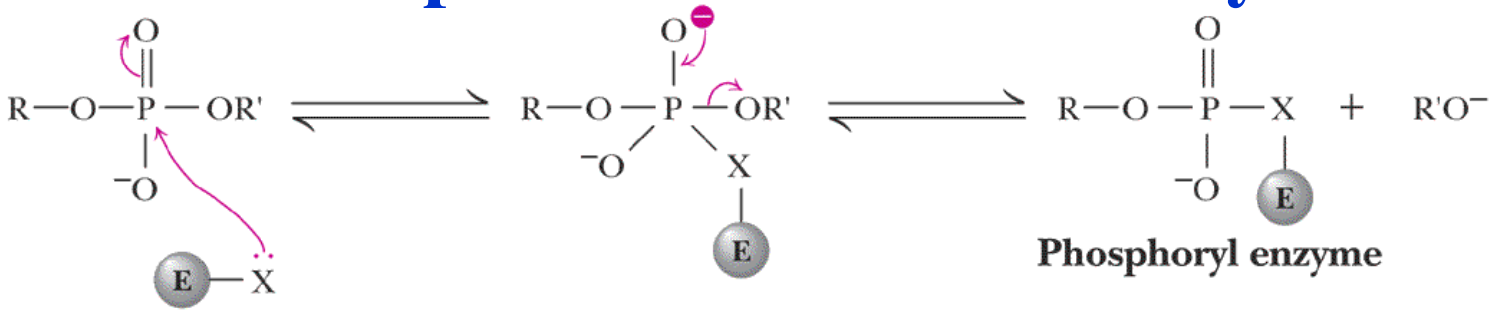
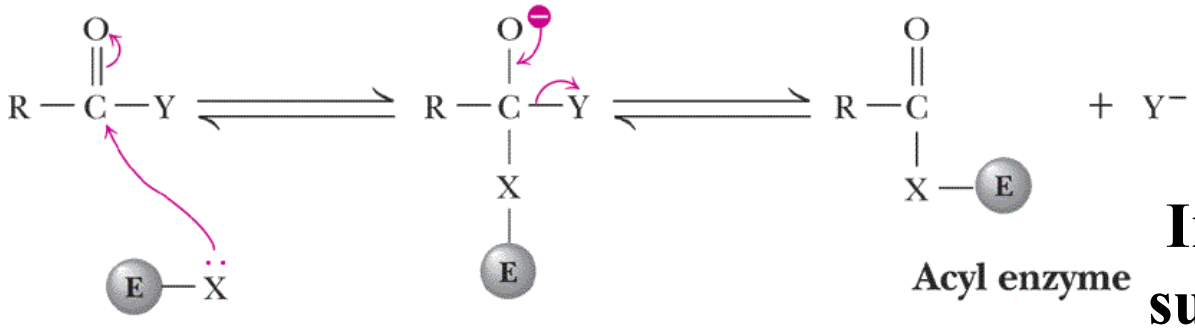
Enzyme Mechanisms

Examples of Covalent Catalysis

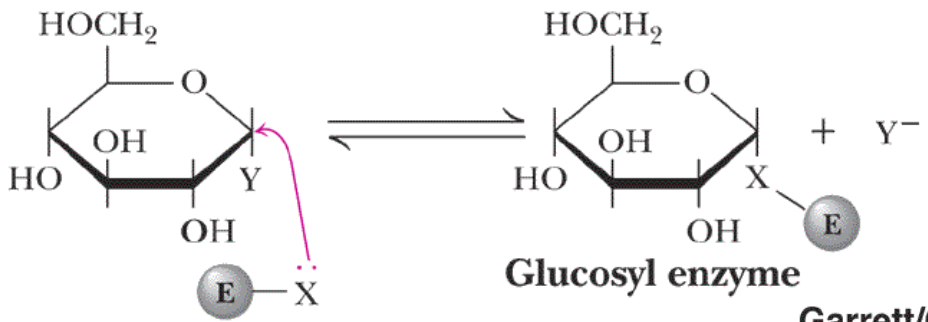
1)



2)



3)

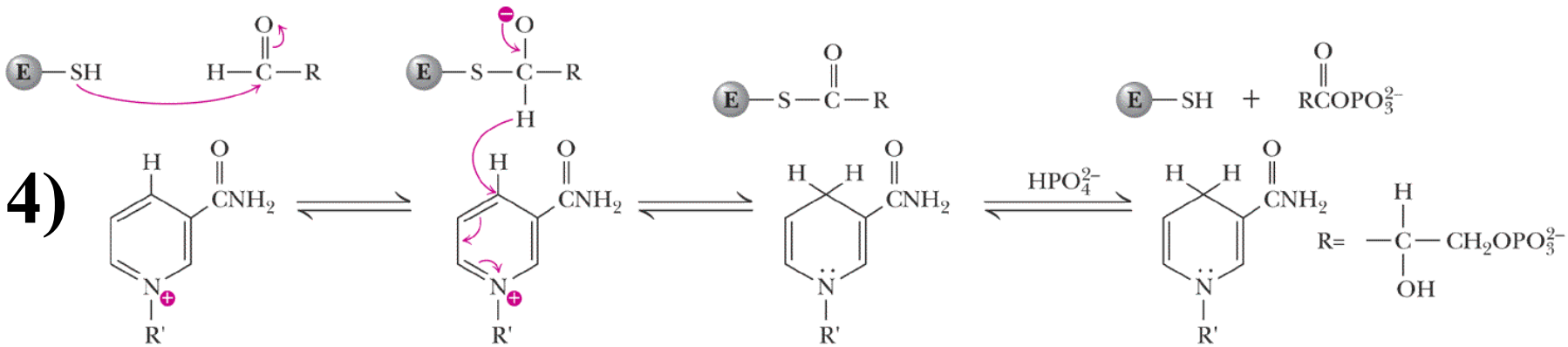


In each case, the substrate becomes covalently bound to the enzyme during catalysis.

Garrett/Grisham, Biochemistry with a Human Focus
Figure 11.7

Examples of Covalent Catalysis

Garrett/Grisham, Biochemistry with a Human Focus
Figure 11.8



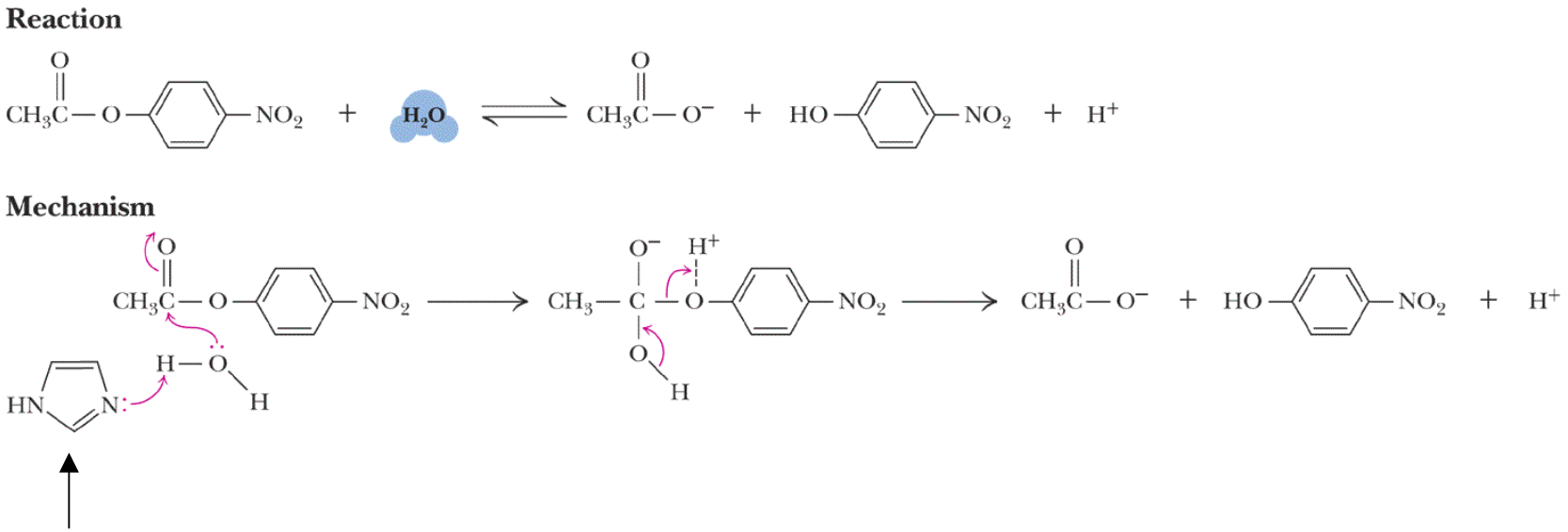
NAD+ **NADH**

Glyceraldehyde 3-phosphate dehydrogenase reaction

Example of General Acid/Base Catalysis

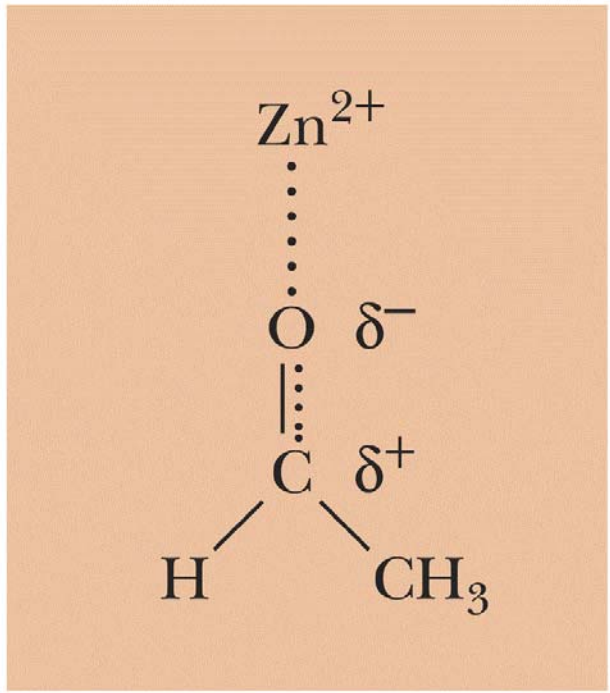
Garrett/Grisham, Biochemistry with a Human Focus
Figure 11.10

General base mechanism



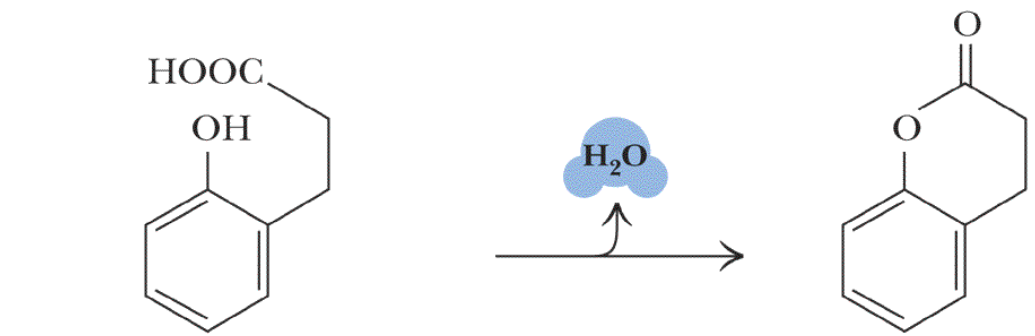
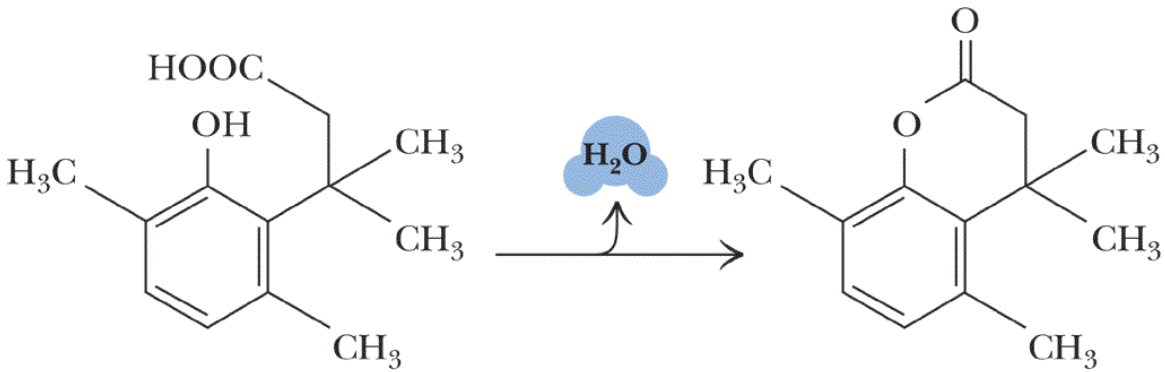
Metal Ion Catalysis

Garrett/Grisham, Biochemistry with a Human Focus
Figure 11.11



Proximity (orientation effects)

Garrett/Grisham, Biochemistry with a Human Focus
Figure 11.12

Reaction	Rate const. ($M^{-1}sec^{-1}$)	Ratio
	$5.9x10^{-6}$	
	$1.5x10^{6}$	$2.5x10^{11}$