Cell Transport

Cell Transport

- the process of substances moving across the cell membrane.

Why is cell transport important?

1. Moves substances needed for metabolism, growth, and reproduction INTO THE CELL.
2. Moves waste products OUT of the cell.

What is a concentration gradient?

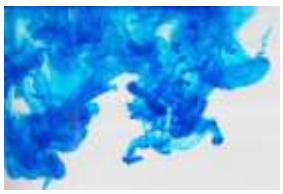
Concentration gradient

- When the amount of a substance is NOT the same across the membrane.

Equilibrium

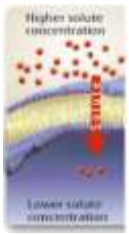
- when there is NO concentration gradient.
- amount of a substance is EQUAL.
- **Molecules are still moving but there is no NET change in amounts.

Concentration Gradient or Equilibrium?



Passive Transport

- Molecules follow concentration gradient
  - High concentration → low concentration
- Energy comes from molecule movement
- Reaches dynamic equilibrium
  - No NET movement

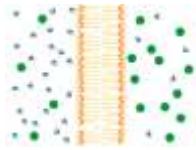


Types of Passive Transport

1. Diffusion
   - Molecules spread from areas of high concentration to areas of low concentration
   - Small molecules: O_2, CO_2, and water.

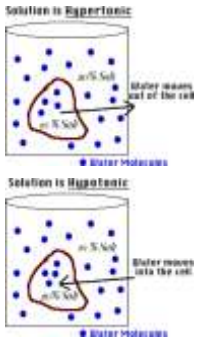
Types of Passive Transport

2. Osmosis
   - Diffusion of water across a semi-permeable membrane
   - Water moves to a high concentration of solute (stuff)
   - Water "goes to the party"

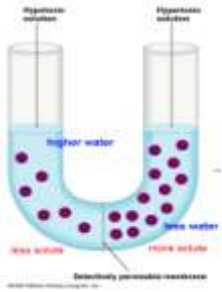


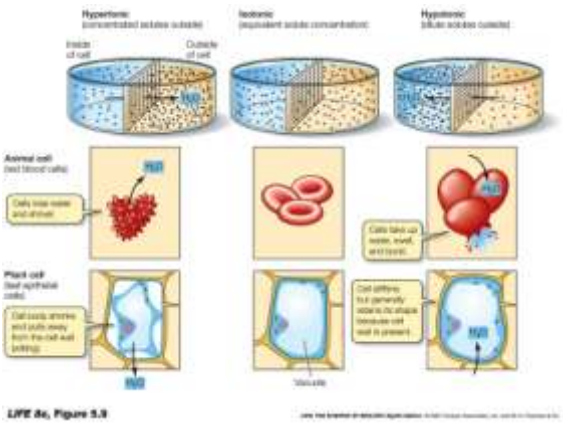
Types of Solutions

- Hypertonic:
  - More stuff (solutes)
  - Water moves ***to*** hypertonic solution
- Isotonic:
  - Same amount
- Hypotonic:
  - Less stuff (solutes)
  - Water moves ***from*** hypotonic solution



Salt Sucks

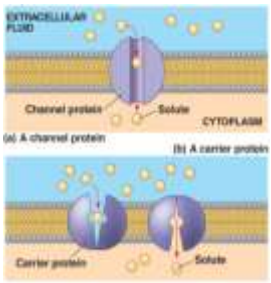




Types of Passive Transport

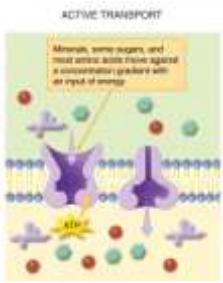
3. Facilitated Diffusion
   - large molecules need help
     - Sugar
     - Amino acids
   - Membrane proteins
     - Carriers or channels

(movement is still high ⇨ low)

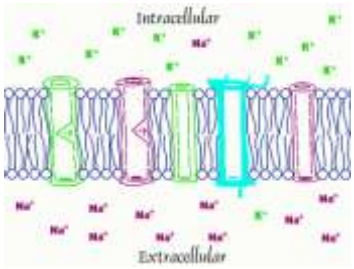


Active Transport

- Requires cellular energy
- Molecules move from LOW concentration to HIGH
- Builds a concentration gradient
- COLLECTING



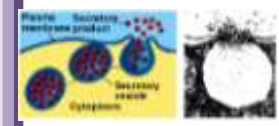
Sodium-Potassium Pump



Active Transport

Exocytosis

- Cell gets rid of large particles



Endocytosis

- Cell takes in large particles by engulfing them
- Phagocytosis
  - "eating"

- Pinocytosis (bulk phase endocytosis)
  - "drinking"