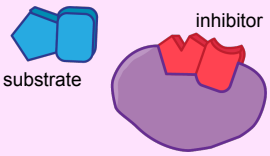
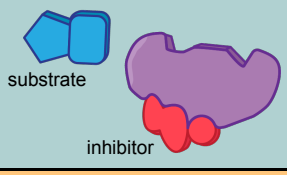
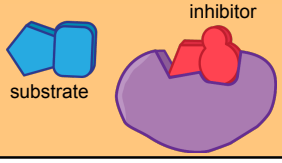
CONCEPT: ENZYME INHIBITION

- **Inhibition** _____ catalyzed reaction rates.
  - □ **Inhibitor**: _____ molecule or ion that _____ to the enzyme and interferes with its activity.
- Characteristics of inhibition:
  - □ **Competitive:** inhibitor binds to _____ site.
  - □ **Noncompetitive:** inhibitor binds to _____-active site.
  - □ **Reversible:** enzyme _____ its activity.
  - □ **Irreversible:** _____ loss of enzyme activity.

Enzyme Inhibition

Inhibition Type	Inhibitor	Interaction	Effect	To Reverse the Effect
Reversible Competitive 	• Similar in _____ and _____ to substrate Ex: Ibuprofen	• _____covalent at _____ site	• _____ the active site	• _____ concentration of substrate
Reversible Noncompetitive 	• Do _____ resemble substrate shape Ex: heavy metals	• _____covalent at _____-active site	• Causes a shape _____ in enzyme & the active site	• Use of special agents: _____ to inhibitors
Irreversible 	• Do _____ resemble substrate shape Ex: poisons & venoms	• _____ with R group within active site	• Blocks the active site	• Inhibition is _____

EXAMPLE: Match each type of inhibition with the correct statement: (a) reversible competitive, (b) reversible noncompetitive, (c) irreversible.

_____ Inhibitor decreases enzyme activity by binding at site other than active site.

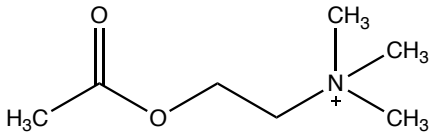
_____ Formation of strong covalent bond leads to permanent loss of enzyme activity.

_____ Substrate unable to bond with active site due to change in enzyme structure.

_____ Increasing concentrations of substrate increases reaction rate.

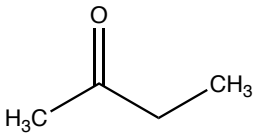
CONCEPT: ENZYME INHIBITION

PRACTICE: Which of the following inhibitors could be a reversible competitive inhibitor for acetylcholinesterase if its substrate is acetylcholine?

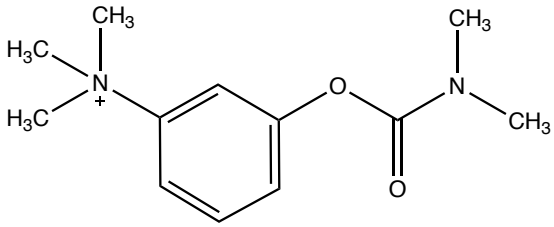


Acetylcholine

a)



b)



c)