

The Plasma Membrane

- The Plasma Membrane
 - Surrounds cell
 - Has a phospholipid bilayer imbedded with proteins
 - Responsible for molecules coming into and leaving the cell
 - Selectively permeable

- The Phospholipid Bilayer

- Polar head

- Hydrophilic

- Face outwards and the tissue fluid on the other side

- Non-polar tails

- Hydrophobic

- Face inwards towards each other, no water

Cholesterol lends support to the membrane

- Functions

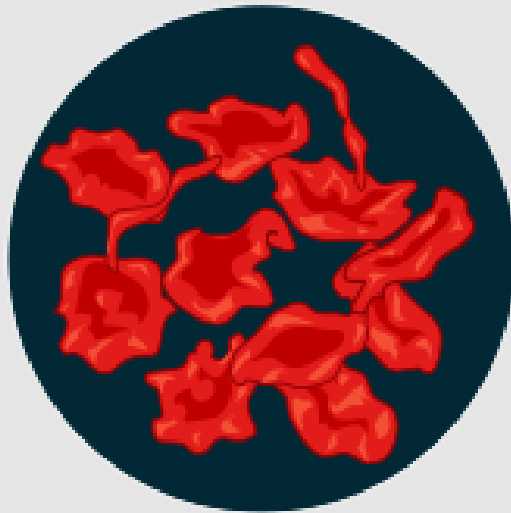
- Selectively permeable – O₂ and CO₂ are lipid soluble and small, can pass through freely
- H₂O can also pass freely
- Large molecules need assistance

Passive Transport

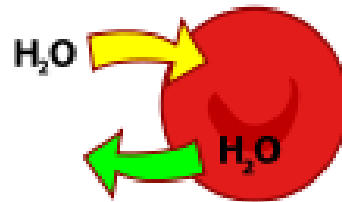
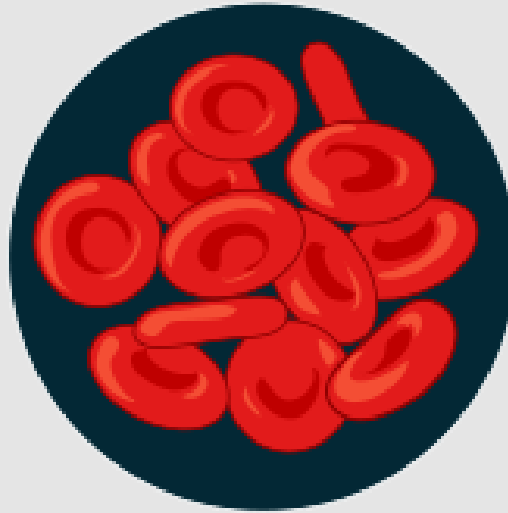
- **Diffusion** – random movement of molecule from the area of high concentration to low concentration
 - **Passive**, needs no cellular energy
 - Moves small molecule that can move freely in and out
 - Equilibrium – as many molecules leaving the cell as entering

- **Osmosis** – diffusion of **water** across a plasma membrane.
 - **Passive**
 - Tonicity – concentration of a solute in a solution vs. the concentration of the water.
 - Water will move to the area with the highest concentration of solute.
 - Isotonic – equal solute concentration
 - Hypotonic - lower solute concentration
 - Hypertonic – higher solute concentration
 - Osmotic pressure – force exerted on a SPM because H₂O has moved from a higher to lower concentration.

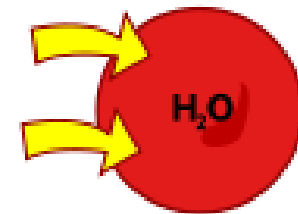
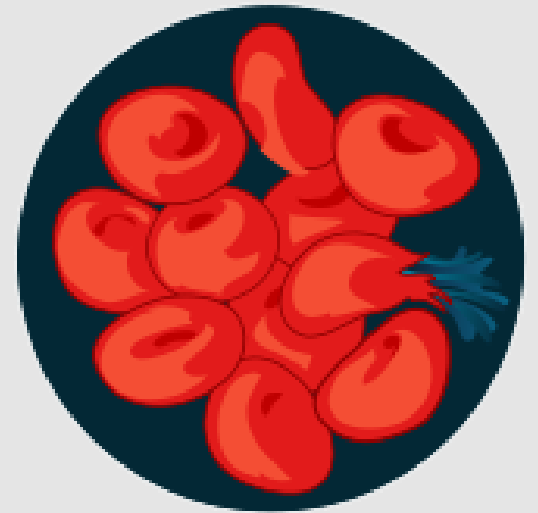
Hypertonic



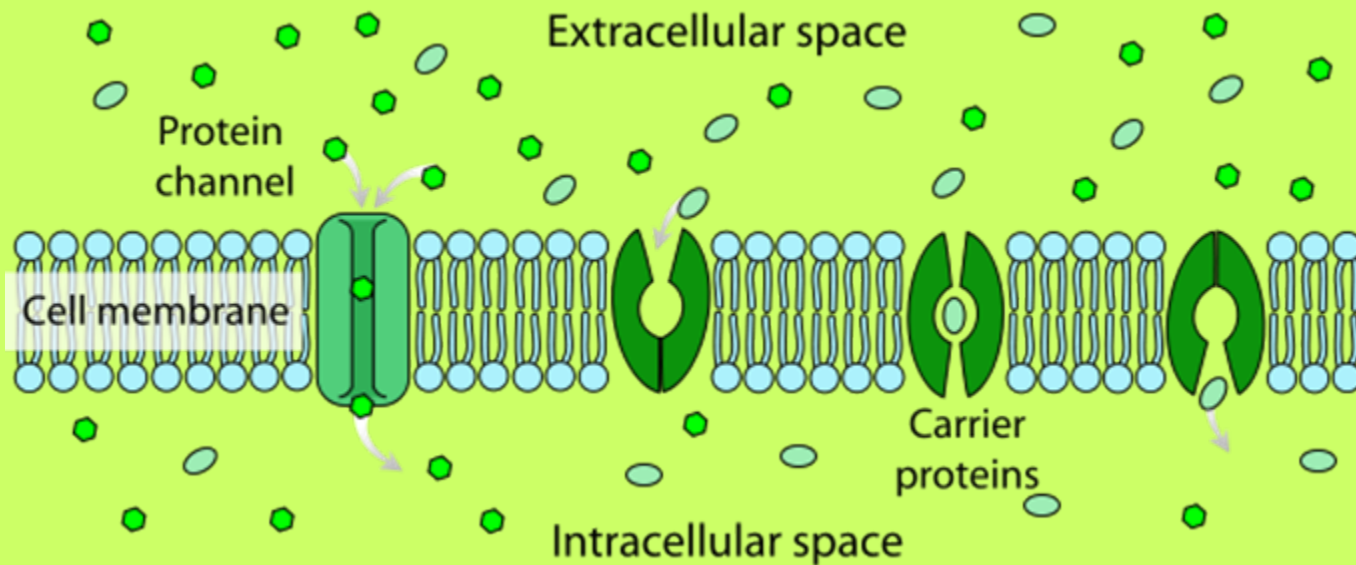
Isotonic



Hypotonic

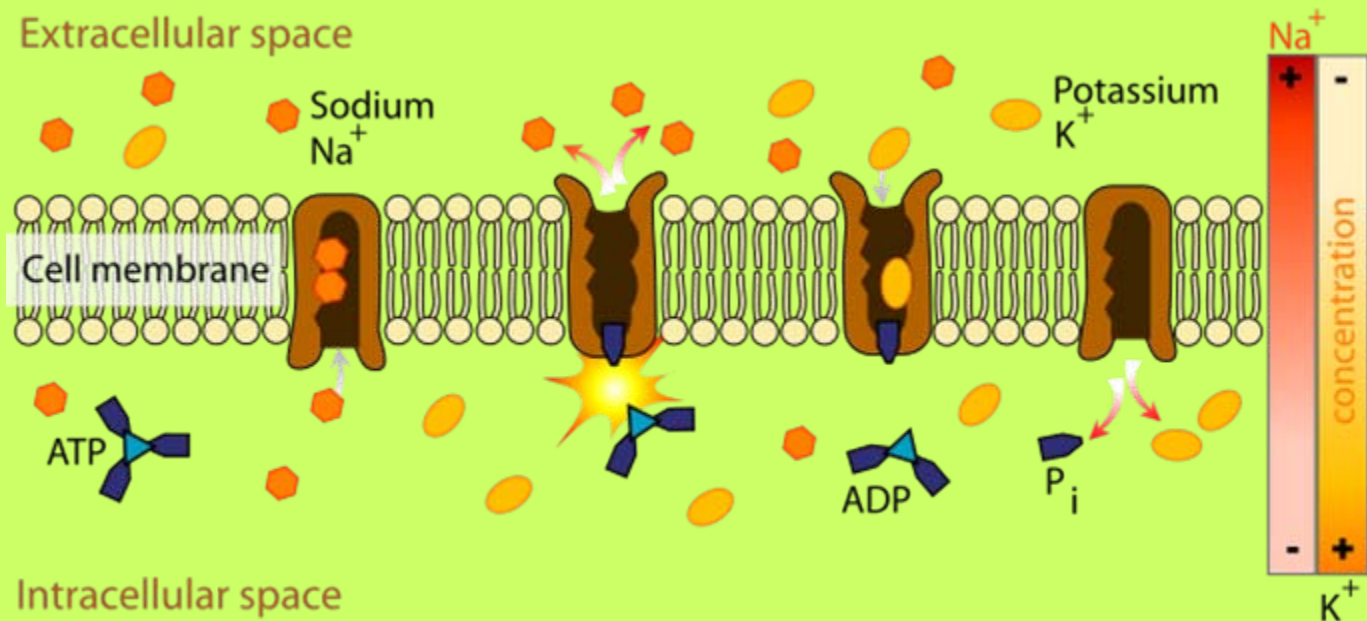


- Facilitated Transport - molecules are transported at a higher rate (faster) from high to low concentration.
 - Uses protein carriers
 - Binds to only a particular molecule
 - Transports sugars and amino acids

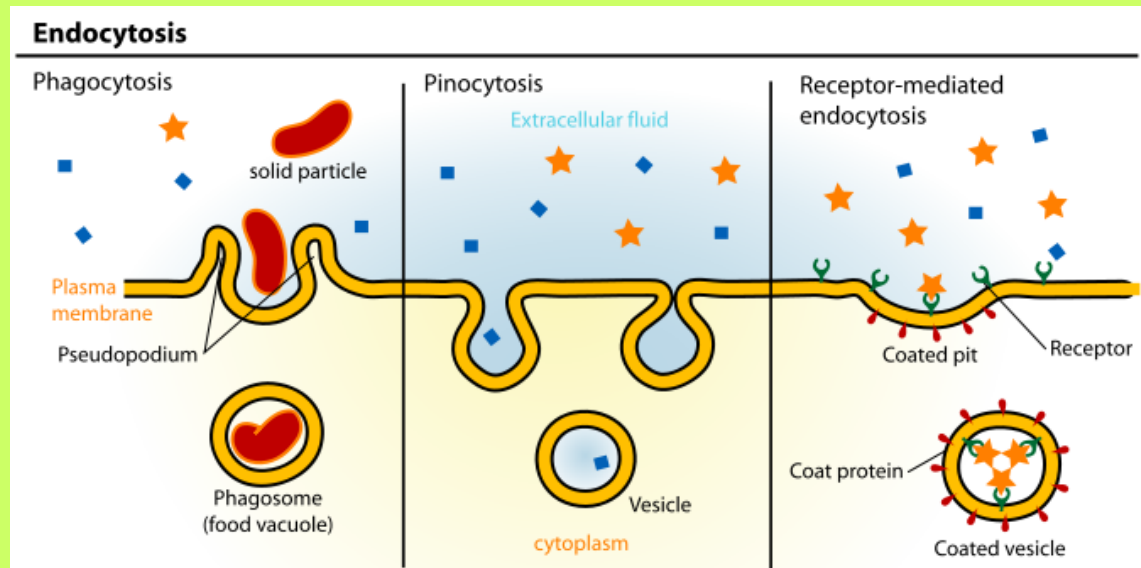


Active Transport

- Active Transport – Moves molecules from low concentration to high concentration.
 - Requires a protein carrier
 - Uses cellular energy (the break down of ATP)
 - Protein carriers are often called pumps
 - e.g. sodium/potassium pump



- Endocytosis – the plasma membrane forms a pouch around a substance and pulls it in to the cell.
 - Creates a vesicle inside the cell
 - Some white blood cells take in pathogens this is called phagocytosis
 - Pinocytosis – cells usually take up molecules and fluids



- Exocytosis – a vesicle fuses with the PM as secretion occurs.
 - e. g. insulin- secreting cell

