CONCEPT: ALLOSTERIC EFFECTORS

●*Allosteric effectors*: regulatory molecules binding to _____ sites to affect an allosteric enzyme's _____.

□ _____tropic effectors: molecules affecting an allosteric enzyme's activity on a _____ molecule.

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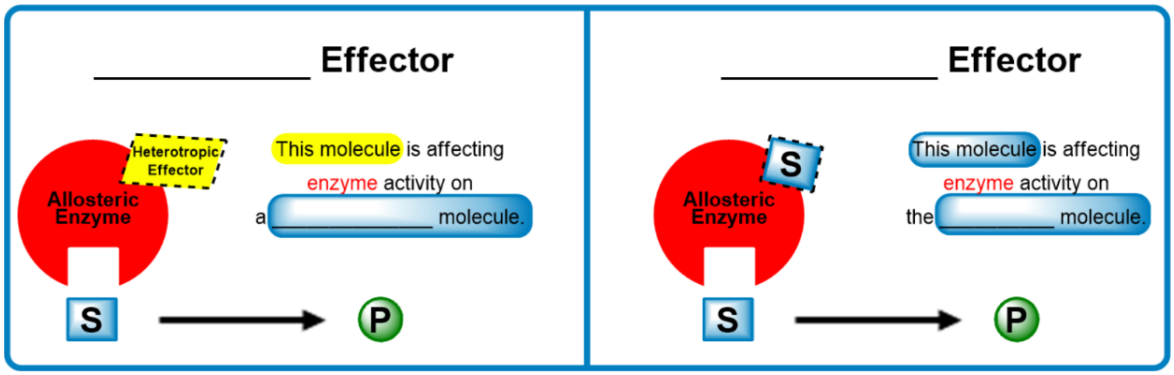
□ In other words, with *homotropic* effectors, the _____ itself will act as the allosteric effector.

EXAMPLE: Heterotropic vs. Homotropic Effectors.



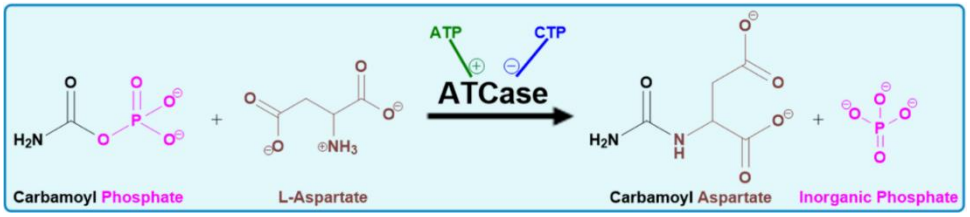
Activators vs. Inhibitors

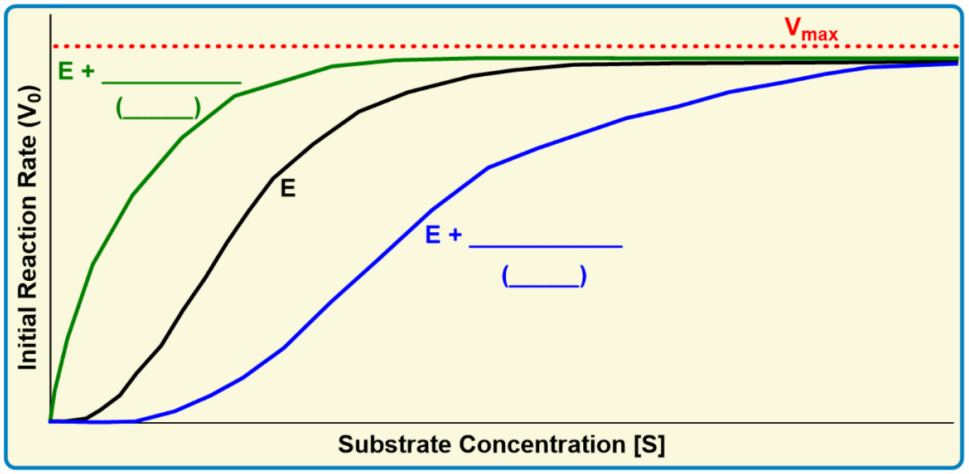
●Allosteric effectors also grouped in _____ other ways based on their result: 1) *Activators* (+) 2) *Inhibitors* (-)

□ _____ (+): stabilize the ____ State (*decreasing* L_0) & shifting the sigmoidal curve to the _____.

□ _____ (-): stabilize the ____ State (*increasing* L_0) & shifting the sigmoidal curve to the _____.

EXAMPLE: Heterotropic Effects of ATP & CTP on the Allosteric Enzyme Aspartate Transcarbamoylase (ATCase).





CONCEPT: ALLOSTERIC EFFECTORS

PRACTICE: L-arginine is capable of binding to and activating N-acetylglutamate synthase. Since L-arginine is neither a substrate nor a product of this enzyme, how would this effector be classified?

a) (-) homotropic effector. b) (+) heterotropic effector. c) (-) heterotropic effector. d) (+) homotropic effector.

PRACTICE: Considering that O_2 triggers hemoglobin to switch from its low affinity (T) state to its high affinity (R) state to bind more O_2, what kind of allosteric effector is O_2 relative to hemoglobin?

a) Heterotropic; activator. b) Homotropic; inhibitor. c) Heterotropic; inhibitor. d) Homotropic; activator.

PRACTICE: Which of the following statements about allosteric control of enzymatic activity is false?

a) Allosteric effectors give rise to sigmoidal V_0 vs. [S] kinetic plots.
b) Allosteric proteins are generally composed of several subunits.
c) An allosteric effector may either inhibit or activate an enzyme.
d) Binding of the allosteric effector to the enzyme changes the conformation of the enzyme.
e) Heterotropic allosteric effectors compete with the substrate for binding sites on the enzyme.