

Chapter 5 notes: Homeostasis and cell transport

A. Passive Transport: A process of moving substance w/o using energy

i. Diffusion: movement of molecules from higher concentration to lower concentration (down the concentration gradient) to reach an equilibrium. i.e. sugar cube in water

- Osmosis: one type of diffusion (of water)

Types of solution according to solute concentration (osmosis depend on the concentration of water/solute)

Hypotonic – low solute concentration (do a drawing of water moving in)

→Cytolysis: bursting of cell due to too much turgor pressure.

→turgor pressure: the pressure that water exerts against the cell wall

Isotonic – at equilibrium

Hypertonic –high solute concentration (water moving out)

➔ Plasmolysis: cells shrink away from the cell wall (wilt)

Cell membrane is semi-permeable allowing only small, lipid soluble material to move across.

ii. Facilitated Diffusion: movement molecules (not small enough and not lipid-dissolving) through carrier protein. i.e. glucose

- Protein also known as ion channels allow ions to pass (some are always open and some are gated to open when signaled) – K⁺, Na⁺, Ca²⁺

B. Active Transport: movement of molecules against the concentration gradient.

Example: Sodium- Potassium Pump. To function normally, some animal cells must have a higher concentration of Na⁺ ions outside the cell and a higher concentration of K⁺ inside the cell. Sodium-Potassium Pump maintains these concentration differences.

- Movement in vesicles: macromolecule movement via endocytosis and exocytosis

Endocytosis: into the cell

- pinocytosis: the transport of solutes or fluids

- phagocytosis: the movement of large particles or a whole cell

- Phagocytes: cells with a lot of lysosomes. When bacteria or virus is engulfed by phagocytosis into the cell, lysosomes fuse with the ingested bacteria or viruses to destroy.

Exocytosis: exiting (out) of the cell. Removing of waste or products (i.e. protein)