

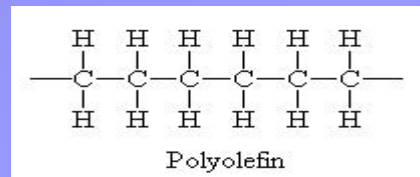
Carbon Based Molecules

Organic Chemistry

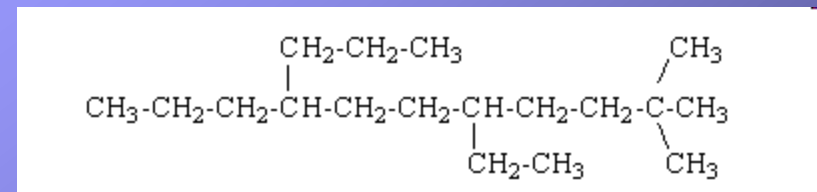
Carbon – life's building blocks

- Unique properties
 - 4 unpaired electrons = 4 possible bonds
 - Covalent bonds with many atoms, including other carbon atoms
- 3 main types of molecules

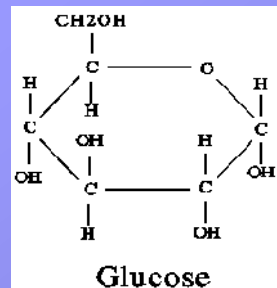
- Chains



- Branched chains



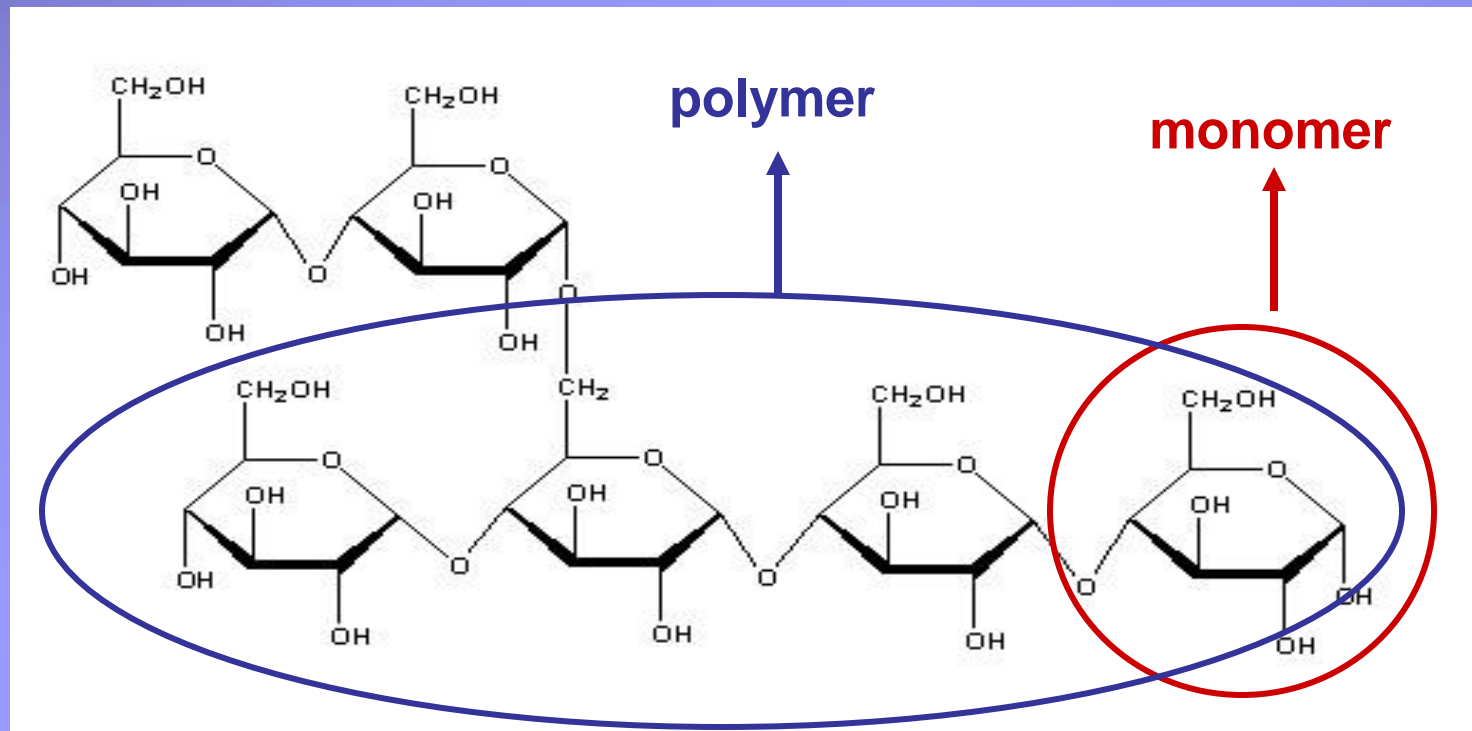
- Rings



Organic Macromolecules

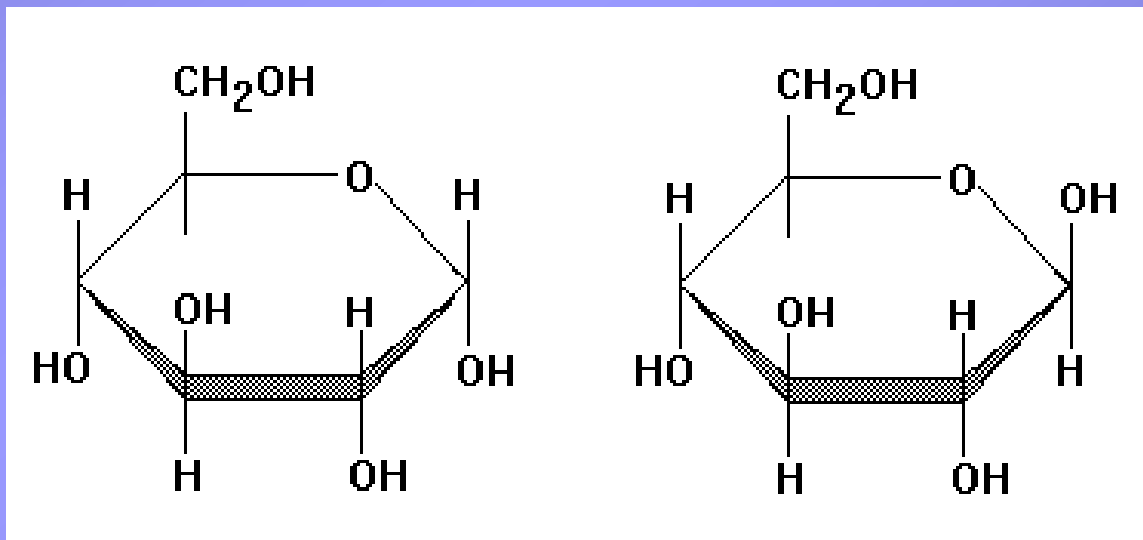
- Life on earth is considered carbon based because the 4 major molecules that make up living things are formed around carbon
- Carbon (C), hydrogen (H), nitrogen (N), and oxygen (O) are the 4 main elements in organic molecules

- Monomer – subunit of molecule
- Polymer – large molecule made up of many monomers



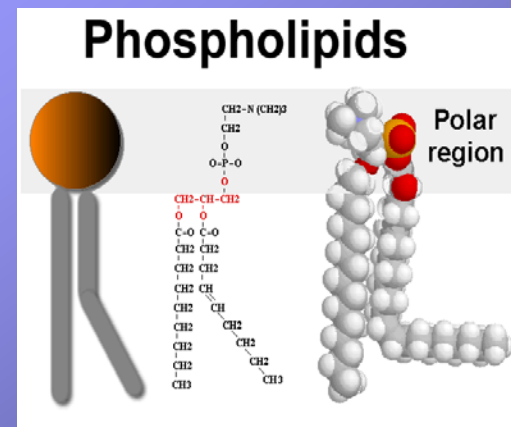
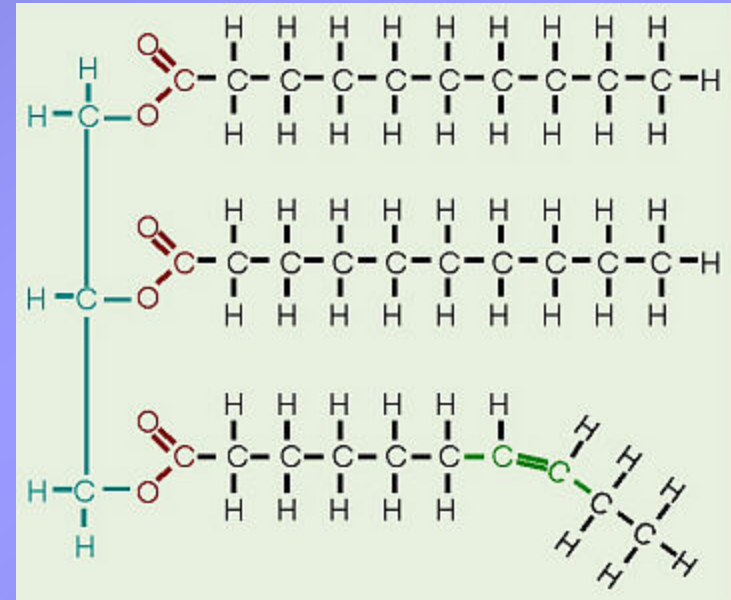
Carbohydrates

- C, H, O
- Monomers = Monosaccharide (one sugar)
- Polysaccharide = 3 or more (disaccharide = 2 sugars)
 - Starch, glycogen, cellulose



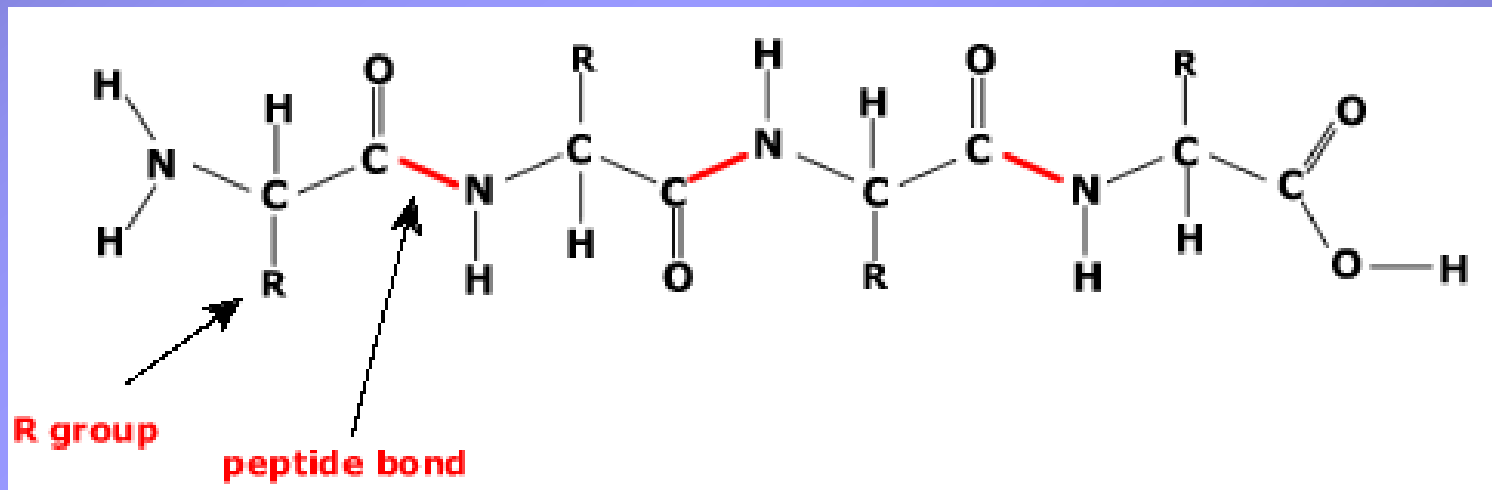
Lipids

- C, H, O
- Monomers = Glycerol + fatty acid chain
- Saturated = single bonds, solid at room temp
- Unsaturated = double bonds, liquid at room temp



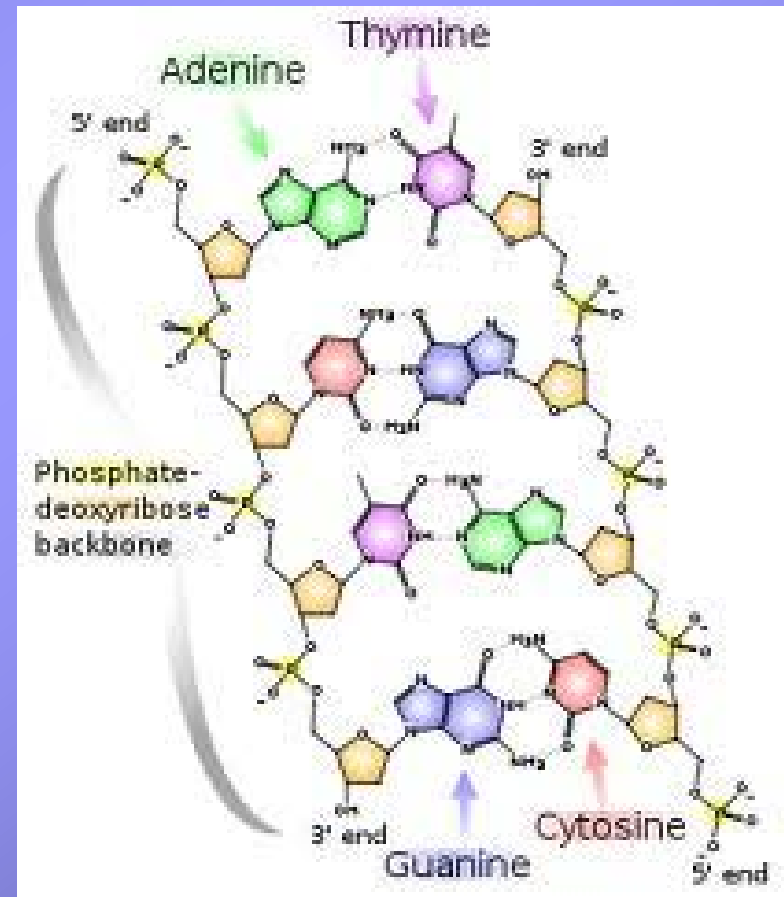
Proteins

- C, H, O, and N
- Made up of amino acids
- Peptide bonds
- Folding affects structure



Nucleic Acid

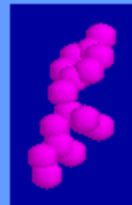
- Monomer = nucleotide
Phosphate group,
sugar group and
nitrogen base
- DNA and RNA



Enzymes

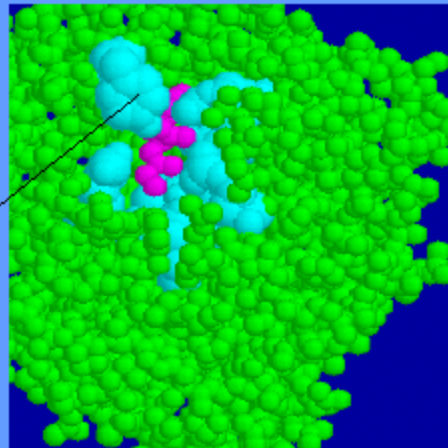
Chapter 2.5

Induced Fit Theory



Substrate

Substrate - Enzyme Complex



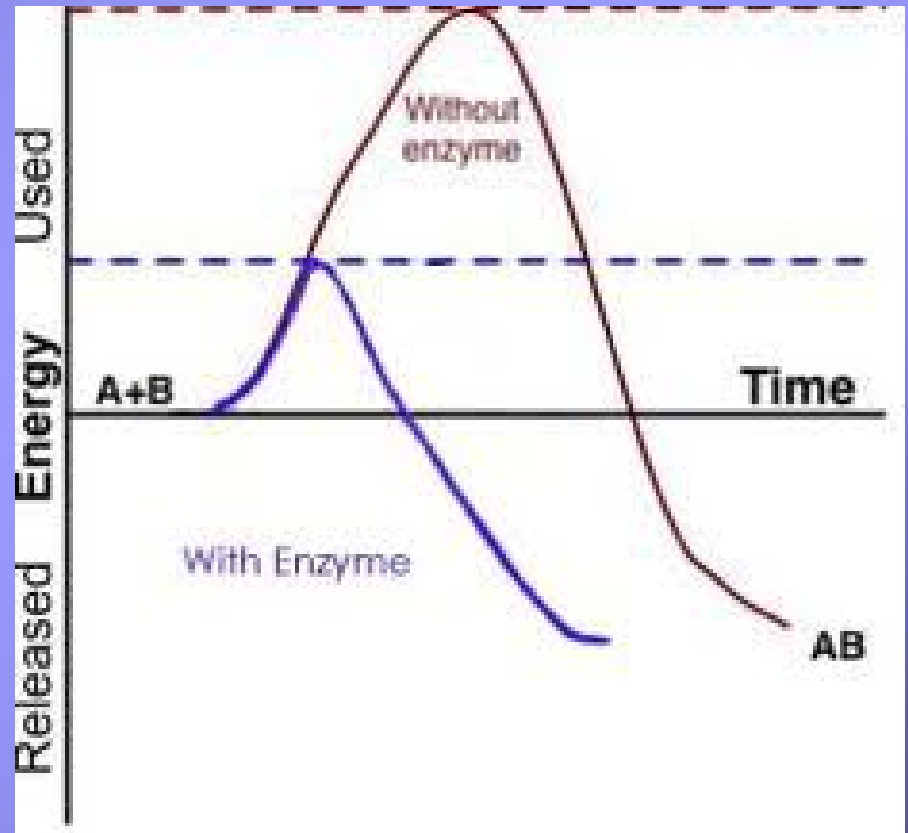
Active Site

Activation Energy

- Energy needed to start a chemical reaction
- Catalyst – lowers activation energy = faster reaction

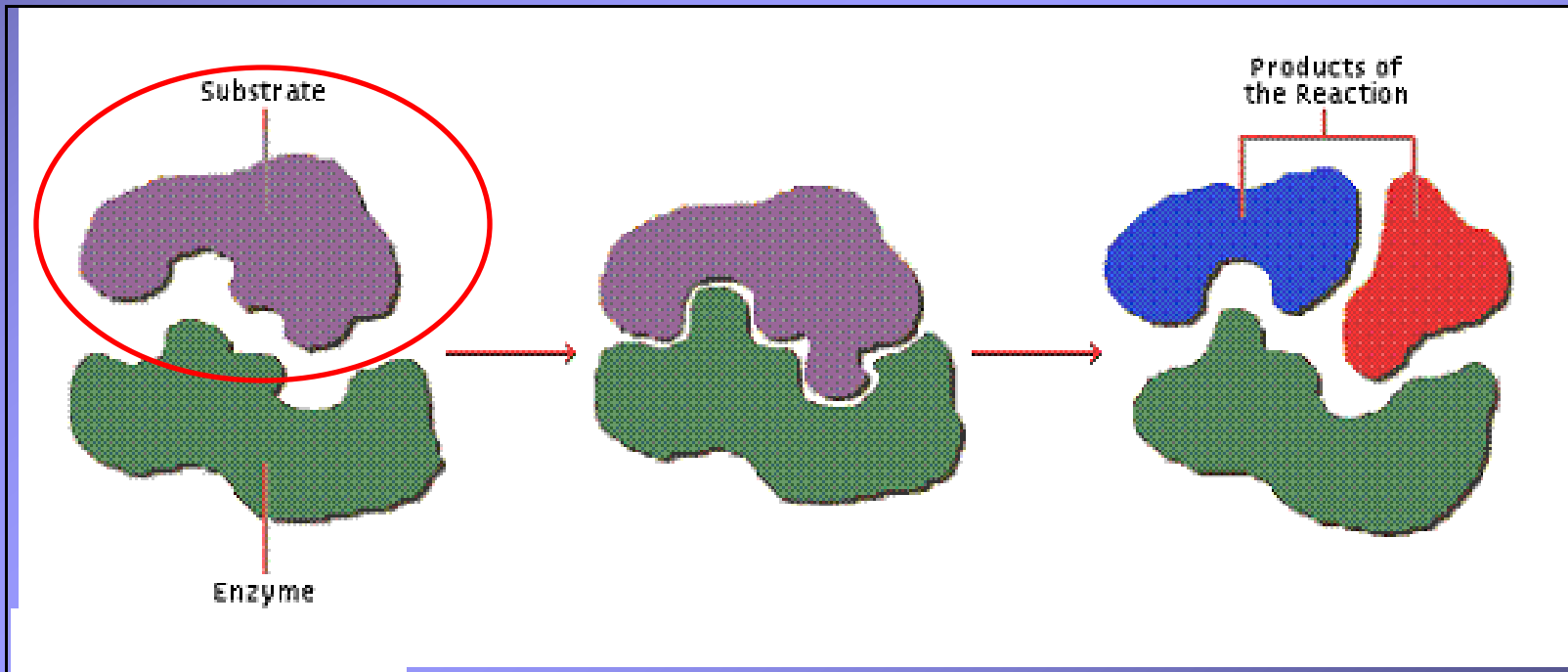
Enzyme

- Special protein – catalyst for biological reactions, not changed



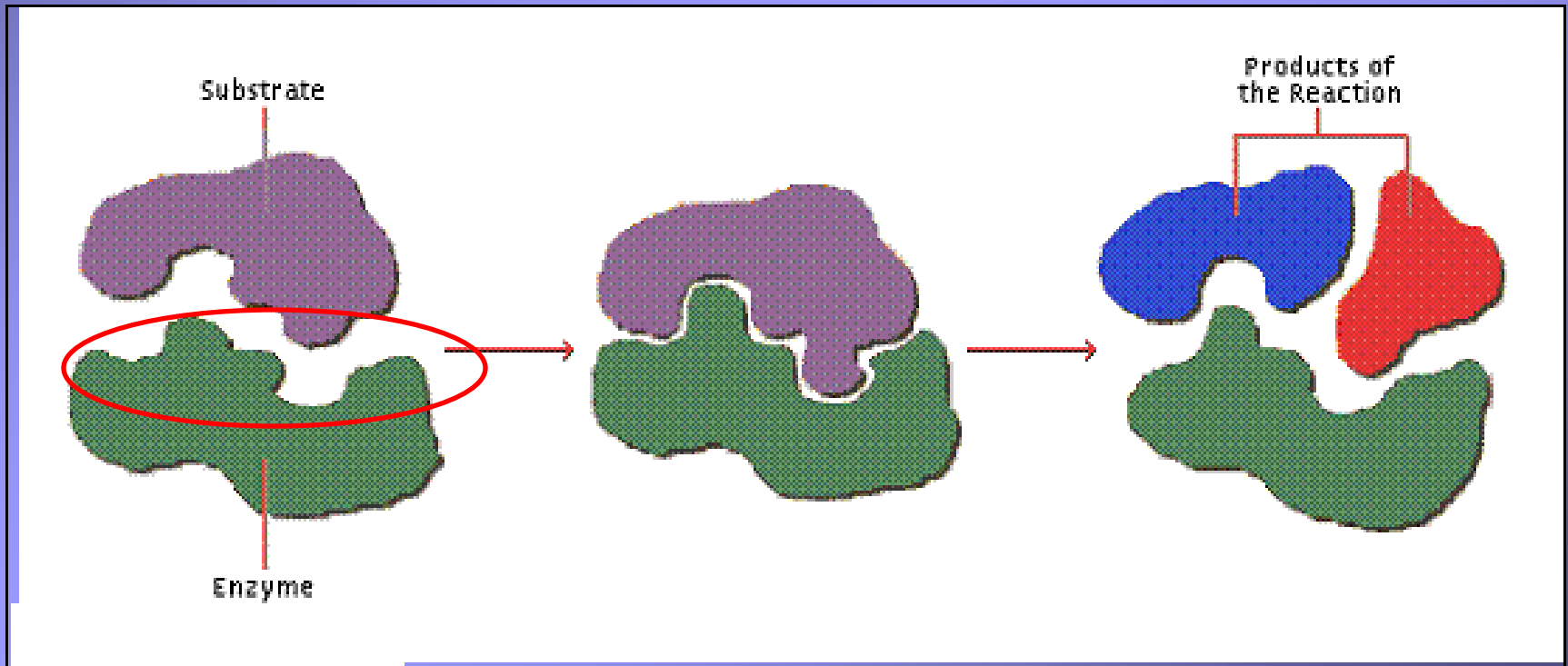
Enzyme Terms

- Substrate – reactants
(substance going into reaction)



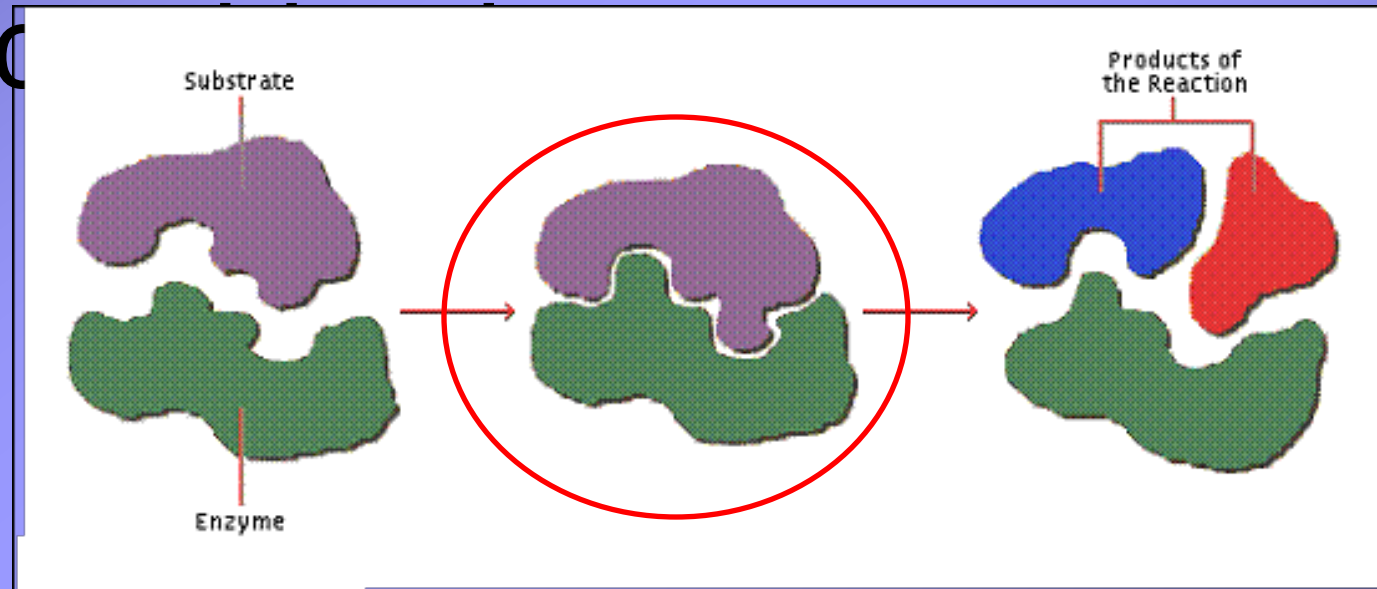
Enzyme Terms

- Active site – section on enzyme where substrate binds



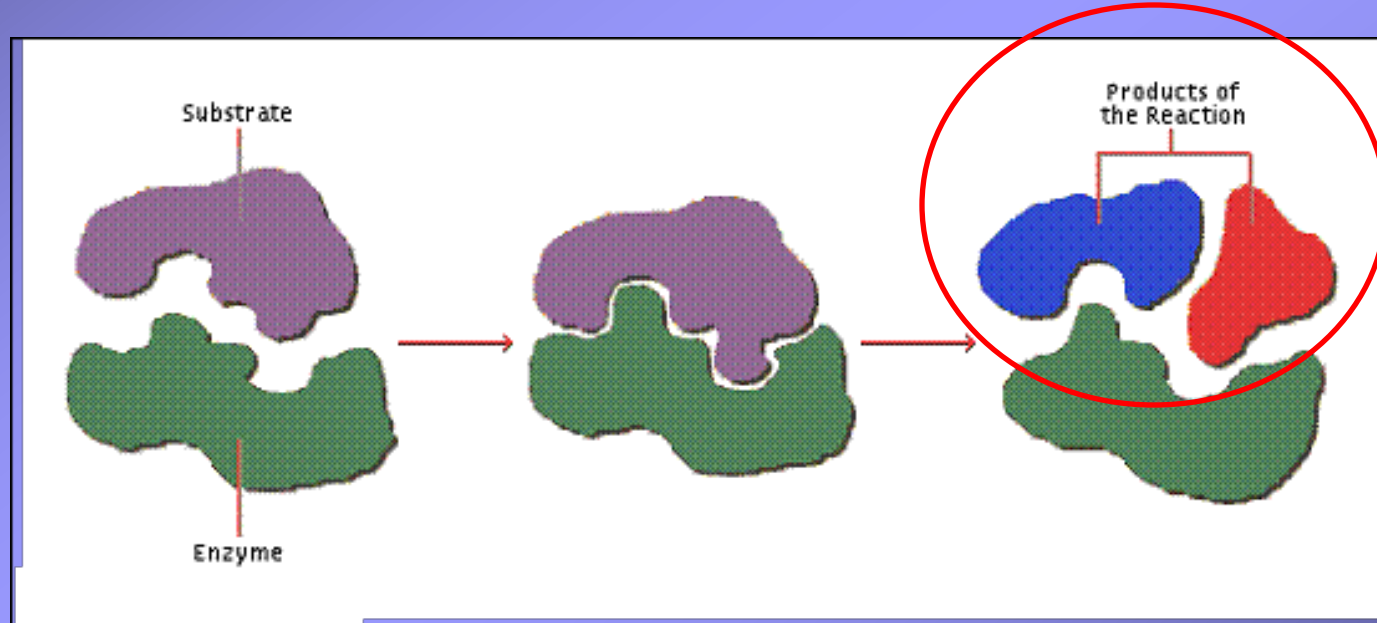
Enzyme Terms

- Enzyme substrate complex – temporary structure with enzyme and substrate



Enzyme Terms

- Products – outcome of reaction



Lock and key

- Enzymes are specific to certain reactions

