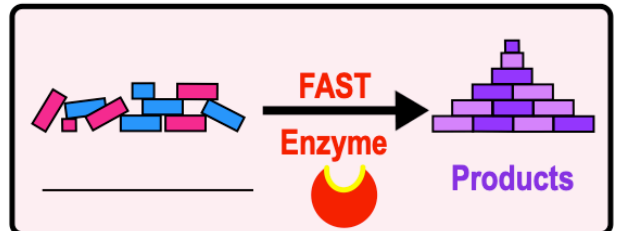


CONCEPT: ENZYMES

● **Enzyme:** molecule that catalyzes (or “_____ - _____”) a *chemical reaction* _____ being consumed.

□ **Substrates:** the reactants of a chemical reaction that is *catalyzed* by an enzyme.

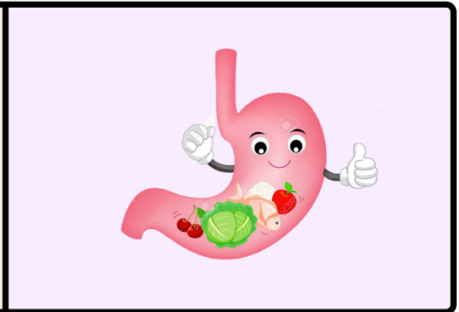
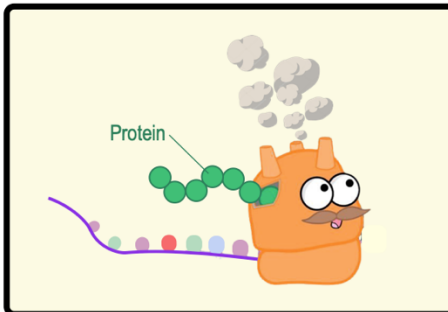
EXAMPLE: Non-Enzymatic vs. Enzymatic Reaction.



Functions of Enzymes

● *Enzymes* have a variety of functions in living cells including:

- ① Building _____; ② Copying _____; ③ _____ food.



PRACTICE: Which of the following are examples of the functions of enzymes?

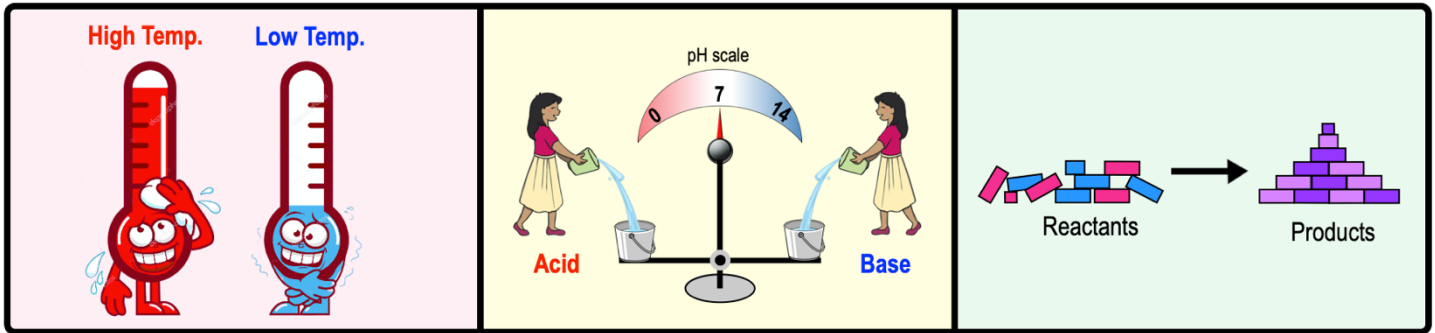
- a) A lactase enzyme breaking down lactose sugar in the small intestine.
- b) A DNA polymerase enzyme synthesizing new strands of DNA.
- c) A lipase enzyme breaking down fats (lipids) in the small intestine.
- d) A helicase enzyme unraveling DNA so it can be replicated.
- e) All of the above.

CONCEPT: ENZYMES

Environmental Factors Affecting Enzyme Activity

- **Enzyme Activity:** a *measure* of the amount of _____ an enzyme can produce in a certain amount of time.
- Many *environmental* factors affect an enzyme's activity:

① _____ ② _____ ③ _____ of reactants.



- *Recall:* Several environmental factors (ex. high temp. or acidity) can cause a protein or enzyme to _____.
 - *Denatured* enzymes *lose their shape* & would therefore have _____ activity.

EXAMPLE: Certain species of bacteria are able to perform metabolic reactions (involving enzymes) in hot springs because:

- a) They are able to maintain a lower internal temperature.
- b) High temperatures make catalysis unnecessary.
- c) Their enzymes have high optimal temperatures.
- d) Their enzymes are completely insensitive to temperature.

PRACTICE: Which characteristics are likely associated with an enzyme isolated from a human stomach where conditions are strongly acidic.

- a) An enzyme that functions properly at 70 degrees Fahrenheit and at a neutral pH.
- b) An enzyme that functions properly at 98 degrees Fahrenheit and at an acidic pH.
- c) An enzyme that functions properly at 98 degrees Fahrenheit and at a neutral pH.
- d) An enzyme that functions properly at 70 degrees Fahrenheit and at an acidic pH.