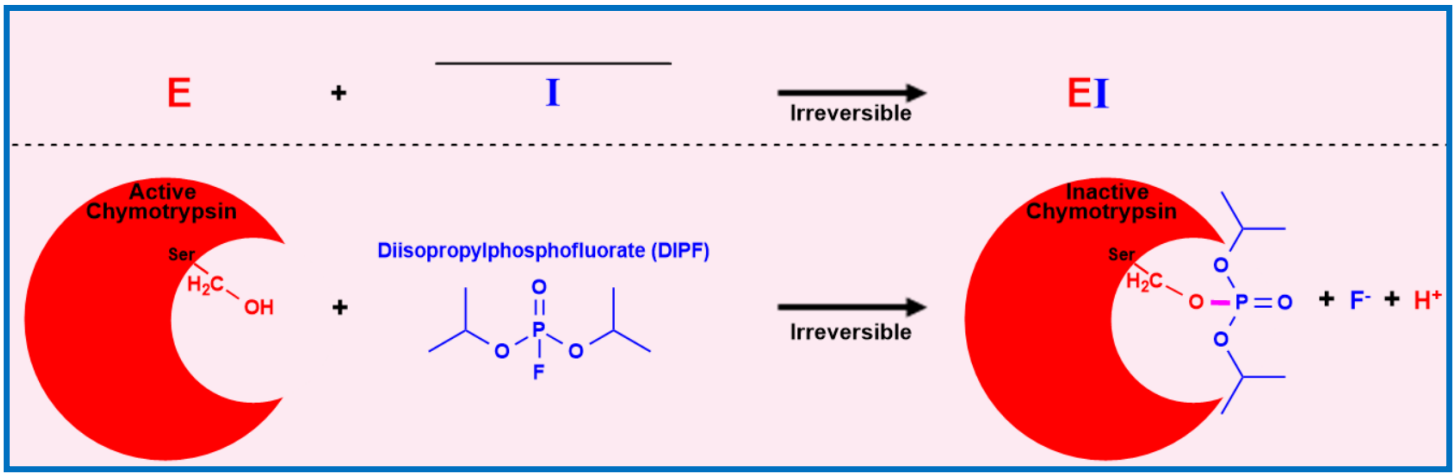
CONCEPT: IRREVERSIBLE INHIBITION

1) Irreversible Inhibitors

- _____ *inhibitors*: bind very *tightly* & "*irreversibly*" to the enzyme to _____ its activity ($V_0 = 0$).
  - □ Can form stable _____ bonds with the enzyme and are also known as _____.
  - □ One irreversible inhibitor permanently neutralizes/removes one active enzyme (1:1 ratio).
  - □ Often are powerful _____ but can also be used as drugs in medicine.

EXAMPLE: DIPF is an example of an irreversible inhibitor.



PRACTICE: Which of the following statements about irreversible inhibitors is correct?

a) Irreversible inhibitors can only bind to an enzyme active site.
b) Dilution of the inhibited enzyme restores activity.
c) Irreversible inhibitors do not have to bind to the active site.
d) Increasing [S] restores activity to inhibited enzyme.
e) Initially, irreversible inhibitors will reversibly bind.

Suicide Inhibitors

- _____ *inhibitor*: partially mimic a substrate in the active site but end up *irreversibly* bound & stuck to the enzyme.
  - □ *Initially* act just like a normal substrate would since they require "normal" catalysis to bind to the enzyme.
  - □ "Normal" catalytic reactions proceed up to a point where the suicide inhibitor remains _____ bound.
  - □ How suicide inhibitors differ from other irreversible inhibitors: they undergo some normal catalytic reactions.

PRACTICE: A suicide inhibitor of an enzyme is one that:

a) Is reversible.
b) Is activated by one type of enzyme for the purpose of inhibiting a second type of enzyme.
c) Is competitive with the enzyme and inactivates the substrate.
d) Is competitive with the substrate and inactivates the enzyme.