CONCEPT: ENZYME INHIBITION

●*Enzyme Inhibitors* (I): compounds that *interfere* with product formation & *decrease* an enzyme's initial reaction rate (____).

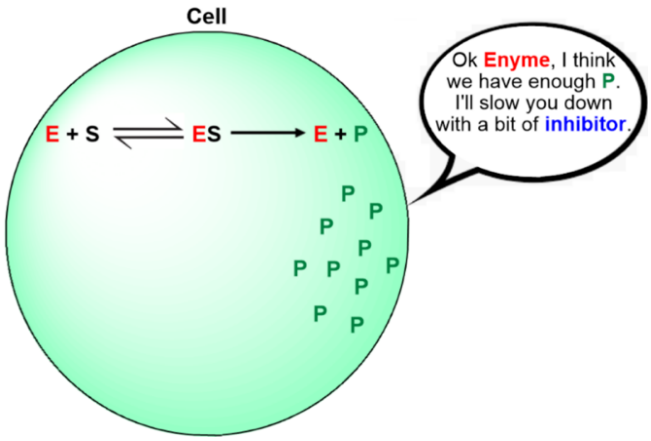
□ Inhibitors form a _____ with either the *free enzyme* (E) and/or the *ES-complex* to *inhibit* the reaction.

EXAMPLE: Enzyme-Inhibitor & Enzyme-Substrate-Inhibitor Complexes.

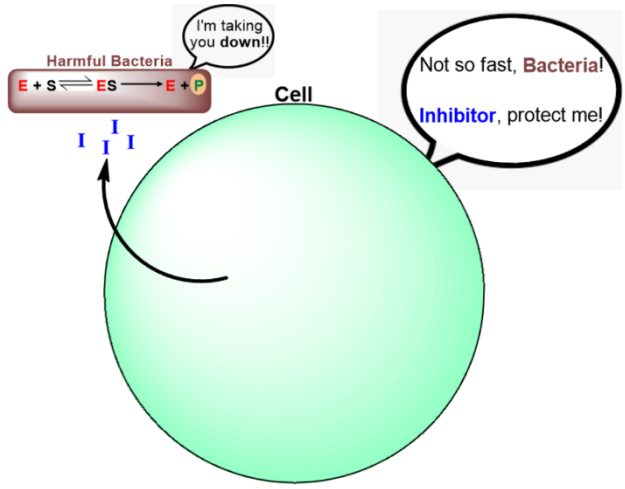
●Biological enzyme inhibitors can be used by cells to **1)** _____ enzyme activity or **2)** act as _____ poisons.

□ Inhibitors also important for medicine since doctor's use them as drugs to treat disease.

1) _____ of Enzyme Activity



2) Inhibitors Acting as _____ in Defense



●There are several categories of enzyme inhibitors including the following:

1) Irreversible Inhibitors (Inactivators)
2) Reversible Inhibitors
3) Competitive Inhibitors
4) Uncompetitive Inhibitors
5) Mixed Inhibitors
6) Noncompetitive Inhibitors

PRACTICE: How can inhibitors prevent an enzyme from functioning normally?

a) Binding to the free enzyme.
b) Binding to the ES-complex.
c) Blocking the active site.
d) Altering the active site.
e) Destroying the enzyme.
f) All options are true.

PRACTICE: Which of the following statements is false regarding inhibitors & enzyme-catalyzed reactions?

a) The V_{max} of an enzyme-catalyzed reaction will never increase in the presence of an enzyme-inhibitor.
b) Enzyme inhibitors can be secreted via exocytosis to defend against harmful threats.
c) At saturating [S], the rate is directly proportional to [enzyme].
d) The E_A for catalyzed & uncatalyzed reactions are equal, but the K_{eq} is more favorable in a catalyzed reaction.
e) Binding of an inhibitor to an enzyme can be reversible or irreversible.