

9. Discuss the term catalytic efficiency; what does it mean for an enzyme to be efficient?

high release $\frac{k_{cat}}{K_m} = \text{cat. eff.}$ means high k_{cat} and low K_m
 high binding $\frac{k_{cat}}{K_m}$ forming Product.

10. How is your answer to 9 above consistent with the term for catalytic efficiency (k_{cat}/K_m)? Discuss the contribution of the terms k_{cat} and K_m to the overall term of catalytic efficiency.

K_m is a catalyst's ability to bind to substrate
 k_{cat} is the release rate of the enzyme. Rxn want enzyme to bind to make ES complex but it needs to be released to form product

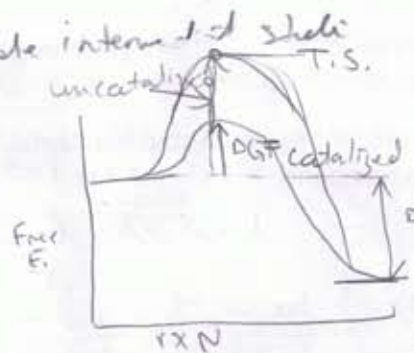
11. Discuss the meaning of enzyme reaction mechanism in the context of catalysis. How does the study of enzyme kinetics relate to reaction mechanism?

low ΔG^\ddagger
 complex favorable
 stabilised state

Stable TS but do not change mechanism

ΔG^\ddagger at TS is lower
 change Act. E

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enzymes accelerate rxn by decreasing ΔG^\ddagger the free E of activation

12. Review the PLAN outlined previously.

POST-ACTIVITY SKILL EXERCISES

Consider the enzymes in the table below and answer the following questions. Answers should be brief (1-3 sentences).

Enzyme	K_M (M)	k_{cat} (s^{-1})
A	9.5×10^{-5}	1.4×10^4
B	2.5×10^{-2}	1.0×10^7
C	5.0×10^{-6}	8.0×10^2

1.5×10^8
 4.0×10^8
 1.6×10^8

1. Which enzyme has the highest affinity for substrate? How do you know?

K_m binding
 K_m low.
 C is smallest