

Induced Fit

- Each enzyme is very selective
 - It catalyzes specific reactions
- Each enzyme recognizes a specific substrate
 - The active site fits to the substrate and the enzyme changes shape slightly
 - This interaction is called induced fit
- Enzymes can function over and over again
 - This is a key characteristic of enzymes

Enzyme Inhibitors

- Can inhibit a metabolic reaction
- Some bind to the active site as substrate imposters
- Bind at a remote site, changing the enzyme's shape

Cells control:

- The flow of energy
- The pace of chemical reactions
- The flow of materials to and from the environment
 - Importing nutrients
 - Exporting waste

Membrane Function

- Working cells must control the flow of materials to and from the environment
 - Membrane proteins helps with this task
- Membrane proteins perform a variety of functions

Passive transport: Diffusion Across Membranes

- Molecules contain heat energy
 - They vibrate and wander randomly
- Diffusion is one result of the movement of molecules
 - Molecules tend to spread into the available space
 - **Diffusion is passive transport, no energy is needed**
- Another type of passive transport is facilitated diffusion, the transport of some substances by specific transport proteins that act as selective corridors

Osmosis and Water Balance in Cells

- **Osmosis** is the passive transport of **water** across a selectively permeable membrane
- A hypertonic solution
 - Has a higher concentration of solute than at equilibrium
- A hypotonic solution
 - Has a lower concentration of solute
- An isotonic solution
 - Has an equal concentration of solute

Water Balance in Animal Cells

- The survival of a cell depends on its ability to balance water uptake and loss
 - Too much water: Lysing
 - Red blood cell bursts
 - Too little water: Shriveled