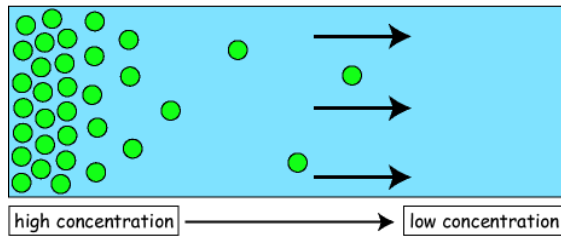
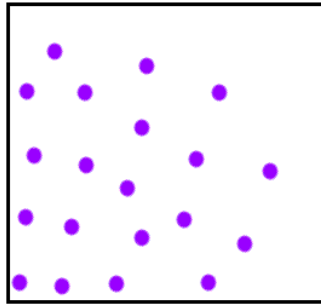
Diffusion

Diffusion can be explained by the movement of molecules from an area of **high** concentration **to** an area of **low** concentration . Diffusion rates increase with increasing *temperature, pressure and concentration*. When molecules are finally distributed equally, then **equilibrium** is reached.



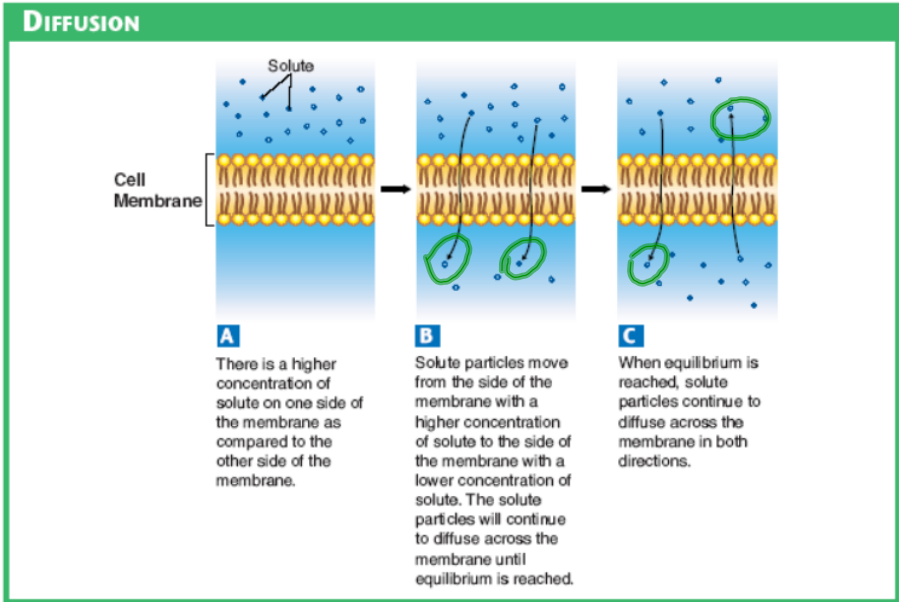
HIGH  LOW

concentration gradient



● solute

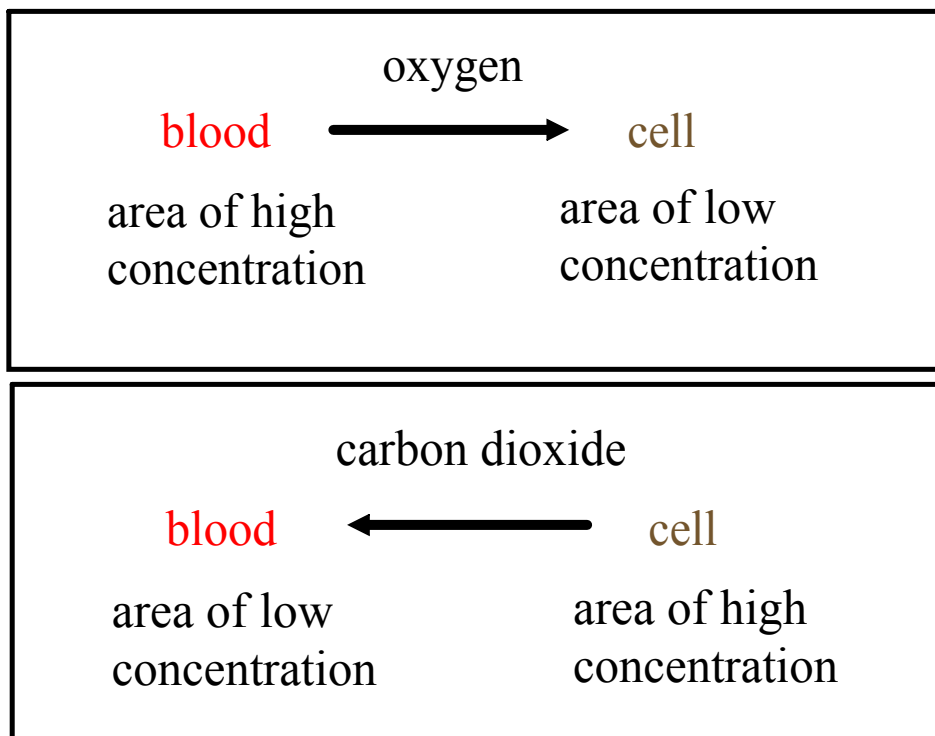
Page 184 - Figure 7-14



Link



Oxygen and carbon dioxide move across cell membranes by diffusion.



If a substance is able to diffuse across a membrane, the membrane is said to be **permeable** to it. A membrane is **impermeable** to substances that cannot pass across it.

Most biological membranes are selectively permeable meaning that some substances can pass across them and others cannot.

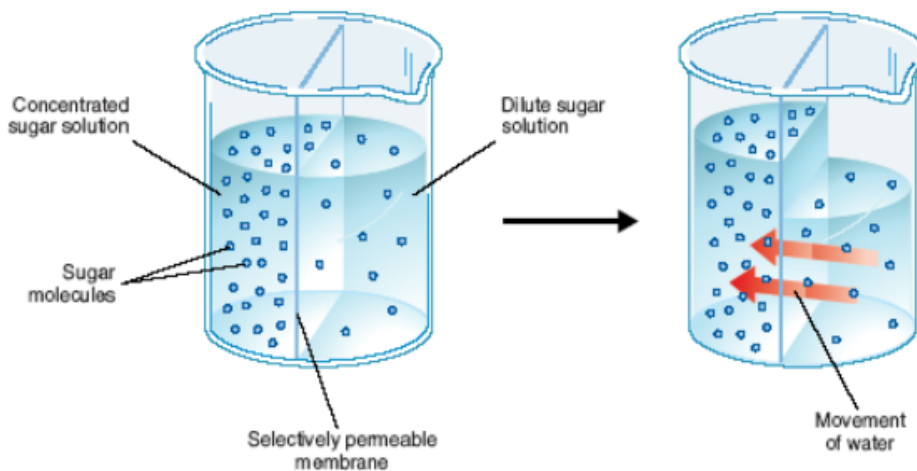
selectively permeable membrane = semipermeable membrane

Osmosis

Osmosis is the diffusion of water through a selectively permeable membrane. Water will tend to move across the membrane until equilibrium is reached.

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▼ **Figure 7-15** 🌈 Osmosis is the diffusion of water through a selectively permeable membrane. In the first beaker, water is more concentrated on the right side of the membrane. As a result, the water diffuses (as shown in the second beaker) to the area of lower concentration.



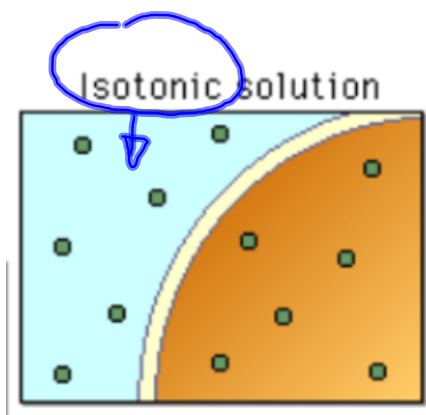
Water will tend to move across the membrane until equilibrium is reached. The concentrations of water and sugar will be the same on both sides of the membrane.

Osmosis

Types of Solutions

Isotonic solutions are solutions in which concentration of **solutes** outside the cell is **equal** to the concentration of solute molecules inside the cell.

no net change in water movement

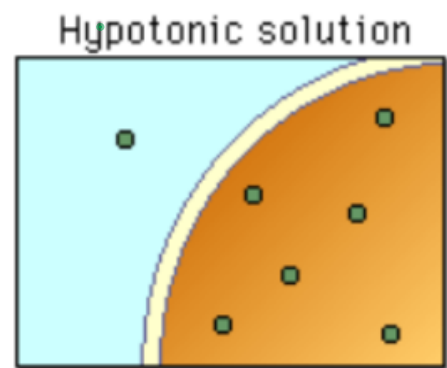


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Hypotonic solutions are solutions in which the concentration of **solutes** outside the cell is **lower** than that found inside the cell.

water diffuses into the cell



Hypertonic solutions are solutions in which the concentration of **solutes** outside the cell is **higher** than that found inside the cell.

water diffuses out of the cell

