



# Enzymes

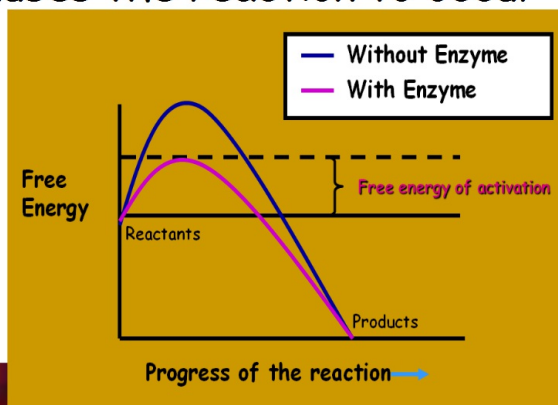
## Enzymes

- Most enzymes are proteins. (Organic)
- Enzymes are catalyst: used to accelerate a reaction
- ★ They are Not permanently changed in the process.
- Enzymes are specific for what they will catalyze.
- They are Reusable
- End in -ase (Ex: *Sucrase, Lactase, Maltase*)

## Enzymes

Most chemical reactions occur very slowly.

Enzymes work by **reducing the activation energy** (the energy needed to start a reaction). This causes the reaction to occur faster.



## Structure of an Enzyme

### **Substrate**

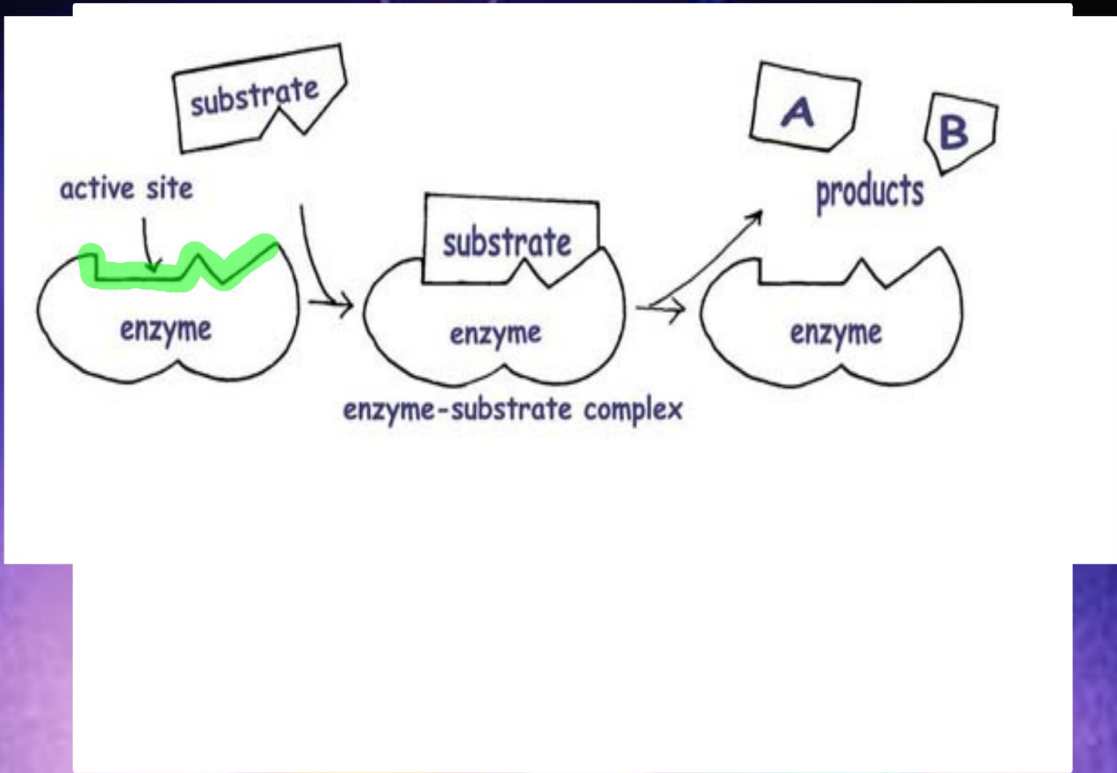
-The reactant that the enzyme will work on.

### **Active Site**

-The region of an enzyme molecule which binds to the substrate. **Fit together like a lock and key.** Enzymes are specific to the substrate they work on. Once the enzyme binds to the substrate it forms the enzyme/substrate complex.

### **Products**

-The final outcome of the reaction.





**Enzymes are affected by 3 factors:**

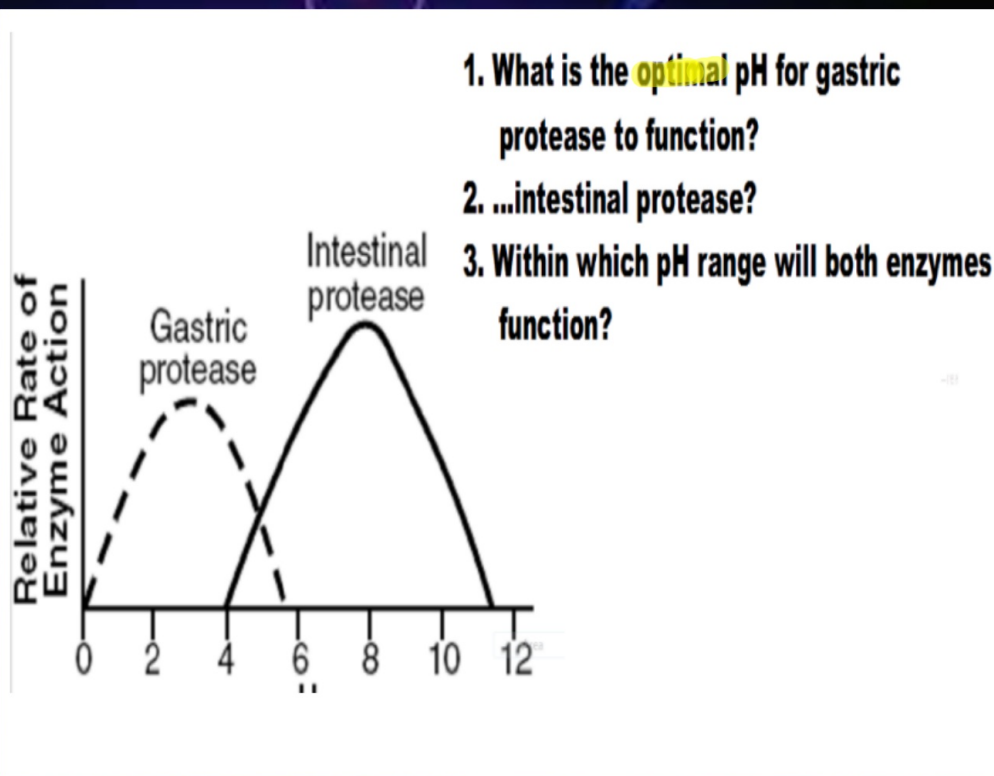
1. Extreme Temperature

- high temps may **denature** (unfold) the enzyme.

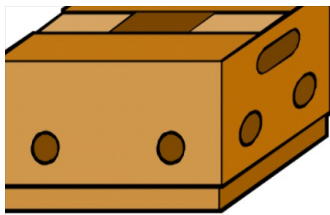
2. pH (most like 6 - 8 pH near neutral)

3. Salinity



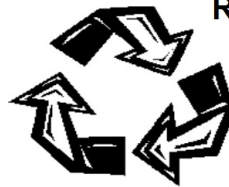


1. What is the **optimal** pH for gastric protease to function?
2. ...intestinal protease?
3. Within which pH range will both enzymes function?



# ENZYMES

FIT WITH  
SUBSTRATE  
LIKE A LOCK FITS  
1 KEY



ARE  
REUSABLE

WORK BEST AT  
SPECIFIC  
TEMPERATURES



SPEED UP  
A  
REACTION

WORK IN A  
NARROW  
pH RANGE



1:1

ARE SPECIFIC  
ONE ENZYME PER  
SUBSTRATE



ARE MADE OF LONG  
CHAINS OF AMINO  
ACIDS