

ENZYMES

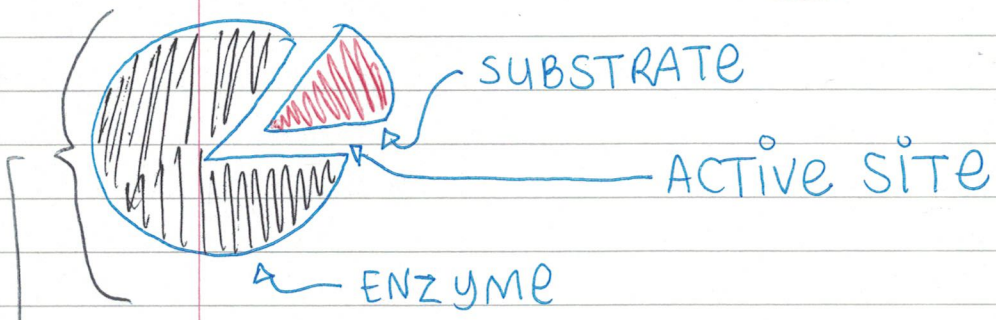
"IN yeast"

biological cataly
"kick start"

PROTEINS

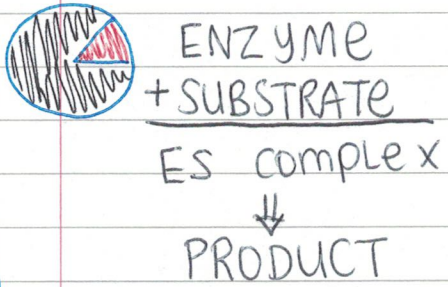
40,000 diff enzymes in human cells

respiration, digestion, motors, pumps, receptors



amino acids in the active site attach to the substrate to hold everything together.

Specific shapes \Rightarrow specific for only one reaction.



Doesn't fit like lock & key ... Active site & substrate change shape to bond (called transition state)

In order to make product, substrate must overcome an energy barrier

$\uparrow e = \downarrow$ speed of reaction (S.O.R)

FACTORS AFFECTING REACTIONS

- TEMP: optimum temp 40°C (OT)
 $\uparrow T$ (to OT) = \uparrow S.O.R
 $\uparrow T$ (above OT) = \downarrow S.O.R (enzymes DENATURE)
 enzymes still work @ 0°C but v. SLOW
- pH: optimum pH = 7-8 (body pH)
 *gastric protease = pH 1 b/c stomach acid.

dest. natu. qualm

③ ENZYME CONCENTRATION (EC)

$\uparrow EC = \uparrow S.O.R.$

* more ES complexes form

④ SUBSTRATE CONCENTRATION (SC)

$\uparrow SC = \uparrow S.O.R.$

* more ES complexes form.

⑤ INHIBITORS

- found naturally

- also in drugs / pesticides

COMPETITIVE

* similar structure
to substrate

* competes for active site

* SLOWS reaction

* temporary &
reversible

NON-COMPETITIVE

* v. diff structure from
substrate.

* DOESN'T fit in active site

* BINDS TO ENZYME &
changes entire shape

* Reduce # of active
enzyme.

* cyanide & heavy metal
(irreversible)