SBI 4U
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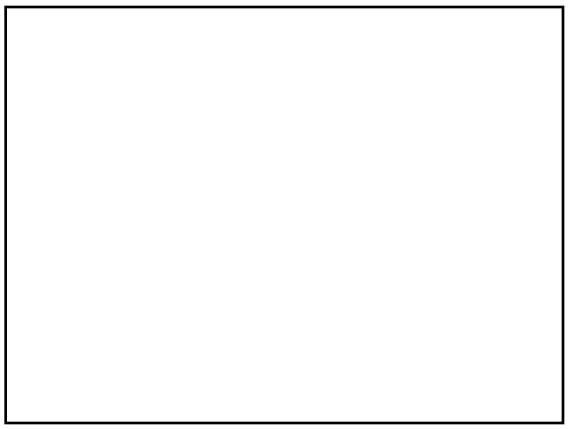
Enzymes

Enzyme: _____

_____

- Enzymes are not used up in the chemical reaction

_____ the energy that must be overcome in order for a chemical reaction to occur.



- Catalysts allow reaction to proceed by decreasing the activation energy of the reaction.
- Enzymes _____ and _____ bonds that normally break in a reaction, therefore decreasing activation energy.

_____: reactant that an enzyme works on when it catalyzes a chemical reaction

- substrate binds to a particular area on the enzyme, each enzyme binds a specific substrate.

_____: Location where the substrate bonds; usually a pocket or a groove in the three dimensional structure

_____: As the substrate enters the active site, reactions between functional groups may cause an enzyme to change it's shape

_____: attachment of the substrate to the enzyme's active site

Factors that might limit enzyme effectiveness:

1)_____

- Reactions catalyzed by enzymes can be saturates
  - limited number of enzymes

2) _____

- A rise in temperature will cause catalyzed reactions to speed up to a point
- After a certain temperature, enzymes begin to denature

3)_____

- After a certain pH, enzymes begin to denature

In order to function, some proteins require either:

1) _____: nonprotein components that may bind to either the enzyme or the substrate that help it function

2) _____: organic nonprotein components that help the enzyme function

Enzyme Inhibition

_____: Similar shape to substrate, enter the enzyme's active site and block normal activity

- Reversible, can be overcome by increasing amount of substrate

_____: bind to another section of the enzyme, changing the enzyme's shape

- Can't be overcome by increasing the amount of substrate

Allosteric Regulation

- Cells must control enzyme activity, do so by limiting production or inhibiting action

_____: Receptor sites some distance from the active site that band substances

- _____: Substance that binds to an allosteric site on an enzyme and stabilizes protein conformation
- _____: Substance the binds to an allosteric site that stabilizes the inactive form

_____: a method of metabolic control in which a product formed later in a series of reactions acts as an allosteric inhibitor