

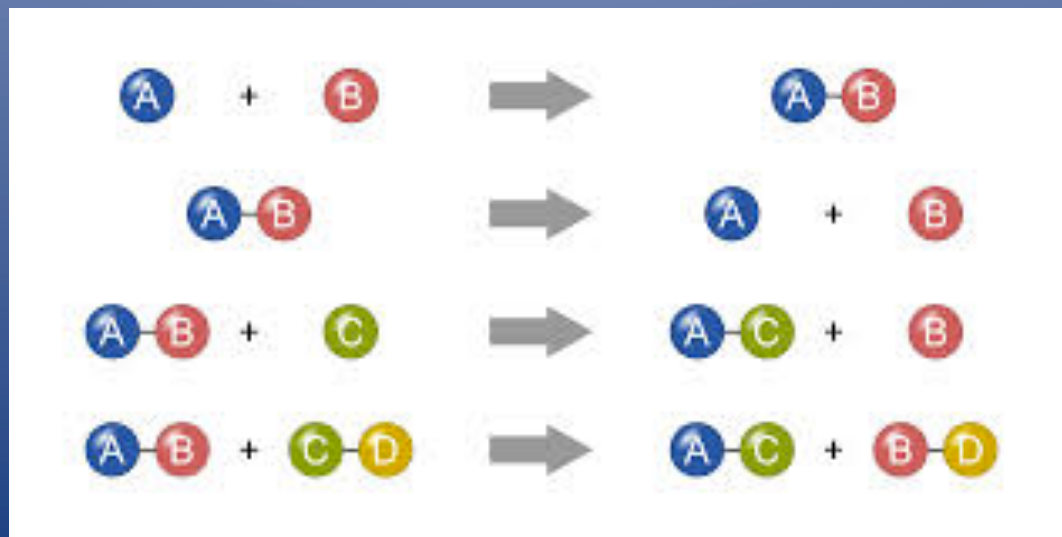
Ch 2-4: Chemical Reactions & Enzymes



Essential Questions:

- What happens to chemical bonds during chemical reactions?
- Why are enzymes important to living things?
- How do temp, pH and substrate concentration affect the action of enzymes?

- Chemical reactions
 - Breaking bonds & forming new bonds
 - Forming bonds stores energy, breaking bonds releases
 - Chem rxns that absorb energy need a source of energy
 - **Activation energy**: energy needed to start a chem rxn

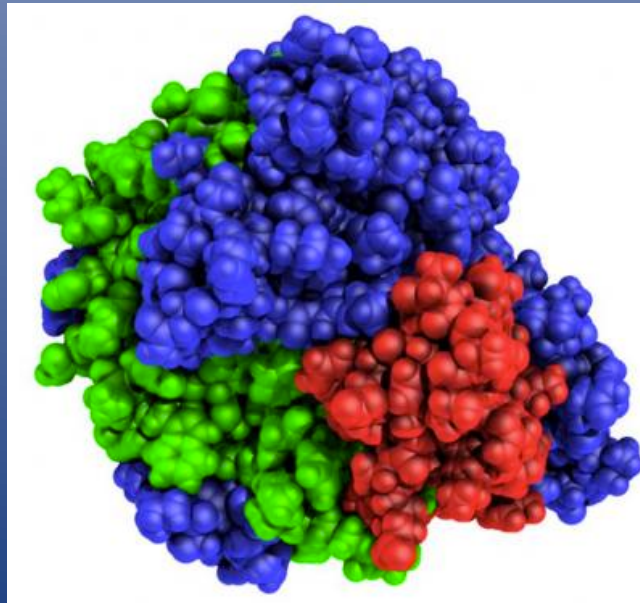


- Enzymes

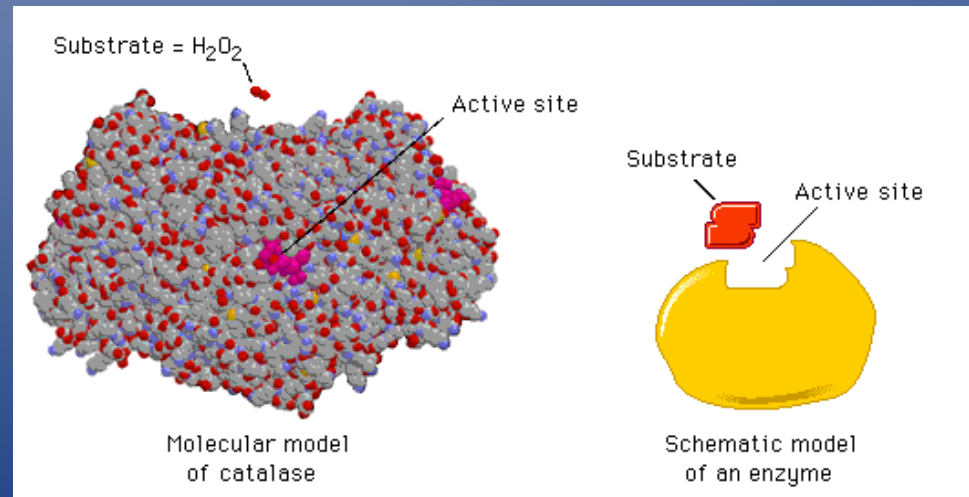
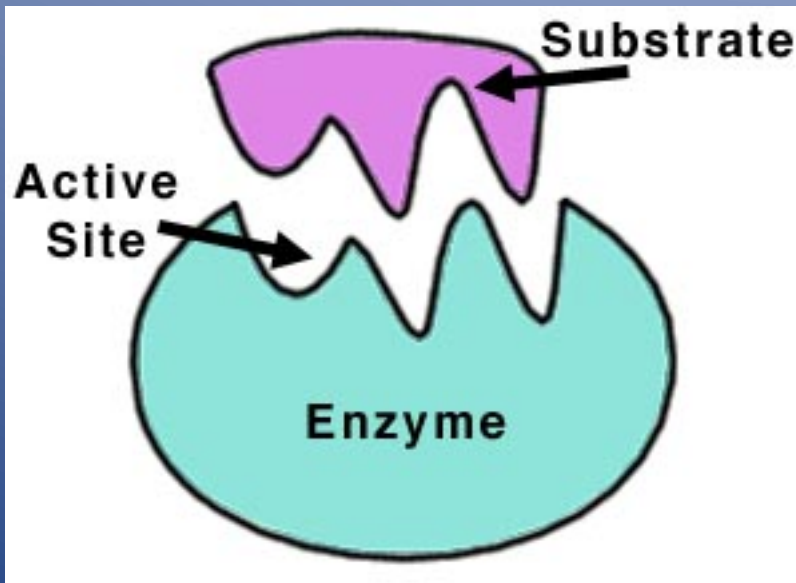
- *Catalyst*: speeds up rate of chem rxn by lowering activation energy

- *Enzyme*:

- protein
 - biological catalyst
 - delicate 3-D shape, specific



- **Substrate:** reactants of catalyzed rxns
- **Active site:** on enzyme, where substrate binds to be catalyzed
 - “lock & key”: specific substrates have specific enzymes that catalyze them



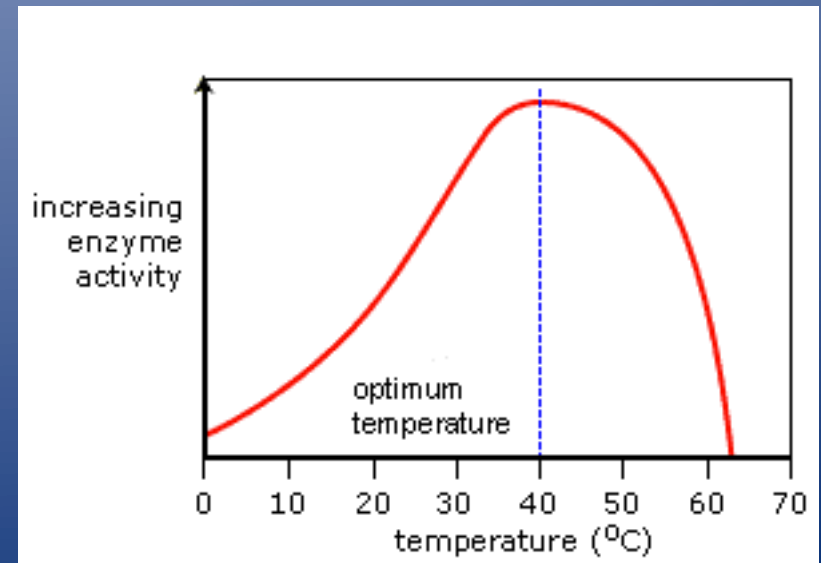
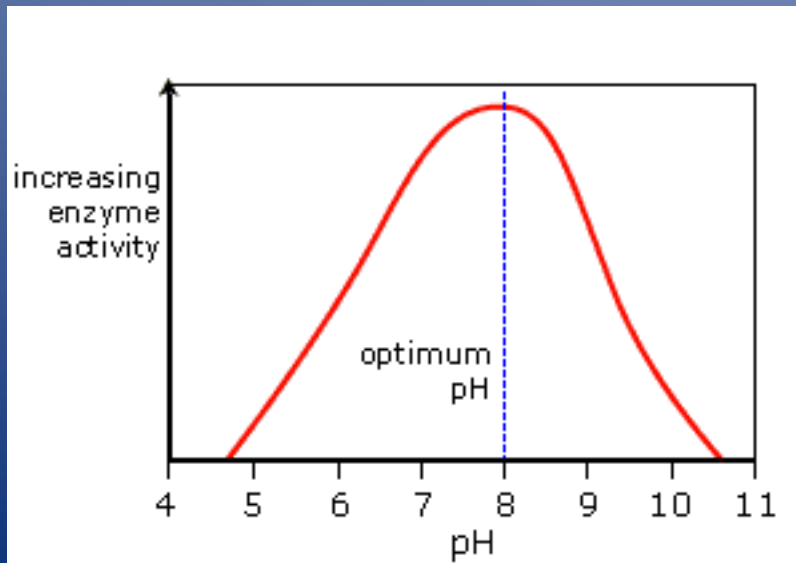
- Regulation of enzyme activity

- pH

- If not optimal, lower rate of rxn

- Temperature

- Lower temps = slower molecule mvmt = lower rate of rxn
 - Denaturing: deforming of active site due to excess temp = lower rate of rxn



– Concentration of substrate

- Low conc of substrate = harder for active site to “find” substrate = lower rate of rxn
- Hi conc of substr = active sites all occupied = rate of rxn levels off

