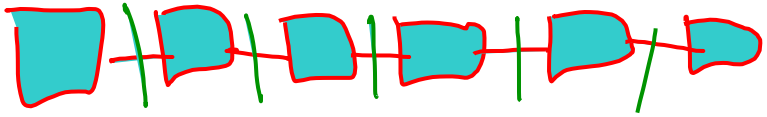
Chemical Reactions and Enzymes

chapter 2-4

Chemical Reactions

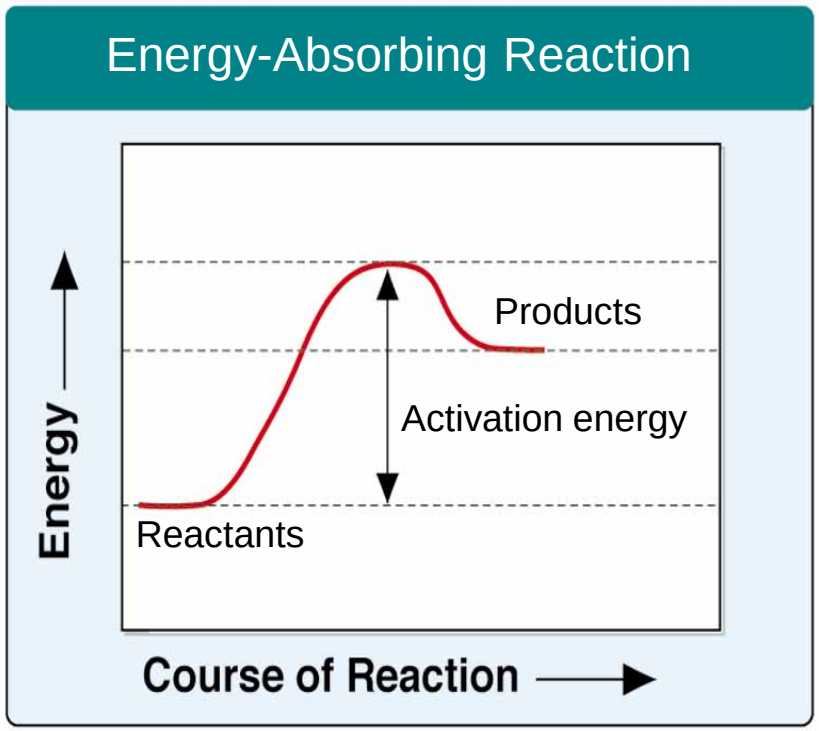
- A process where one substance is changed into something totally different
- Iron turning into rust
- Wood turning into ash
- Cake batter becoming a cake

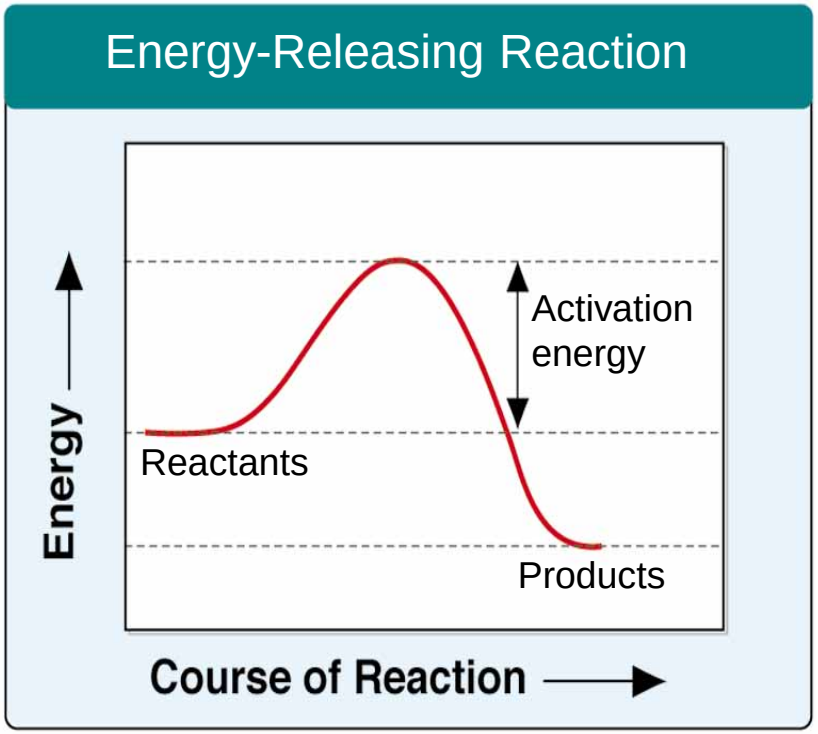
Chemical equation

- Reactant $\longrightarrow$ Product
- Bonds are broken and reformed
- $CO_2 + H_2O \longrightarrow H_2CO_3$
- Some chemical reactions release energy 
- Some chemical reactions absorb energy

Activation Energy

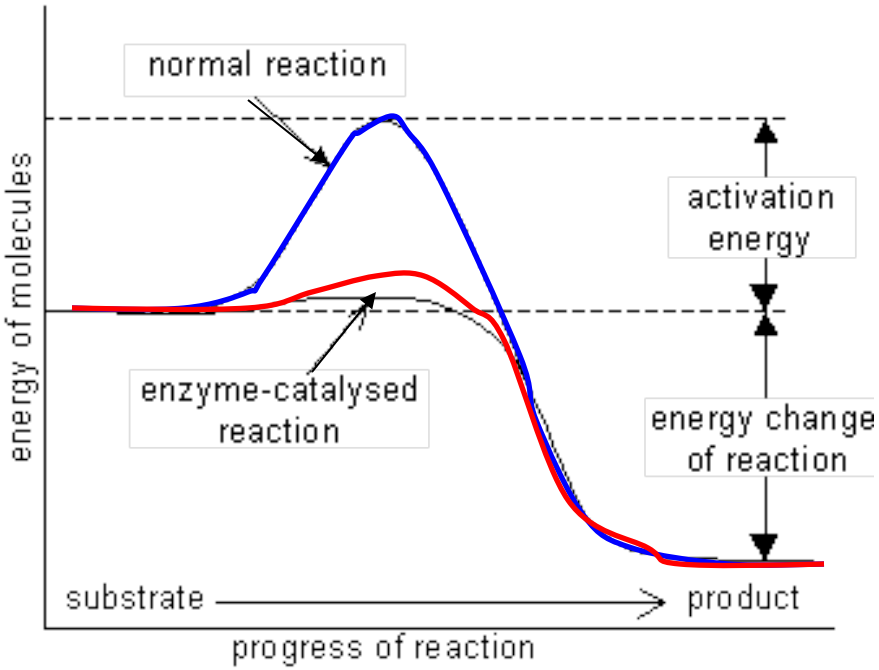
- Amount of energy required to get a chemical reaction started





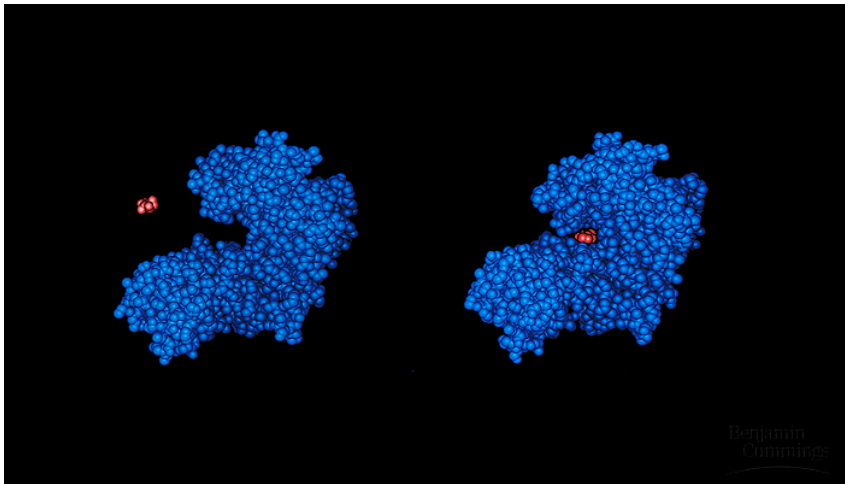
Enzymes

- Catalysts speed up reactions
- Enzymes are catalysts in cells
- Lower activation energy

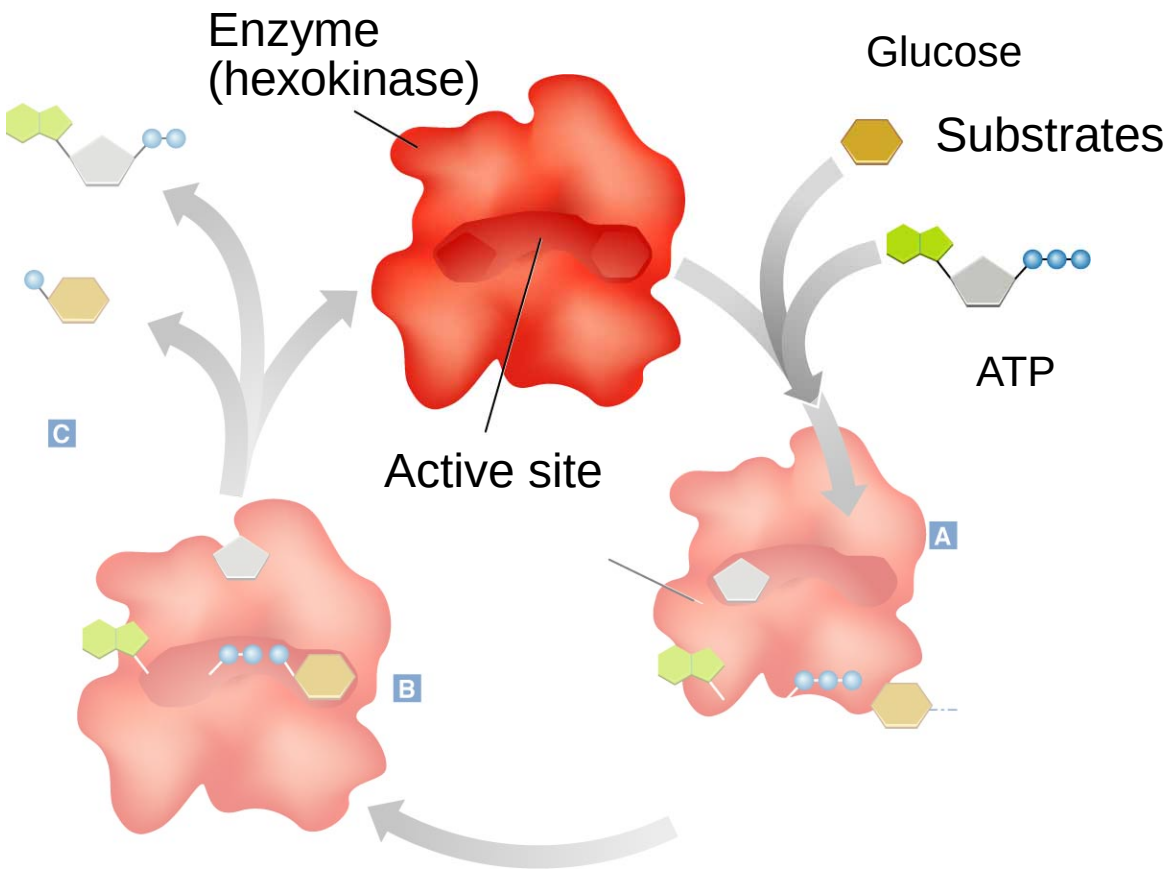


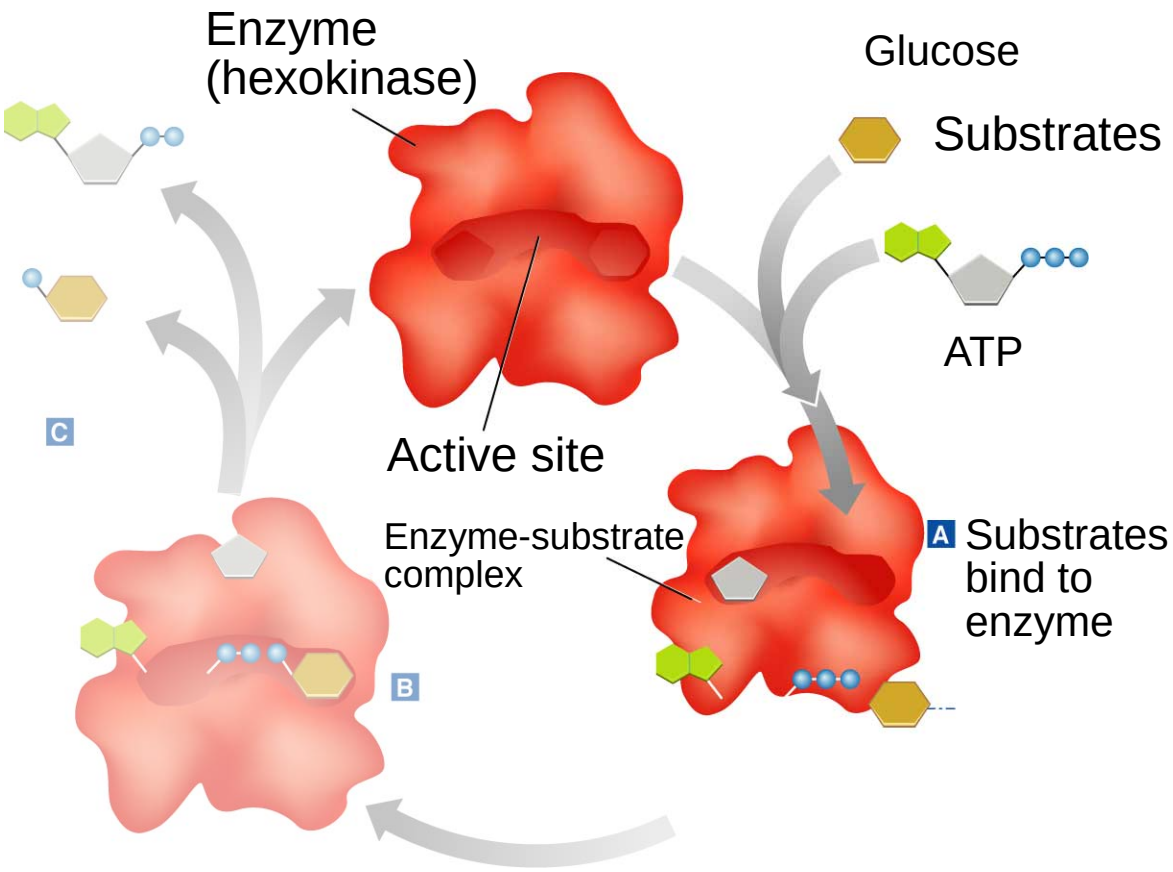
Enzyme Structure

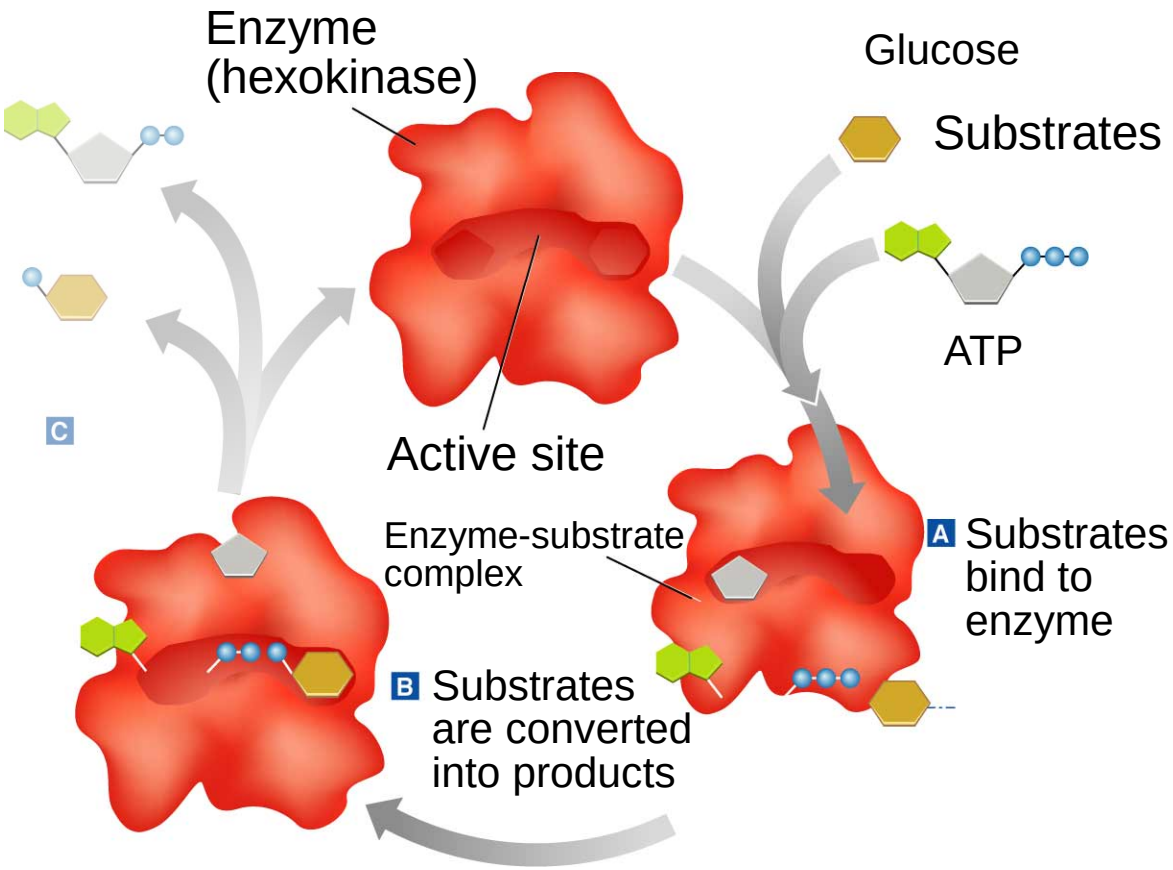
- Made of protein
- Specific shape
- Substrate fits into enzyme
  - Lock and key
- Changing the pH or temperature of the enzyme will denature it.
  - It will not work

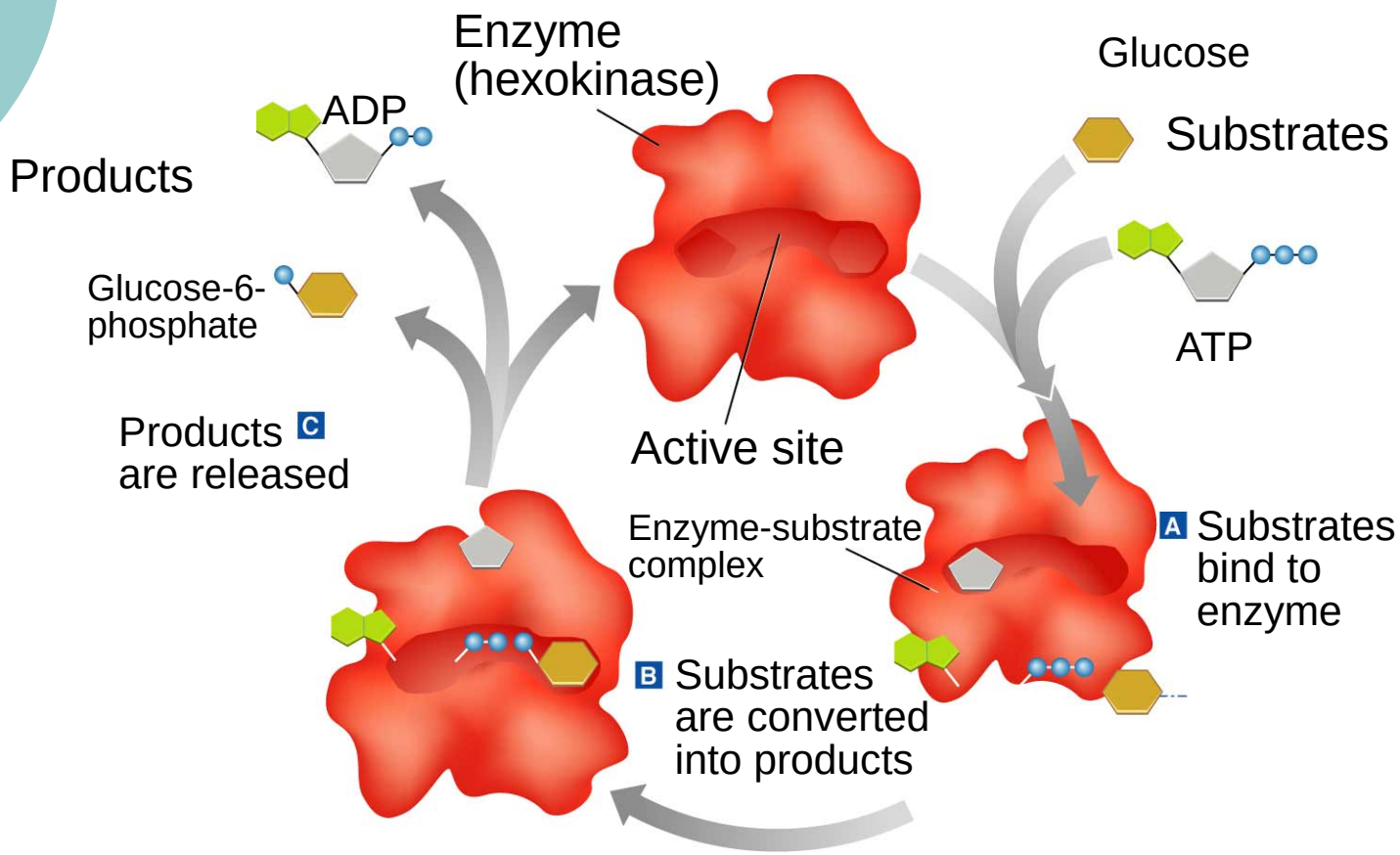


Watch this video about enzymes




Enzyme
(hexokinase)
Glucose
Substrates
ATP
Active site
C
Enzyme-substrate
complex
A
Substrates
bind to
enzyme
B


Enzyme
(hexokinase)
Glucose
Substrates
ATP
Active site
C
A Substrates
bind to
enzyme
Enzyme-substrate
complex
B Substrates
are converted
into products


Enzyme
(hexokinase)
ADP
Products
Glucose
Substrates
Glucose-6-
phosphate
ATP
Products
are released
C
Active site
Enzyme-substrate
complex
A
Substrates
bind to
enzyme
B
Substrates
are converted
into products