

Figure 7.1
Biochemistry: A Short Course, Second Edition
© 2013 W. H. Freeman and Company

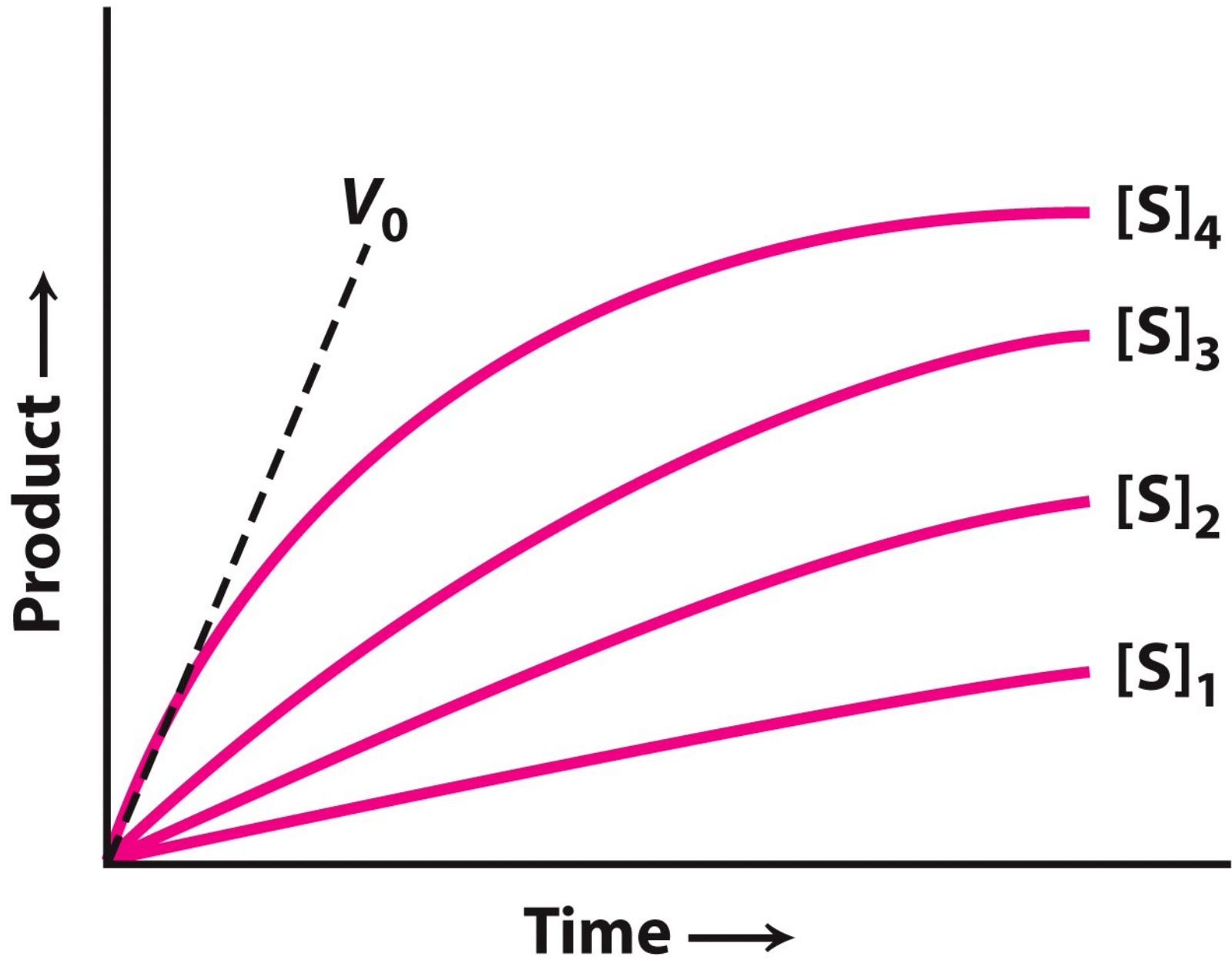


Figure 7.2
Biochemistry: A Short Course, Second Edition
© 2013 W. H. Freeman and Company

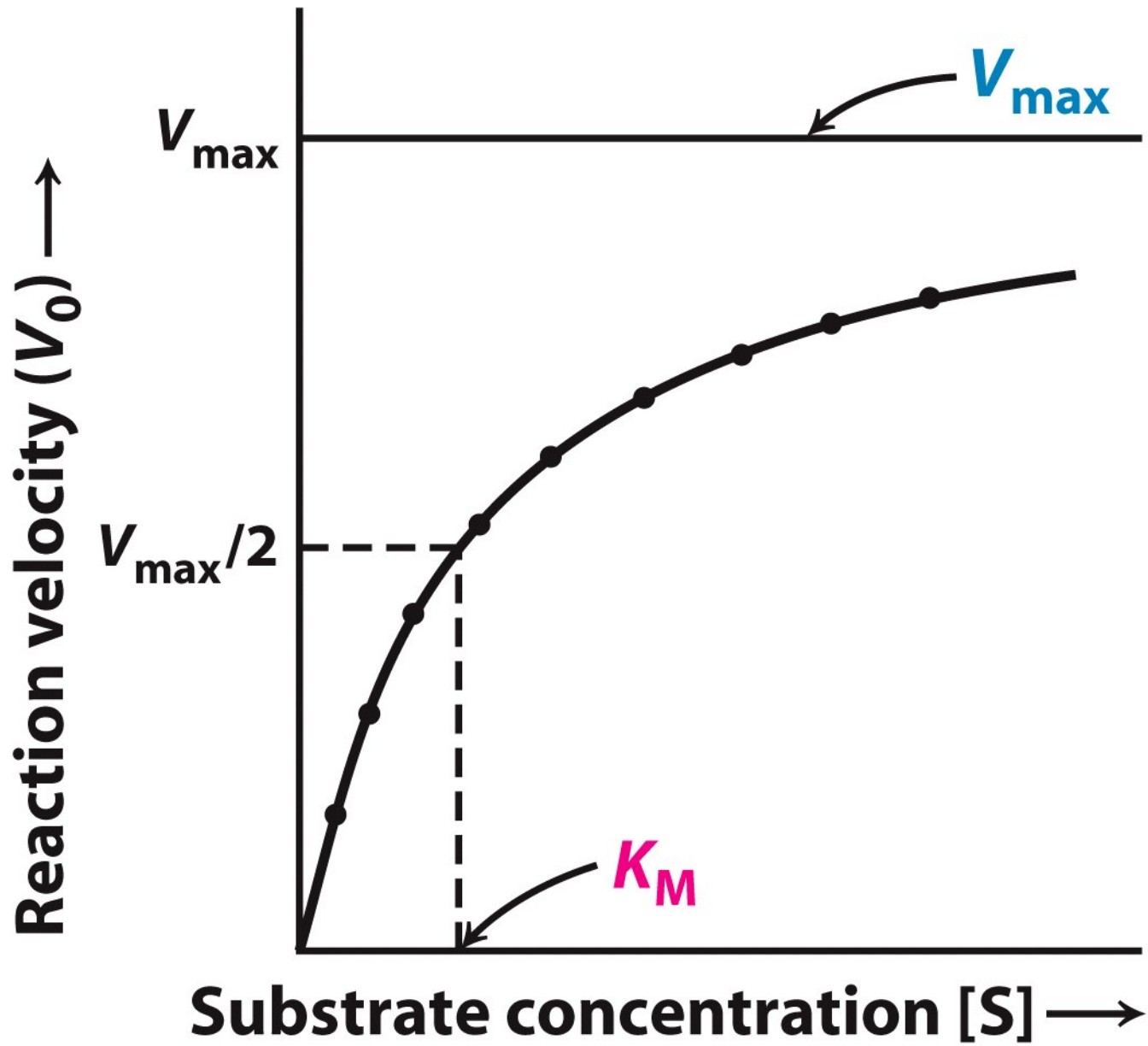


Figure 7.3
Biochemistry: A Short Course, Second Edition
© 2013 W. H. Freeman and Company

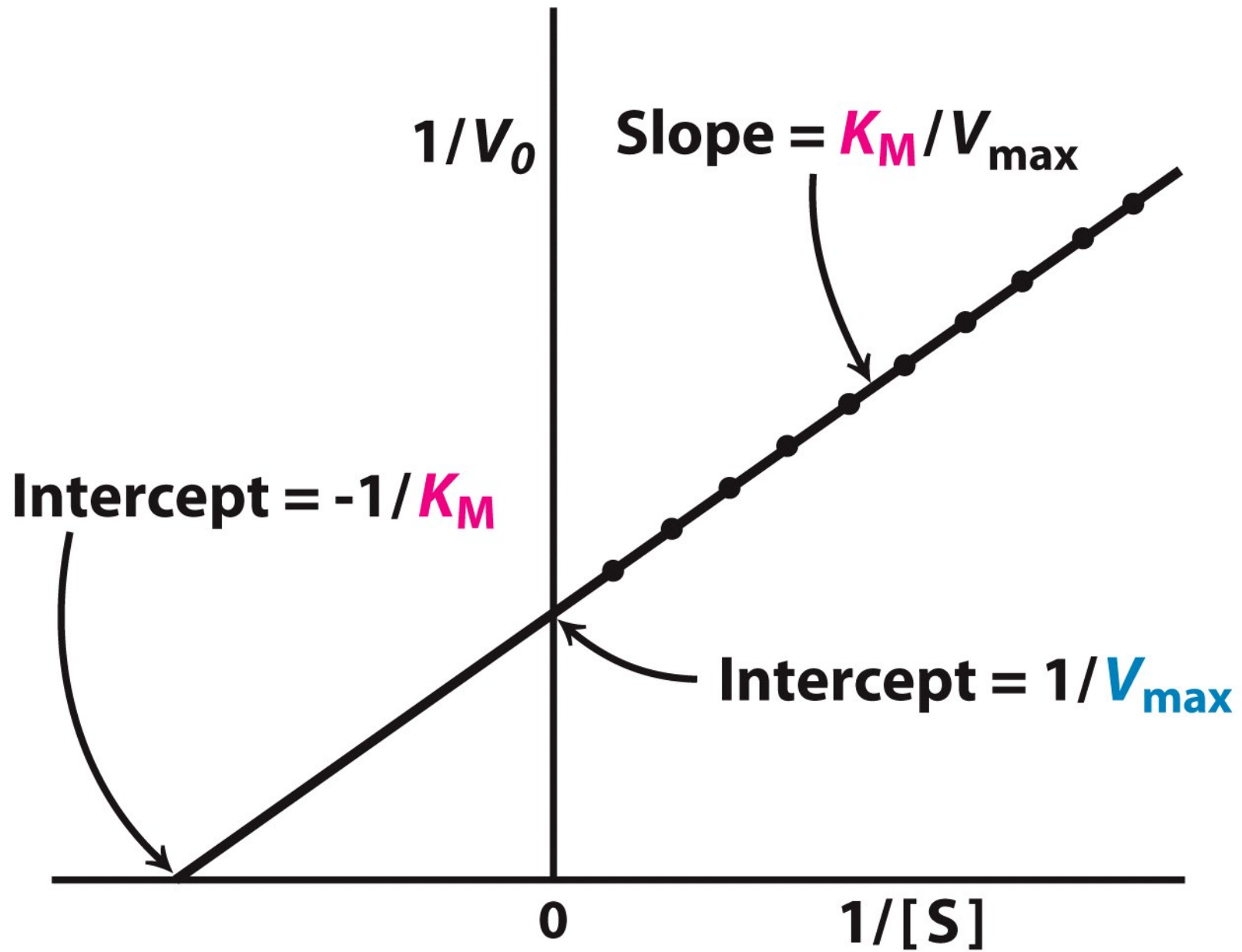


Figure 7.5
Biochemistry: A Short Course, Second Edition
© 2013 W. H. Freeman and Company

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	Benzympenicillin	50

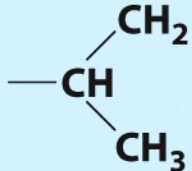
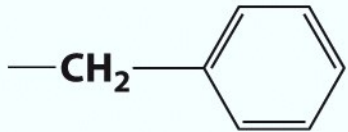
Table 7.1
Biochemistry: A Short Course, Second Edition
© 2013 W. H. Freeman and Company

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

Table 7.2
Biochemistry: A Short Course, Second Edition
© 2013 W. H. Freeman and Company

Table 7.3 Substrate preferences of chymotrypsin

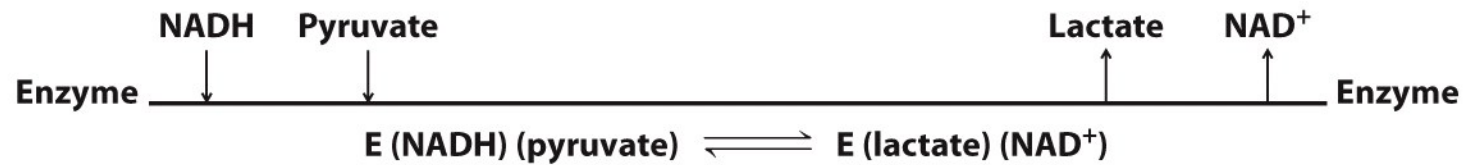
Amino acid in ester	Amino acid side chain	k_{cat}/K_M ($\text{s}^{-1} \text{M}^{-1}$)
Glycine	H	1.3×10^{-1}
Valine		2.0
Norvaline	$\text{—CH}_2\text{CH}_2\text{CH}_3$	3.6×10^2
Norleucine	$\text{—CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$	3.0×10^3
Phenylalanine		1.0×10^5

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.

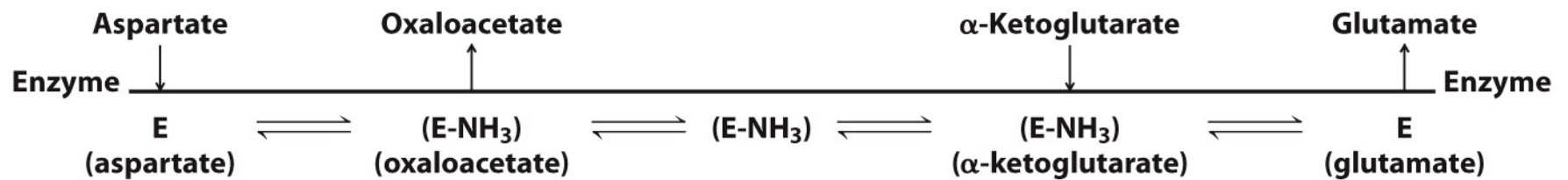
Table 7.3

Biochemistry: A Short Course, Second Edition

© 2013 W. H. Freeman and Company



(A) Sequential reaction



(B) Double-displacement reaction

Figure 7.6
Biochemistry: A Short Course, Second Edition
 © 2013 W. H. Freeman and Company

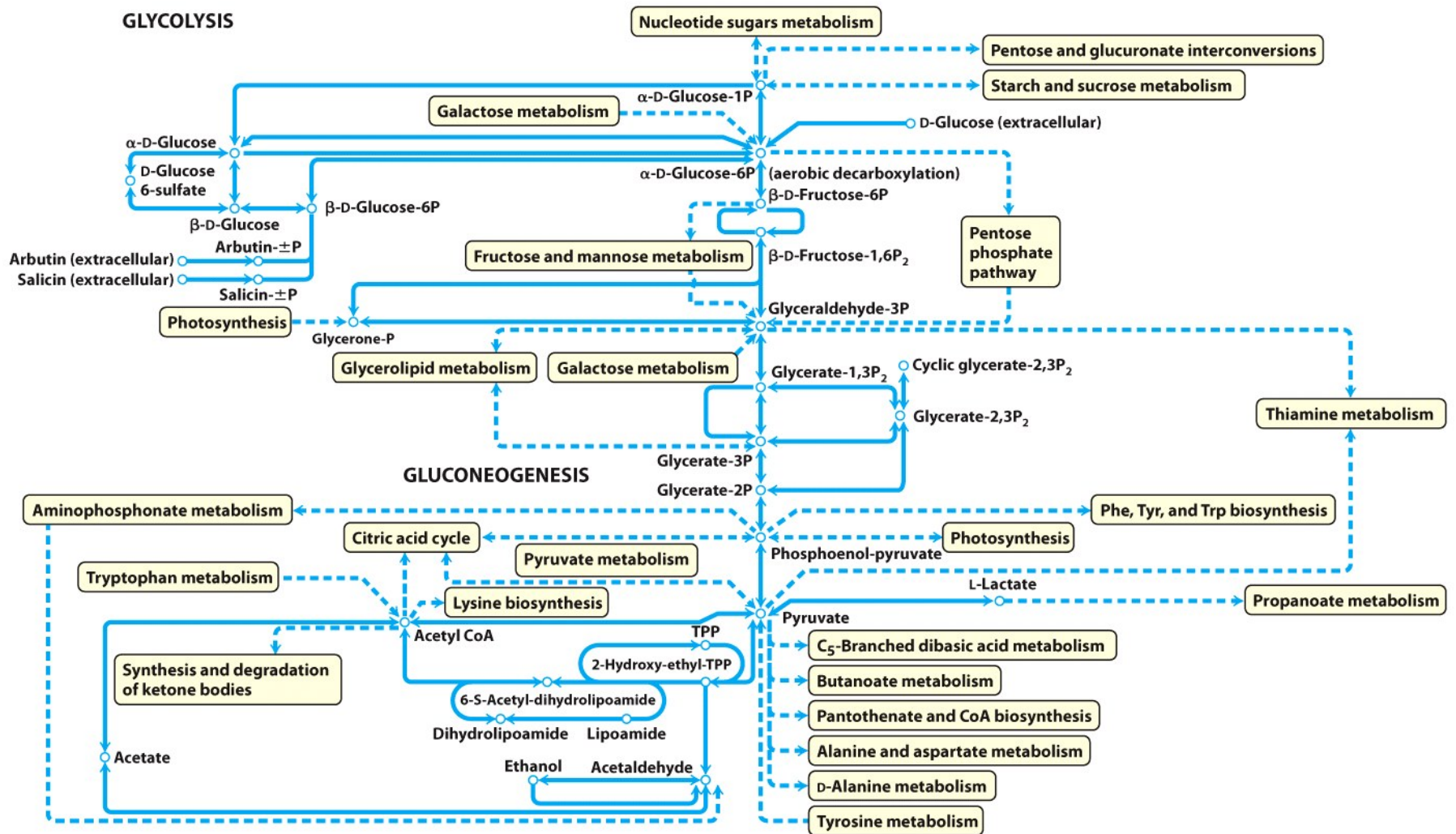


Figure 7.7b
 Biochemistry: A Short Course, Second Edition
 © 2013 W. H. Freeman and Company

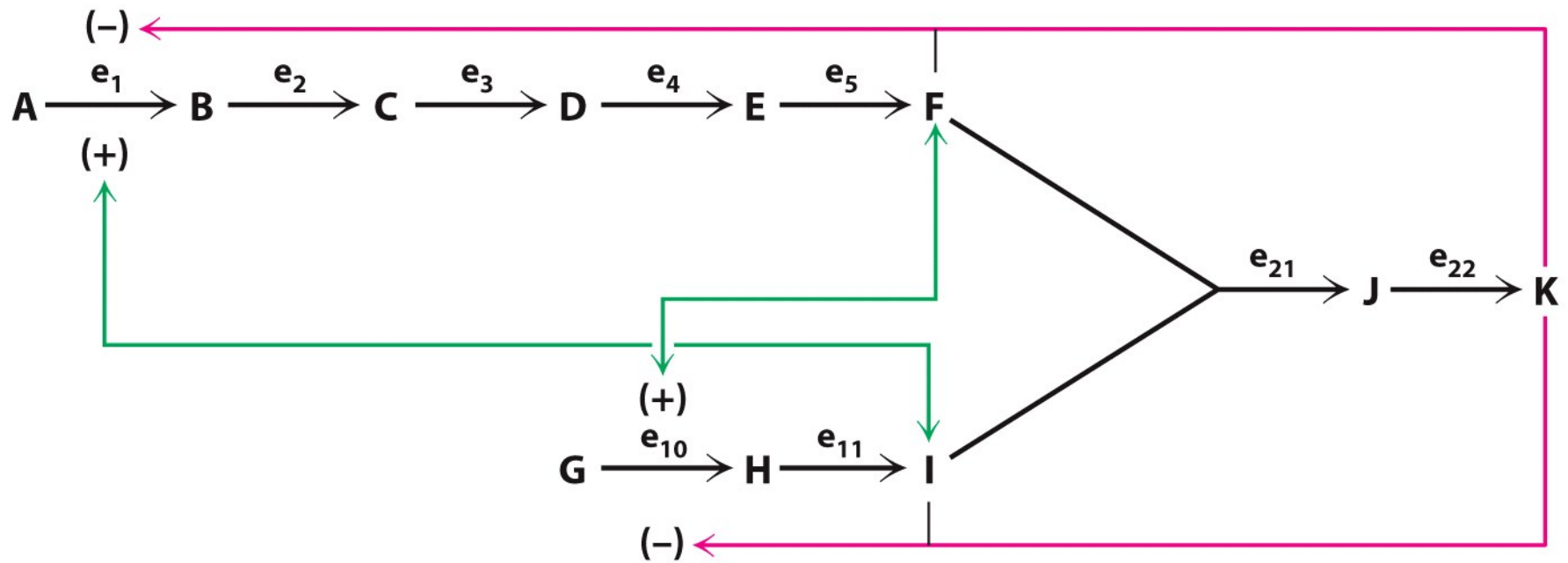


Figure 7.8
Biochemistry: A Short Course, Second Edition
 © 2013 W. H. Freeman and Company

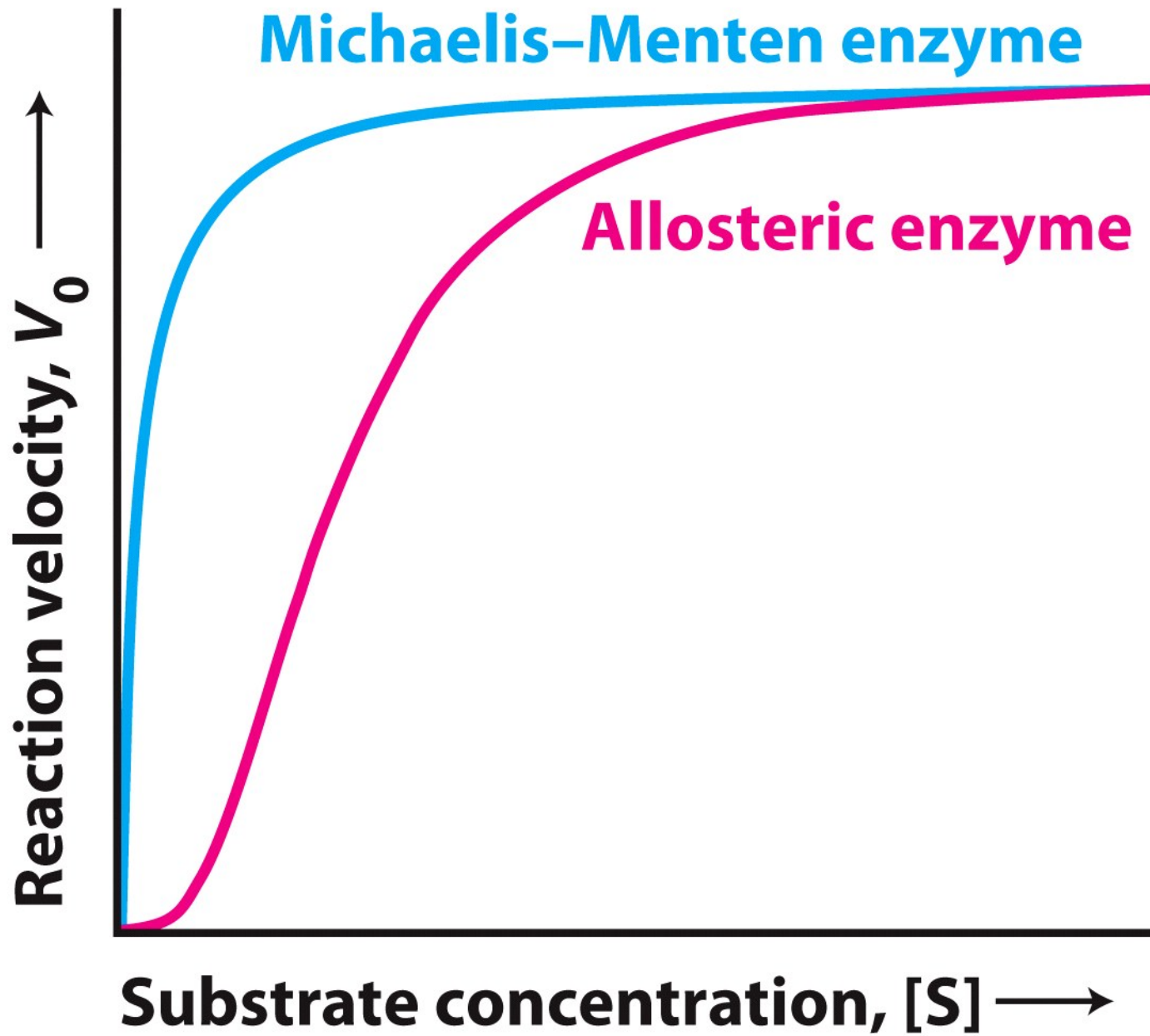
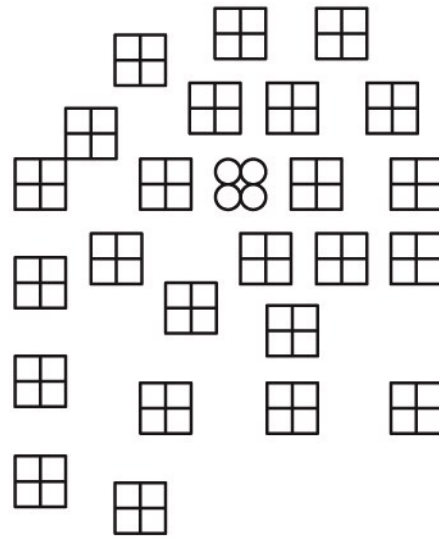
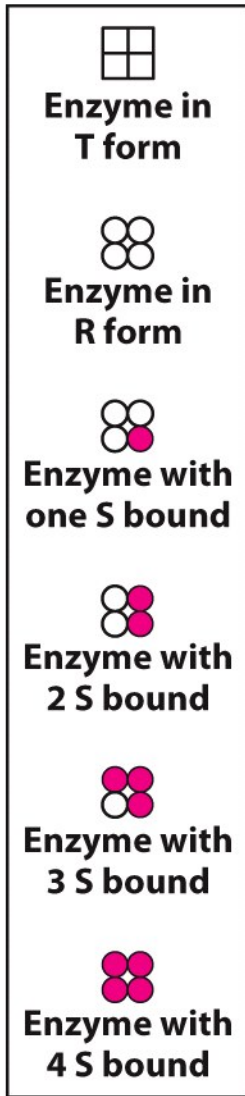
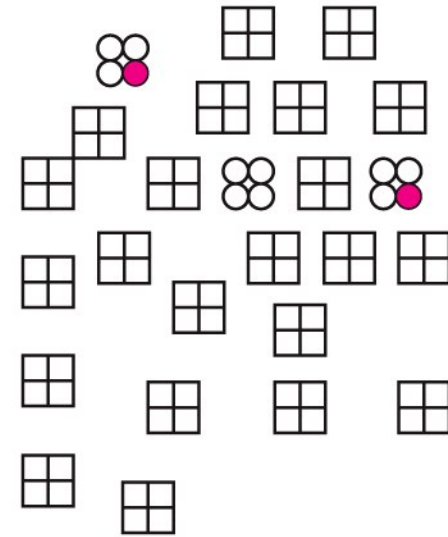


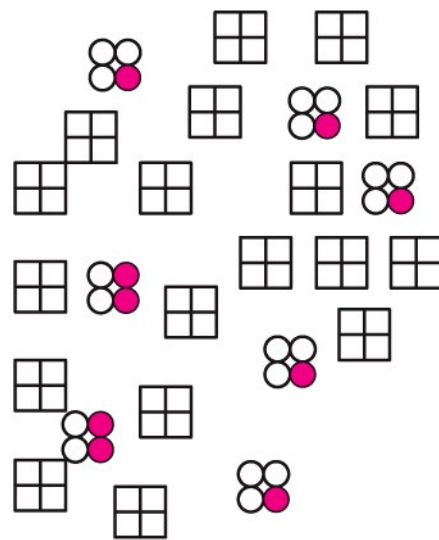
Figure 7.9
Biochemistry: A Short Course, Second Edition
© 2013 W. H. Freeman and Company



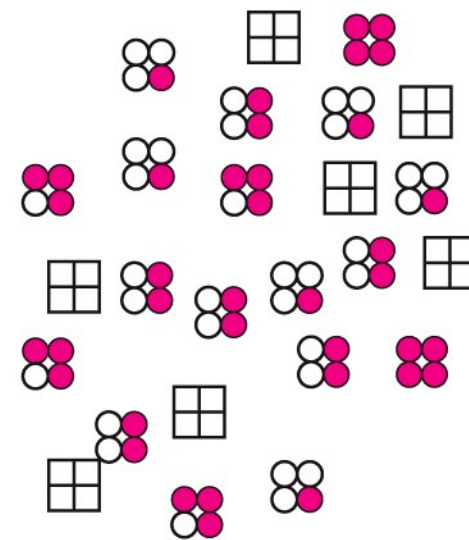
(A)



(B)



(C)



(D)

Figure 7.10
Biochemistry: A Short Course, Second Edition
 © 2013 W. H. Freeman and Company

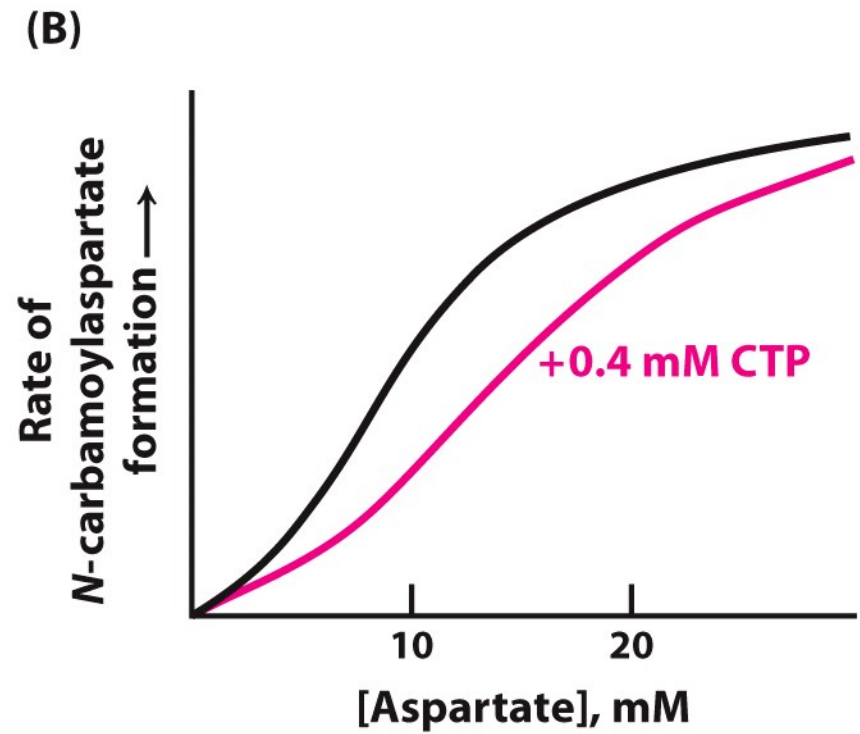
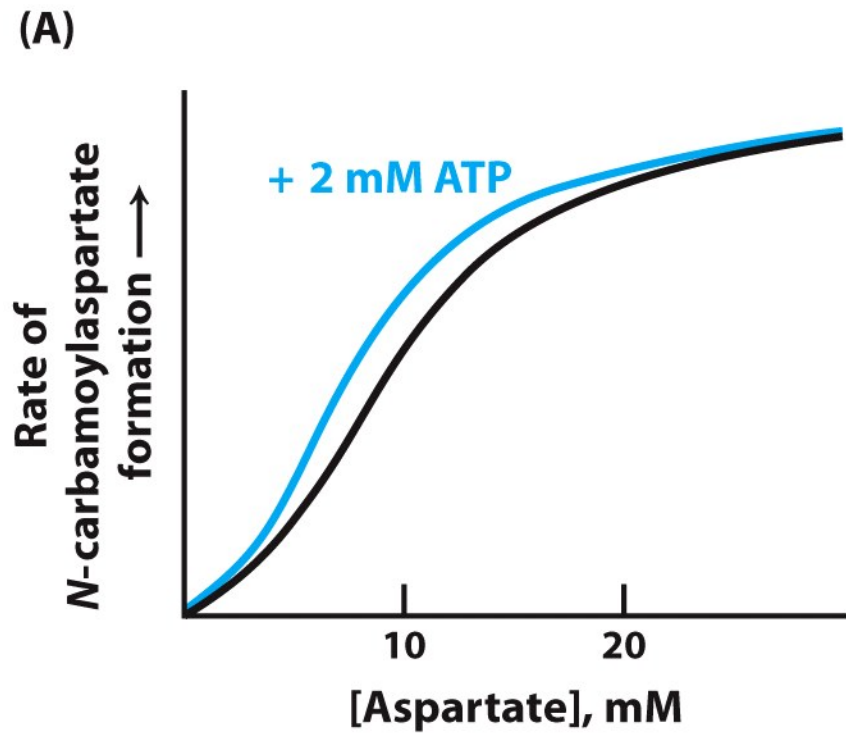


Figure 7.11
Biochemistry: A Short Course, Second Edition
© 2013 W. H. Freeman and Company

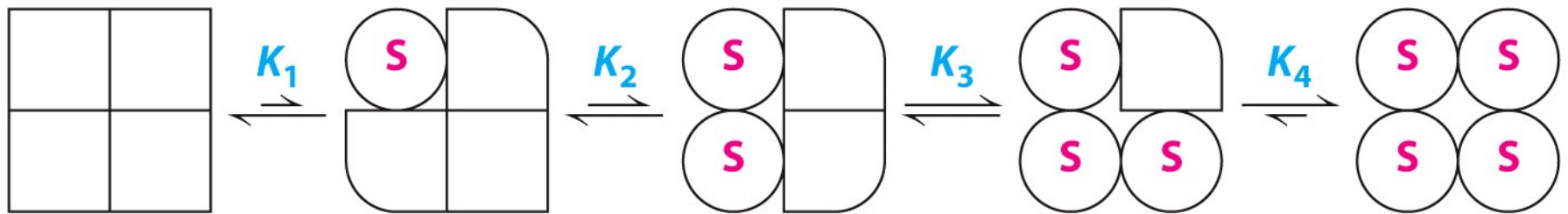


Figure 7.12
Biochemistry: A Short Course, Second Edition
 © 2013 W. H. Freeman and Company

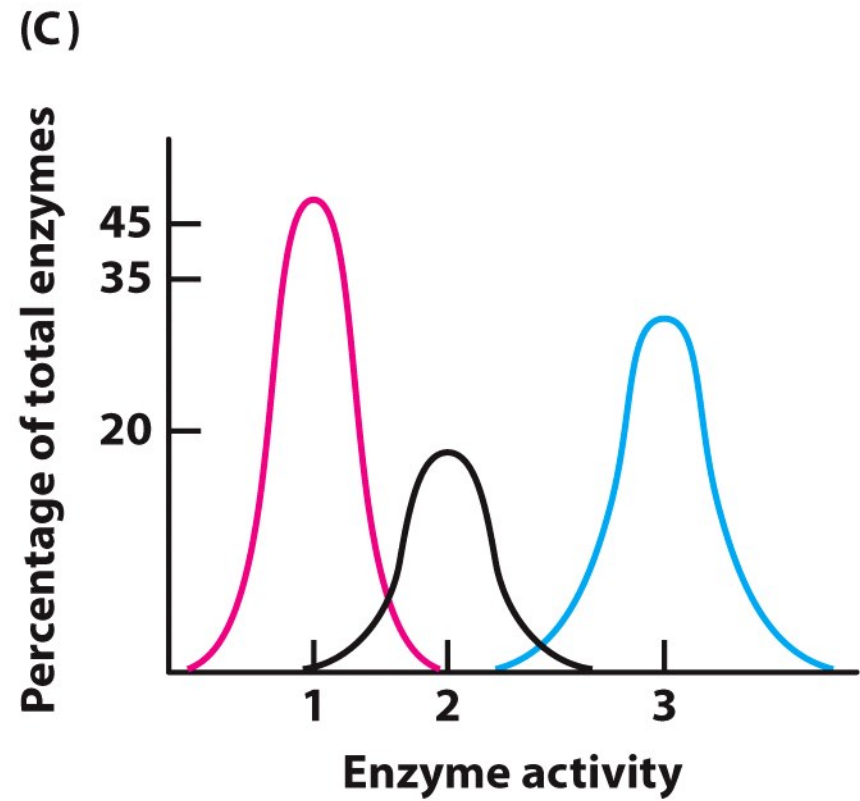
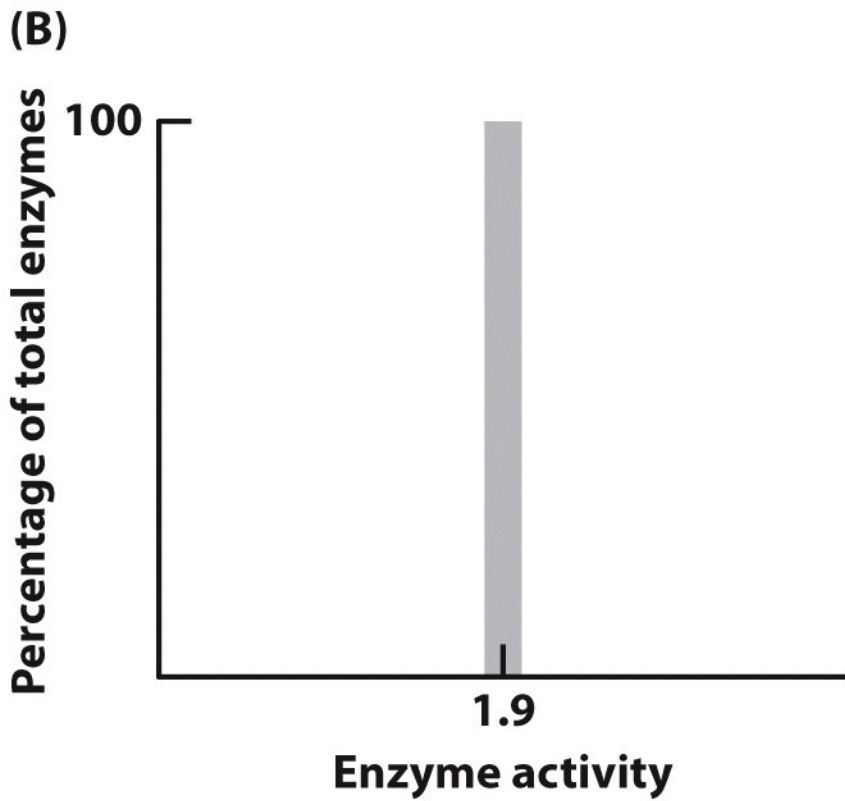
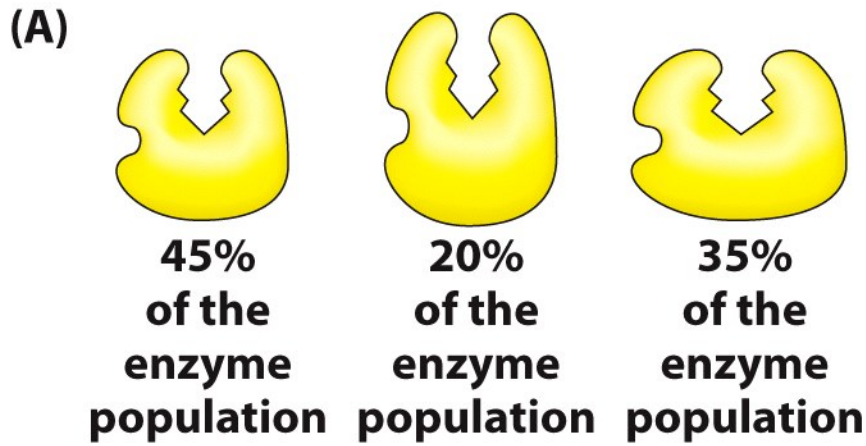


Figure 7.14
Biochemistry: A Short Course, Second Edition
 © 2013 W. H. Freeman and Company