

Table 7.1 K_M values of some enzymes

Enzyme	Substrate	K_M (μM)
Chymotrypsin	Acetyl-L-tryptophanamide	5000
Lysozyme	Hexa-N-acetylglucosamine	6
β -Galactosidase	Lactose	4000
Carbonic anhydrase	CO_2	8000
Penicillinase	Benzylpenicillin	50


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Table 7.2 Turnover numbers of some enzymes

Enzyme	Turnover number (per second)
Carbonic anhydrase	600,000
3-Ketosteroid isomerase	280,000
Acetylcholinesterase	25,000
Penicillinase	2,000
Lactate dehydrogenase	1,000
Chymotrypsin	100
DNA polymerase I	15
Tryptophan synthetase	2
Lysozyme	0.5

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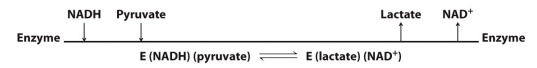
Table 7.3 Substrate preferences of chymotrypsin

Amino acid in ester	Amino acid side chain	k_{cat}/K_M ($s^{-1} M^{-1}$)
Glycine	H	1.3×10^{-1}
Valine	$\begin{array}{c} \text{CH}_2 \\ \\ \text{CH} \\ \\ \text{CH}_3 \end{array}$	2.0
Norvaline	$-\text{CH}_2\text{CH}_2\text{CH}_3$	3.6×10^2
Norleucine	$-\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$	3.0×10^3
Phenylalanine	$-\text{CH}_2$ 	1.0×10^5

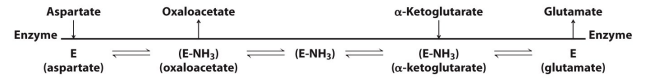
Source: After A. Fersht, *Structure and Mechanism in Protein Science: A Guide to Enzyme Catalysis and Protein Folding* (W. H. Freeman and Company, 1999), Table 6.3.

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(A) Sequential reaction



(B) Double-displacement reaction

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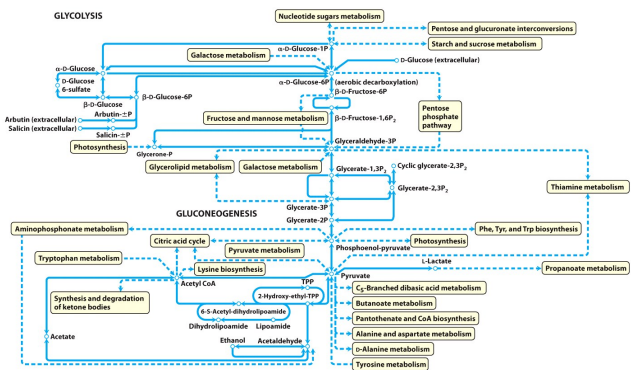


Figure 7.7b
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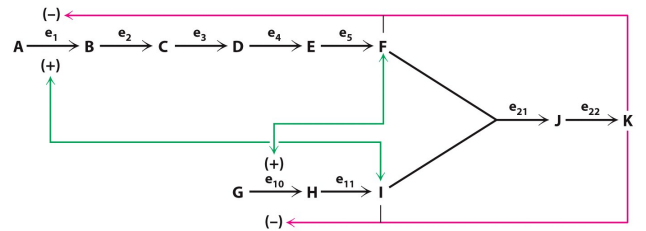


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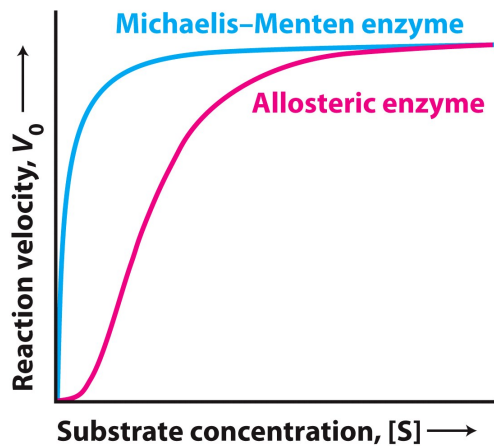


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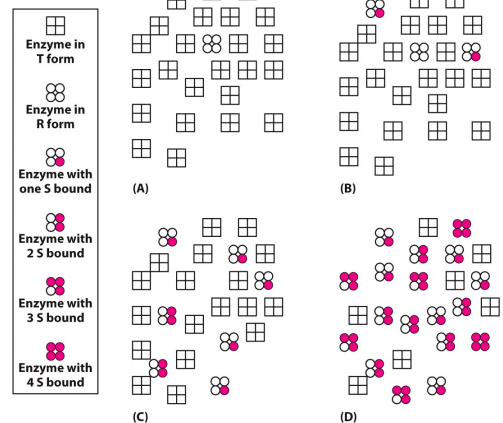
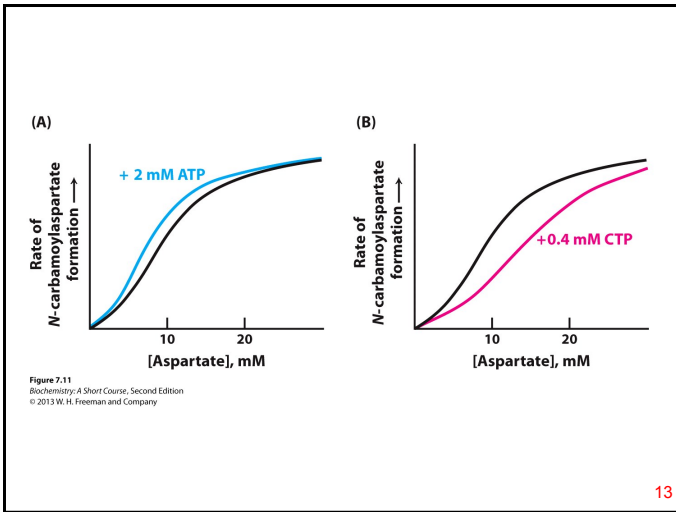
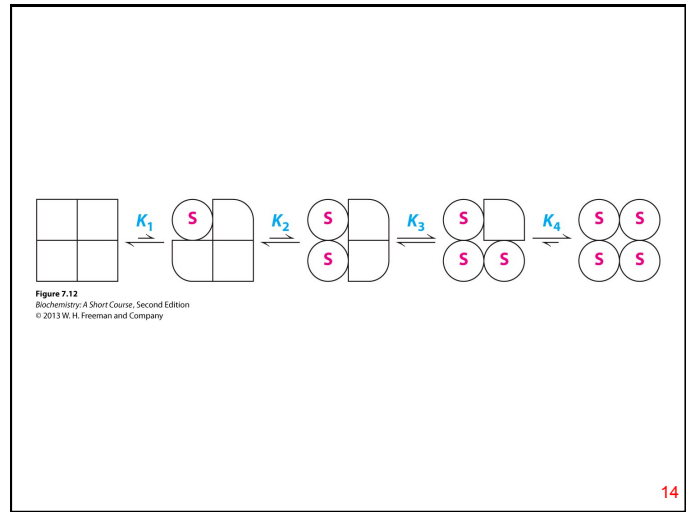


Figure 7.10
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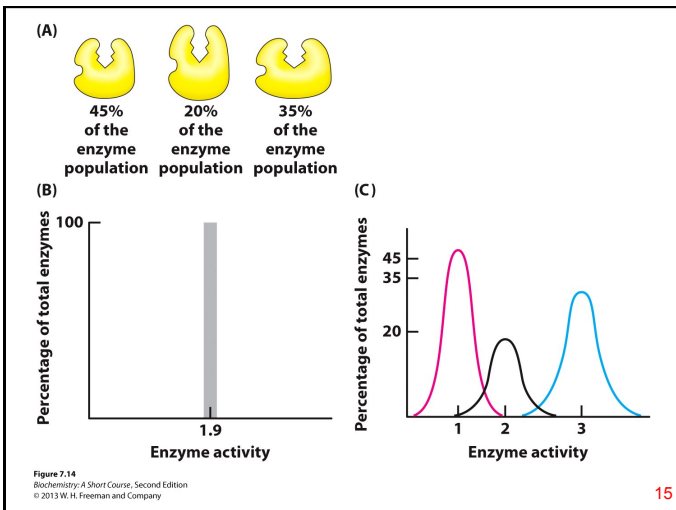
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