*Biochemistry: Enzymes*

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pd. \_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**ENZYMES:**

A specialized type of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Function in our body:**

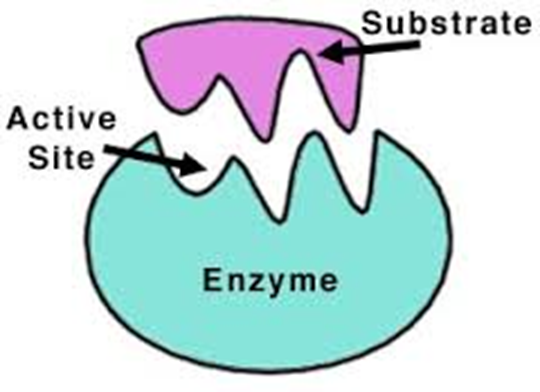
* Acts like a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_= substance that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ up the rate of a

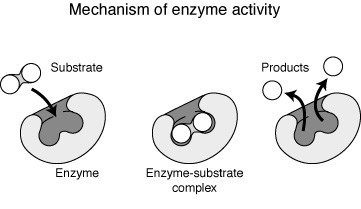
chemical reaction but it is \_\_\_\_\_\_\_\_\_ used up in the reaction.

* Enzyme(s) reduce \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_= amount of energy needed to begin a reaction
* Usually end in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_= an organic molecule \_\_\_\_\_\_\_\_\_\_\_\_with the enzyme to

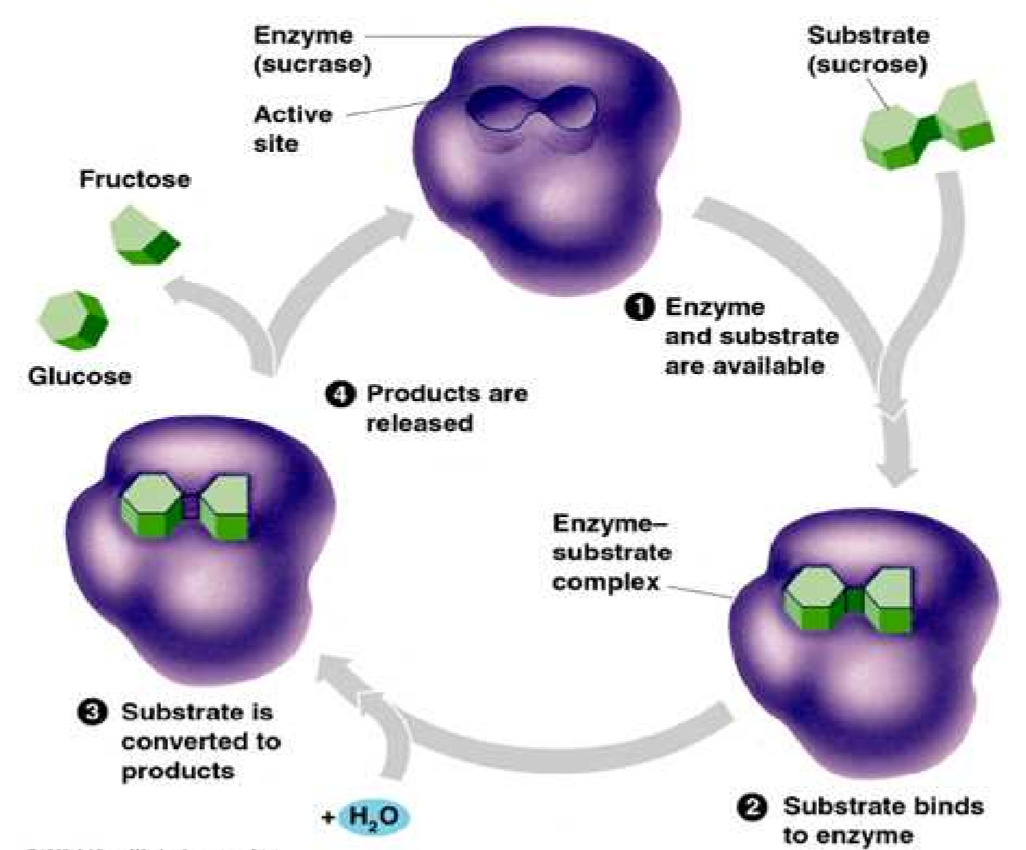
\_\_\_\_\_\_\_\_\_\_in the reaction.

* Need an active site on the enzyme
  + - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- attracts and holds only \_\_\_\_\_\_\_\_\_\_\_\_\_\_molecules called\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
      * **“Lock-and-key” system**- one “key” will fit “lock”; perfect fit
      * **Induced Fit** – “lock” will mold around the “Key” if fit is close enough
    - Therefore, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ enable molecules called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_to undergo a chemical change to form new substances, called\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



\_\_\_\_\_\_\_\_

* Example of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of sucrose using the enzyme (\_\_\_\_\_\_\_\_)

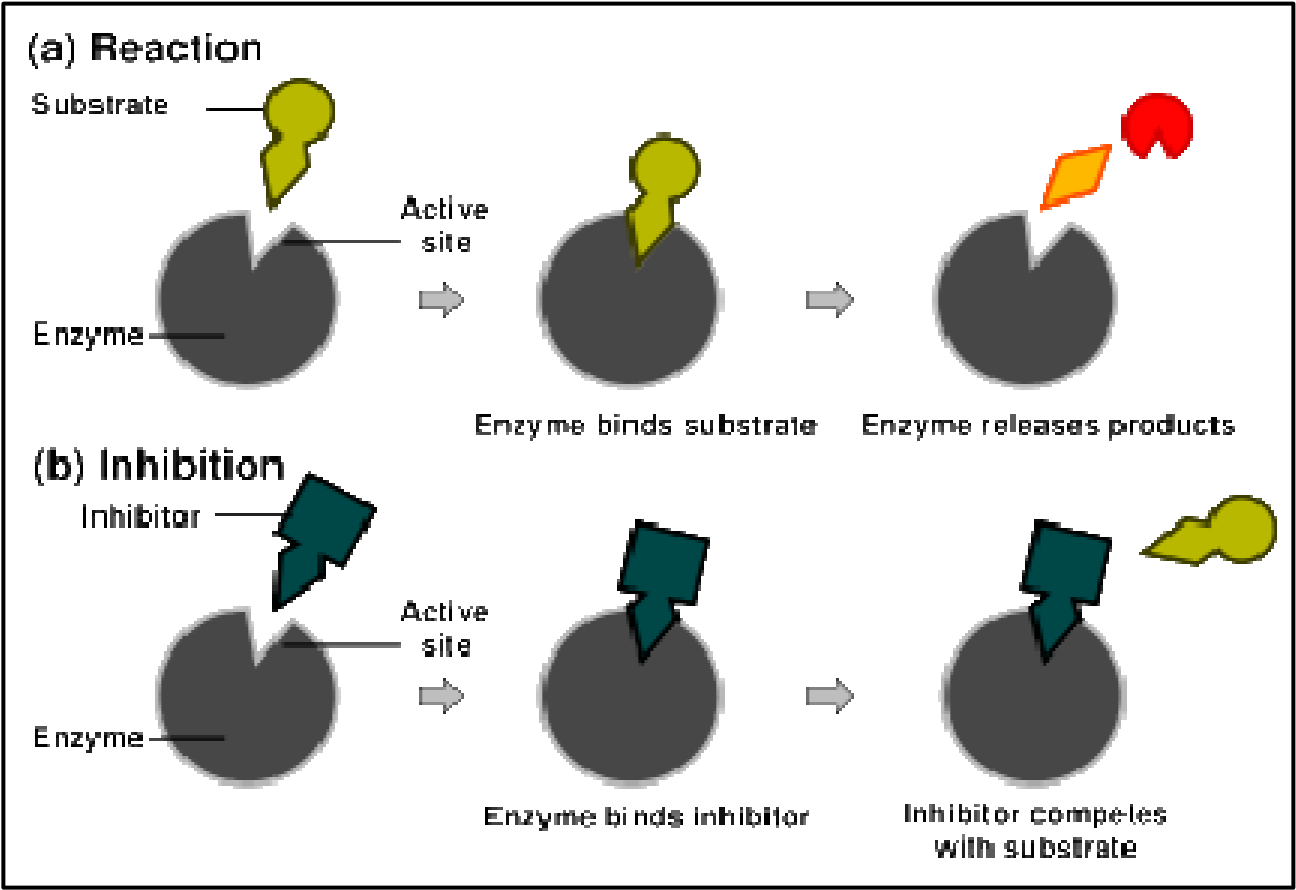


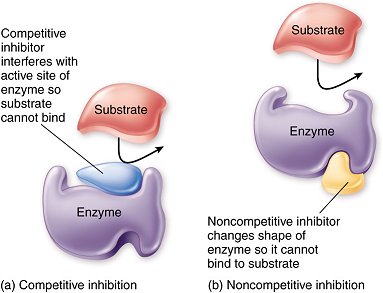
**Enzyme Inhibitors**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_= a substance that

\_\_\_\_\_\_\_\_\_\_\_\_\_the activity of an enzyme by entering the \_\_\_\_\_\_\_\_\_\_\_\_\_\_in place of the

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_whose structure is \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ inhibitors:
  + - * Inhibitors that do not enter the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, but bind to another part of the enzyme causing the enzyme to change its **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, which in turn alters the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* Could not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_without enzymes! (Almost all chemical reactions in cells

require an enzyme)

* + - * **Speeds up the reactions in:**
        1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of food
        2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of molecules
        3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of energy

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_are named for the compound they work on.
  + - You drop the current compound ending and replace it with \_\_\_\_\_\_\_\_\_

o For example:

o Lactose’s enzyme is \_\_\_\_\_\_\_\_\_\_\_\_\_\_

o Maltose's enzyme is \_\_\_\_\_\_\_\_\_\_\_\_\_\_

o Sucrose's enzyme is \_\_\_\_\_\_\_\_\_\_\_\_\_\_

o \_\_\_\_\_\_\_\_\_\_\_\_\_\_(in your salvia) is the enzyme for starch (amylose)

**2 Factors that affect enzymes:**

* + 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- Too high temperatures will denature (change the shape of) the active site of the enzyme, causing the enzyme to not work properly.
    2. \_\_\_\_\_\_\_\_\_\_\_\_\_ – every enzyme has an optimum pH in which they will work. Altering the pH will cause the enzyme to not work properly.

**Examples**

* Cat box example

Urea + urease 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ + carbon dioxide

Clean litter in cooler temps = less smell due to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rate of reaction

* pH (most like 6 - 8 pH near neutral)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Juice on apple

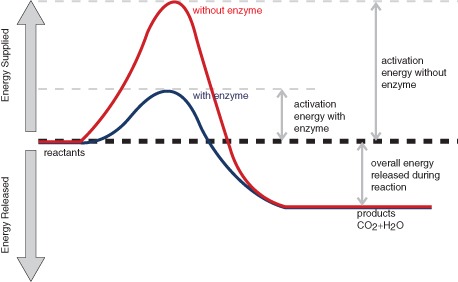
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (PPO) is the enzyme that reacts with oxygen to turn the apple brown

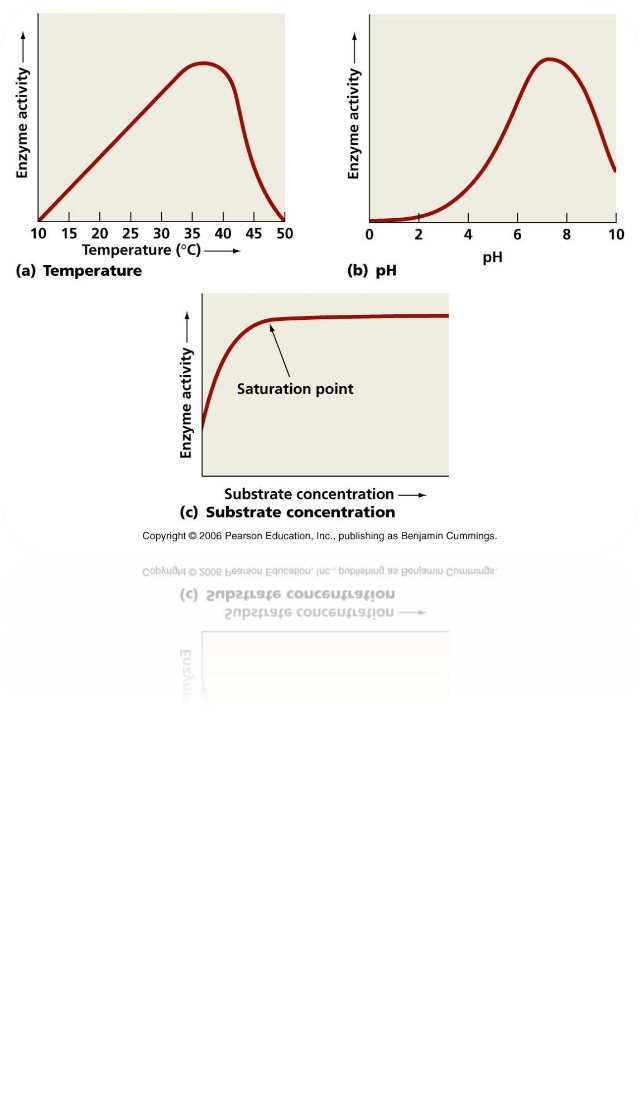
**HOW DOES OUR BODY GET ENERGY FROM THE BREAKING DOWN OF MOLECULES?**

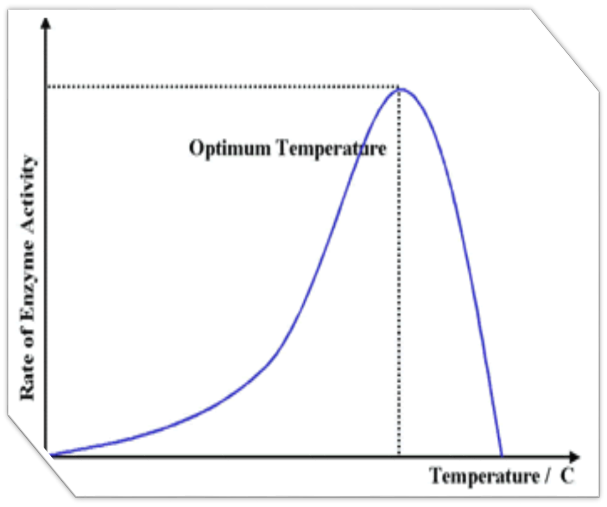
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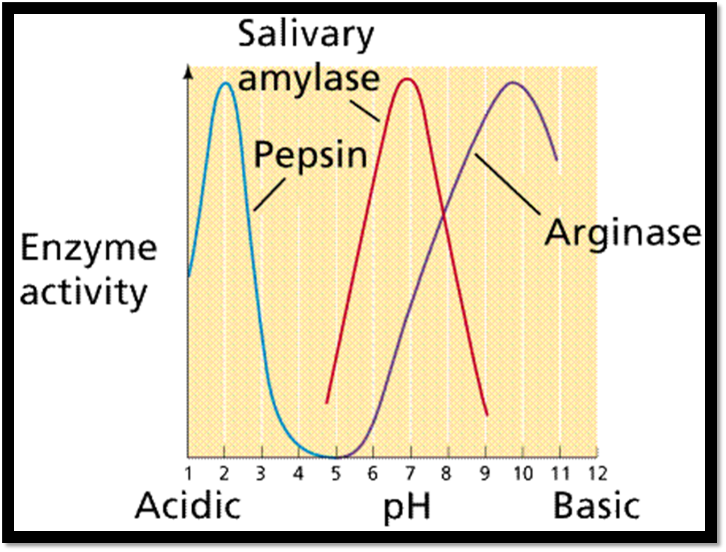
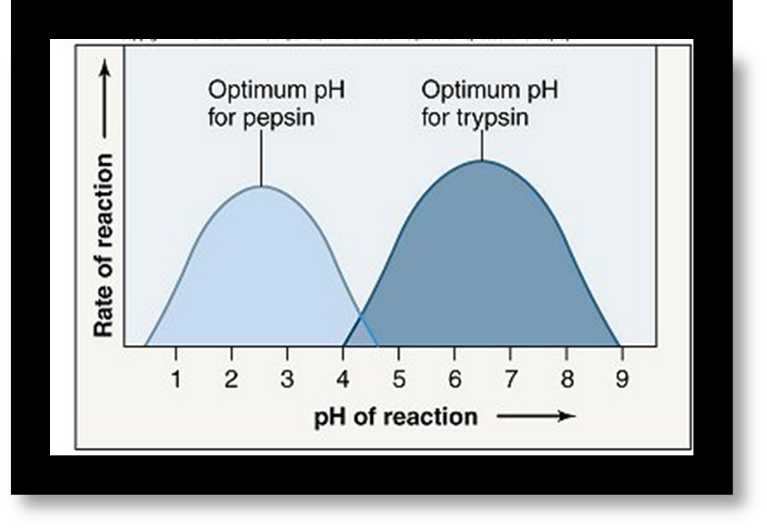
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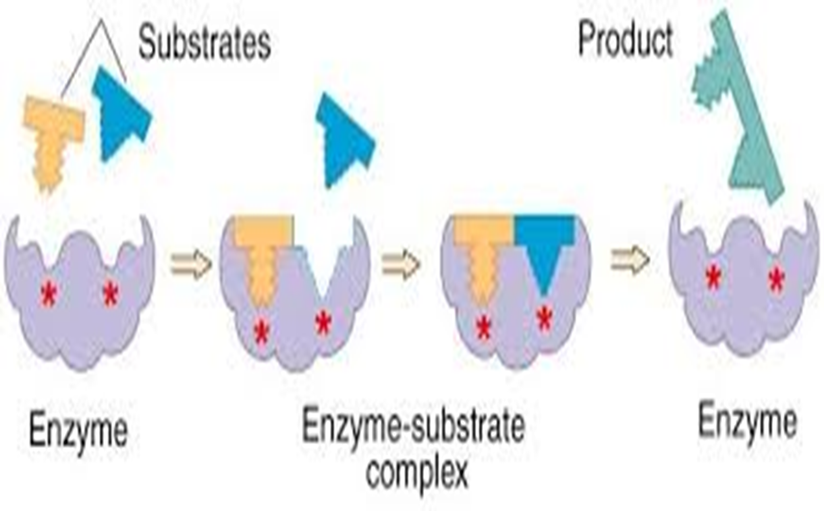
**Draw a conclusion based on each graph below.**

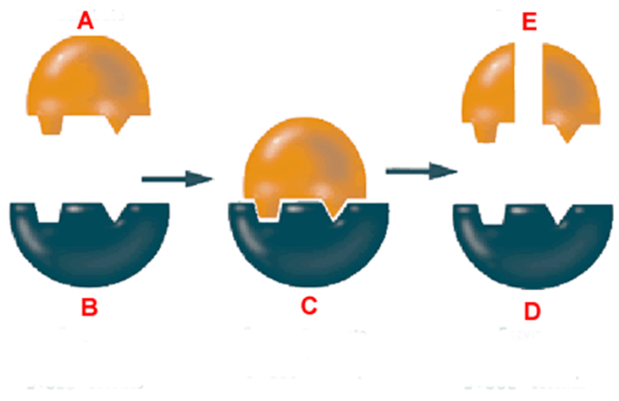










**Dehydration synthesis or hydrolysis?**