CONCEPT: ENZYME INHIBITION

●**Enzyme Inhibitors**: compounds that interfere with & selectively _____ the catalysis of specific enzymes.

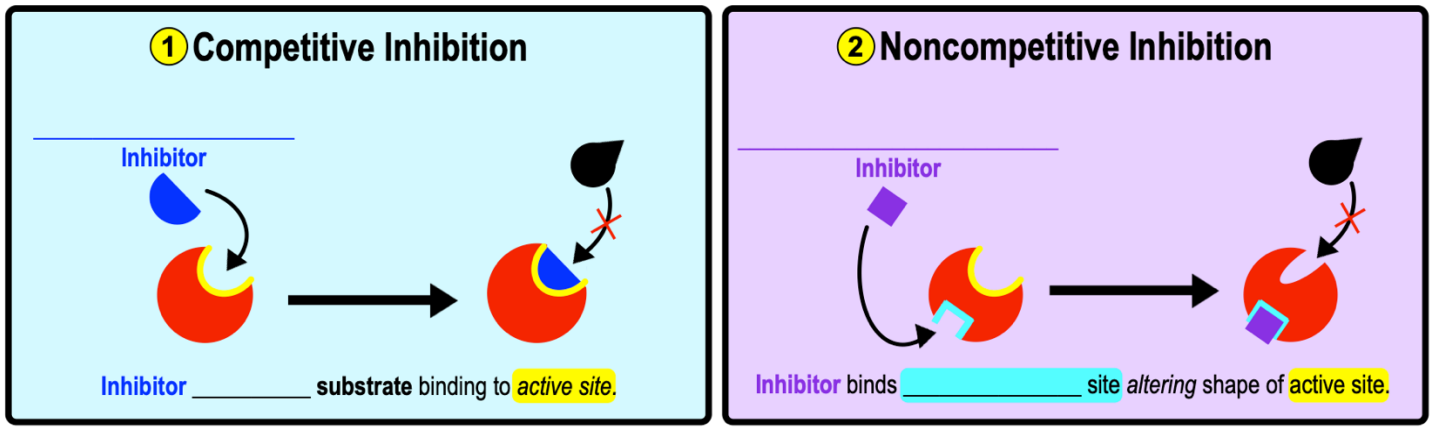
1 **Competitive Inhibitors:** *compete* with the substrate for a position in the free enzyme's _____ site.

□ Can only bind when the active site is _____.

2 **Noncompetitive Inhibitor:** *does not compete* with the substrate & binds at an _____ *site* on the enzyme.

□ *Allosteric site*: an alternative site for inhibitor binding that is _____ in the *active site*.

EXAMPLE: Competitive Inhibition vs. Noncompetitive Inhibition.



PRACTICE: Which of the following statements correctly describes competitive inhibition?

a) A competitive inhibitor binds to the substrate and inhibits it from binding to the active site of the enzyme.
b) A competitive inhibitor binds to a site other than the active site and inhibits the substrate from binding.
c) A competitive inhibitor binds to the active site and degrades the enzyme.
d) A competitive inhibitor binds to the active site of an enzyme and inhibits the substrate to bind.

PRACTICE: How does a noncompetitive inhibitor decrease the rate of an enzyme-catalyzed reaction?

a) By binding to the active site of the enzyme, thus preventing binding of the normal substrate.
b) By binding to an allosteric site, thus changing the shape of the active site of the enzyme.
c) By decreasing the free-energy change of the reaction catalyzed by the enzyme.
d) By binding to the substrate, thus changing its shape so that it no longer binds to the active site of the enzyme.

PRACTICE: Which of the following types of enzyme inhibition is overcome by increasing the substrate concentration?

a) The need for a coenzyme.
b) Noncompetitive inhibition.
c) Competitive inhibition.
d) None of the above.