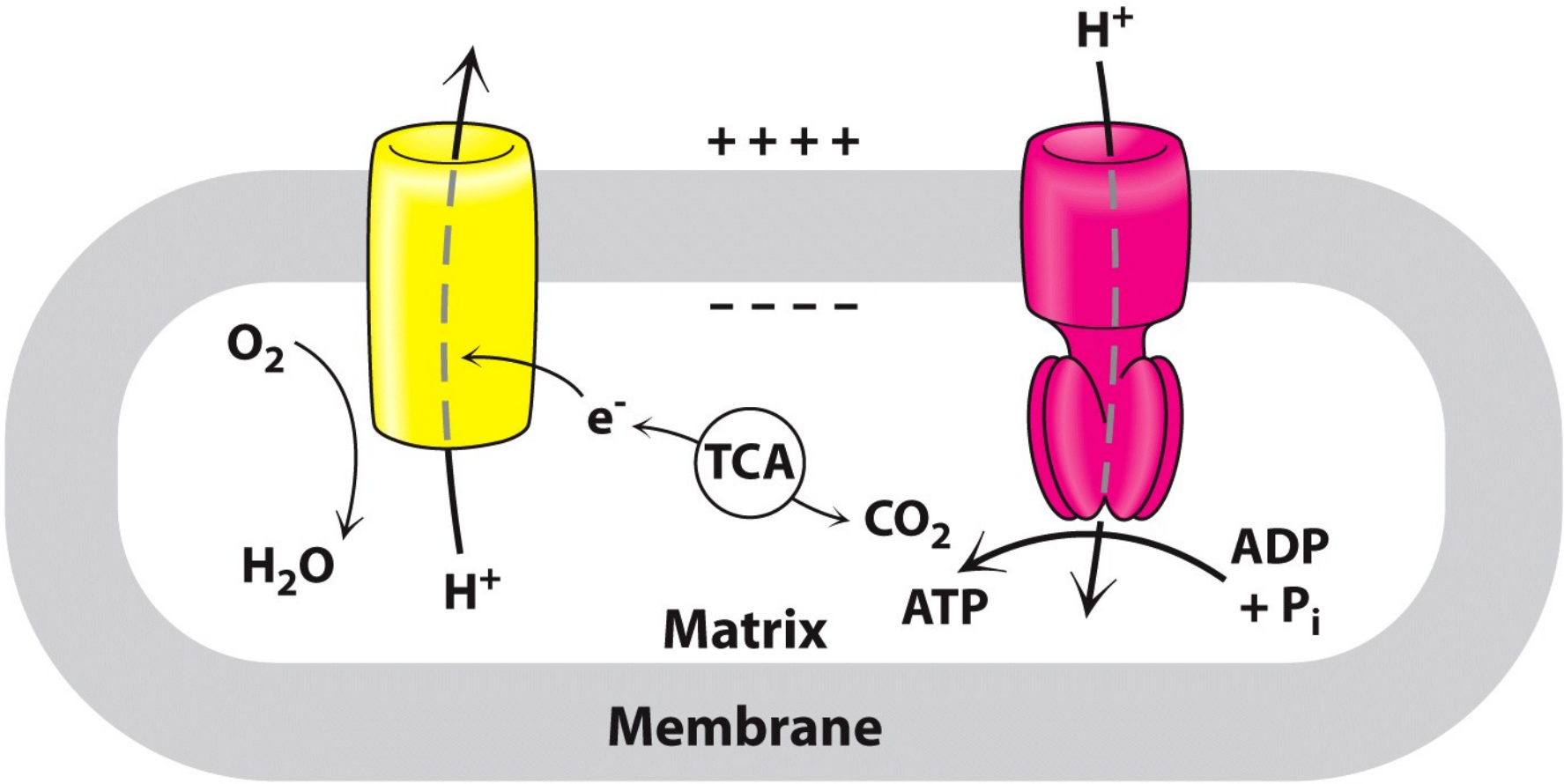


Figure 20.1
Biochemistry: A Short Course, Second Edition

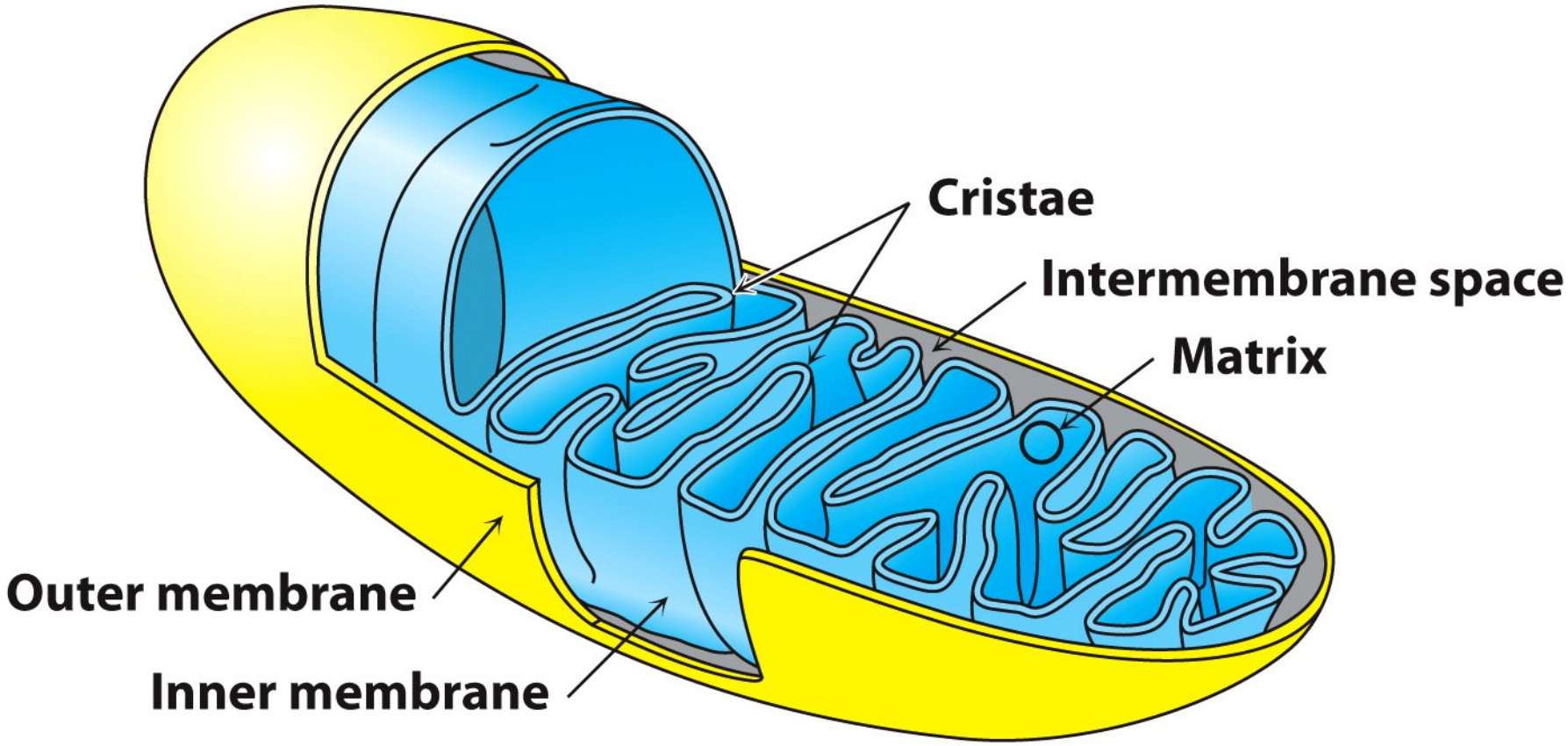


Figure 20.2b
Biochemistry: A Short Course, Second Edition

Table 20.1 Standard reduction potentials of some reactions

Oxidant	Reductant	*n*	E'_0(V)
Succinate + CO_2	α-Ketoglutarate	2	-0.67
Acetate	Acetaldehyde	2	-0.60
Ferredoxin (oxidized)	Ferredoxin (reduced)	1	-0.43
2 H^+	H_2	2	-0.42
NAD^+	NADH + H^+	2	-0.32
$NADP^+$	NADPH + H^+	2	-0.32
Lipoate (oxidized)	Lipoate (reduced)	2	-0.29
Glutathione (oxidized)	Glutathione (reduced)	2	-0.23
FAD	$FADH_2$	2	-0.22
Acetaldehyde	Ethanol	2	-0.20
Pyruvate	Lactate	2	-0.19
2 H^+	H_2	2	0.00[1]
Cytochrome *b* (+3)	Cytochrome *b* (+2)	1	+0.07
Dehydroascorbate	Ascorbate	2	+0.08
Ubiquinone (oxidized)	Ubiquinone (reduced)	2	+0.10
Cytochrome *c* (+3)	Cytochrome *c* (+2)	1	+0.22
Fe (+3)	Fe (+2)	1	+0.77
$^1/_2$ O_2 + 2 H^+	H_2O	2	+0.82

Note: E'_0 is the standard oxidation–reduction potential (pH 7, 25°C, except where noted) and *n* is the number of electrons transferred. E'_0 refers to the partial reaction written as

$$\text{Oxidant} + e^- \longrightarrow \text{reductant}$$

[1]Standard oxidation–reduction potential at pH = 0.

Table 20.1
Biochemistry: A Short Course, Second Edition

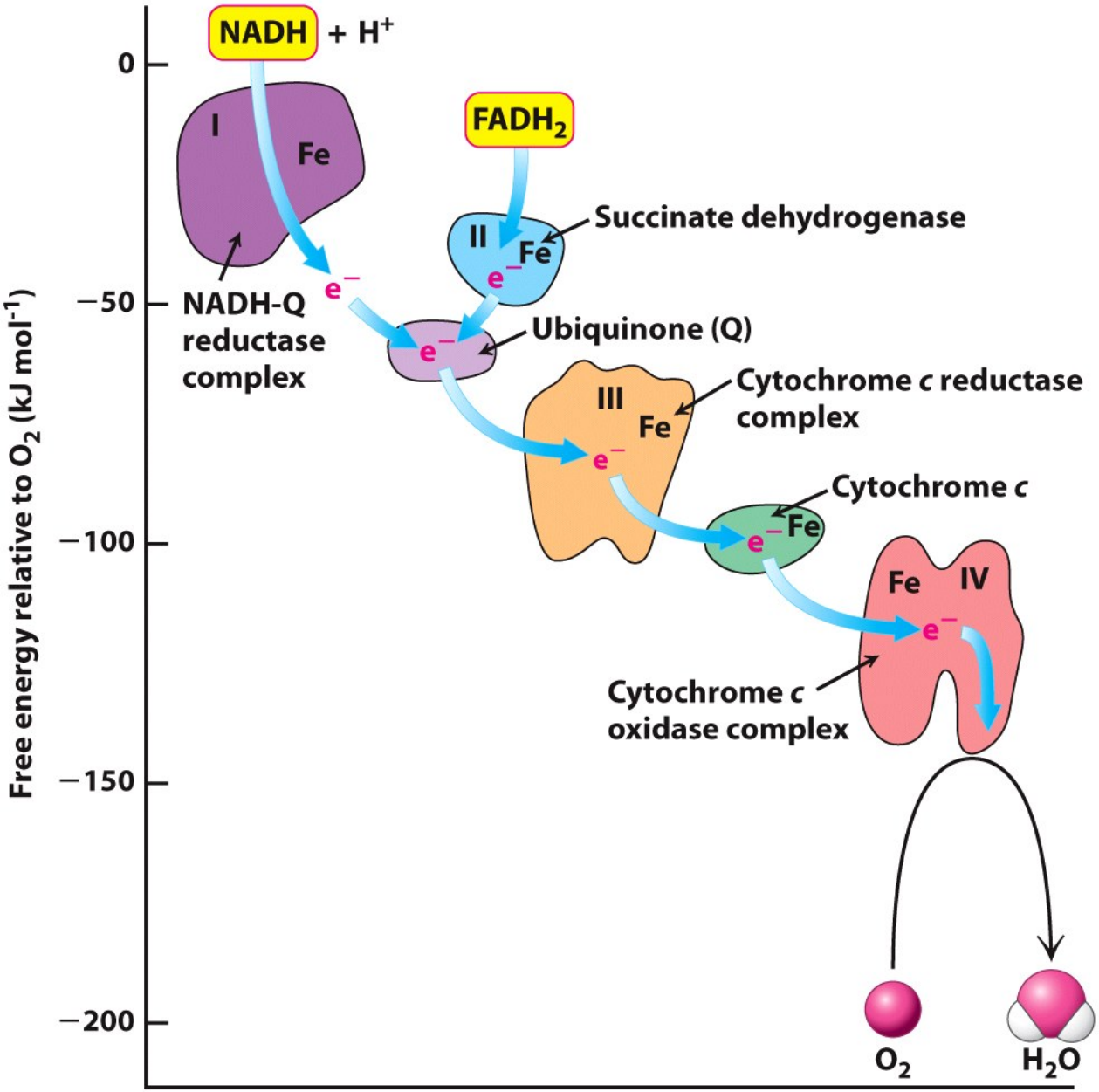


Figure 20.6
Biochemistry: A Short Course, Second Edition

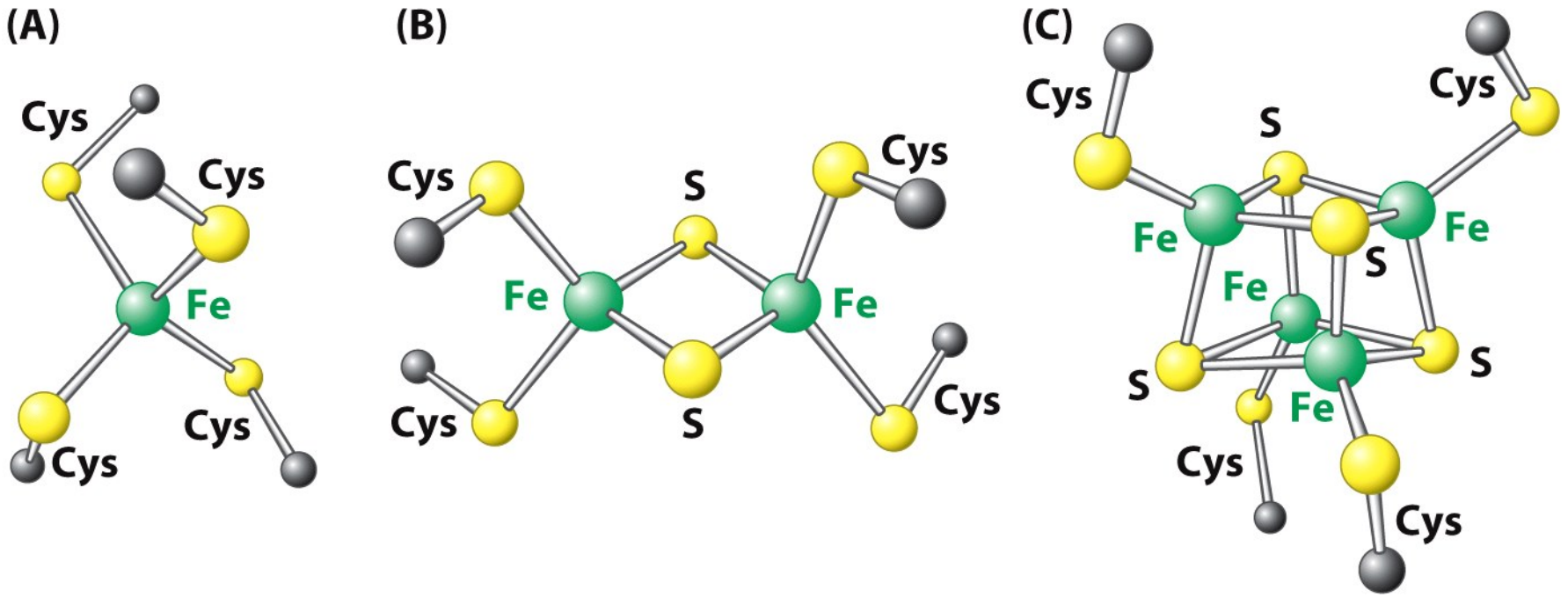
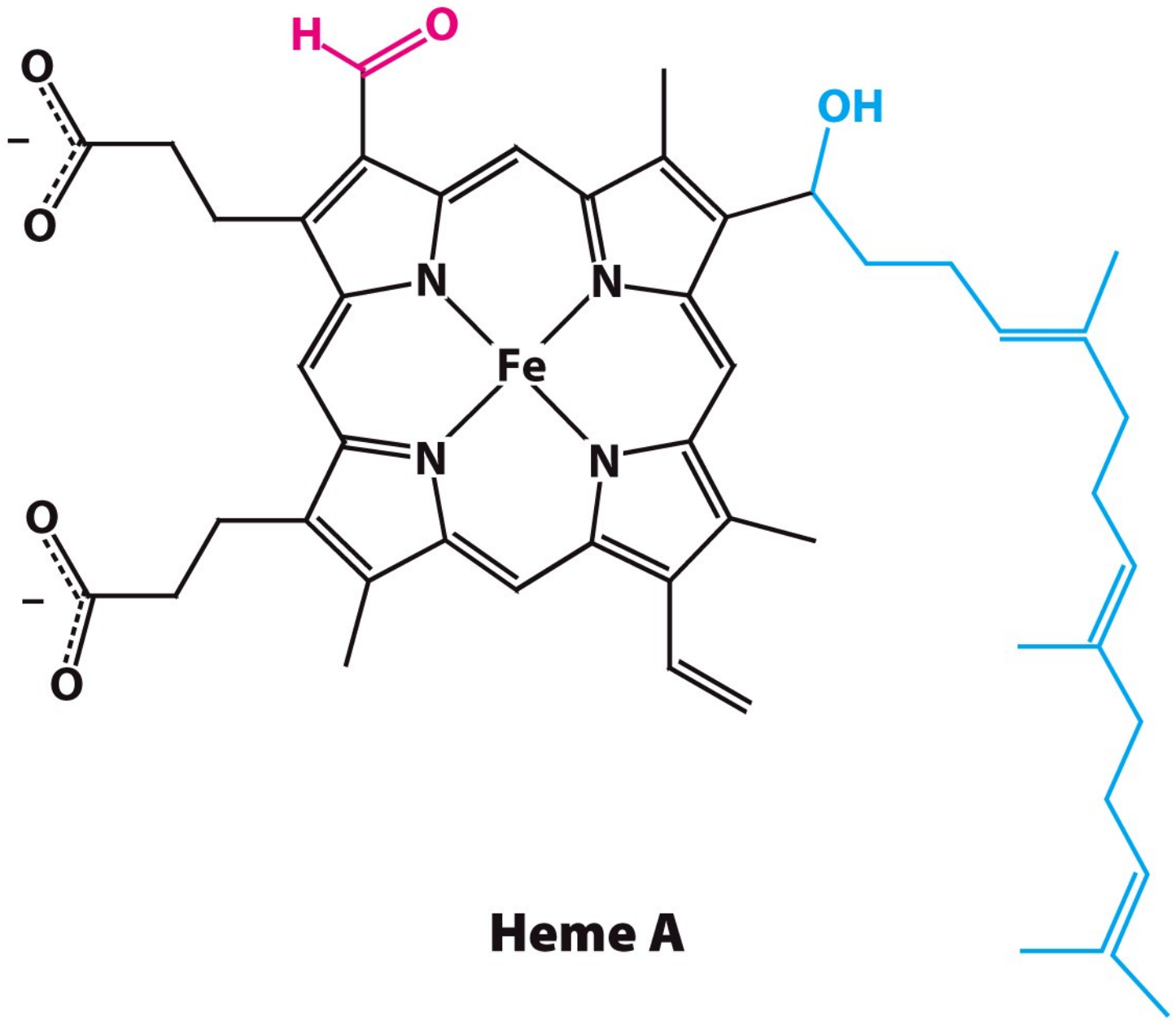
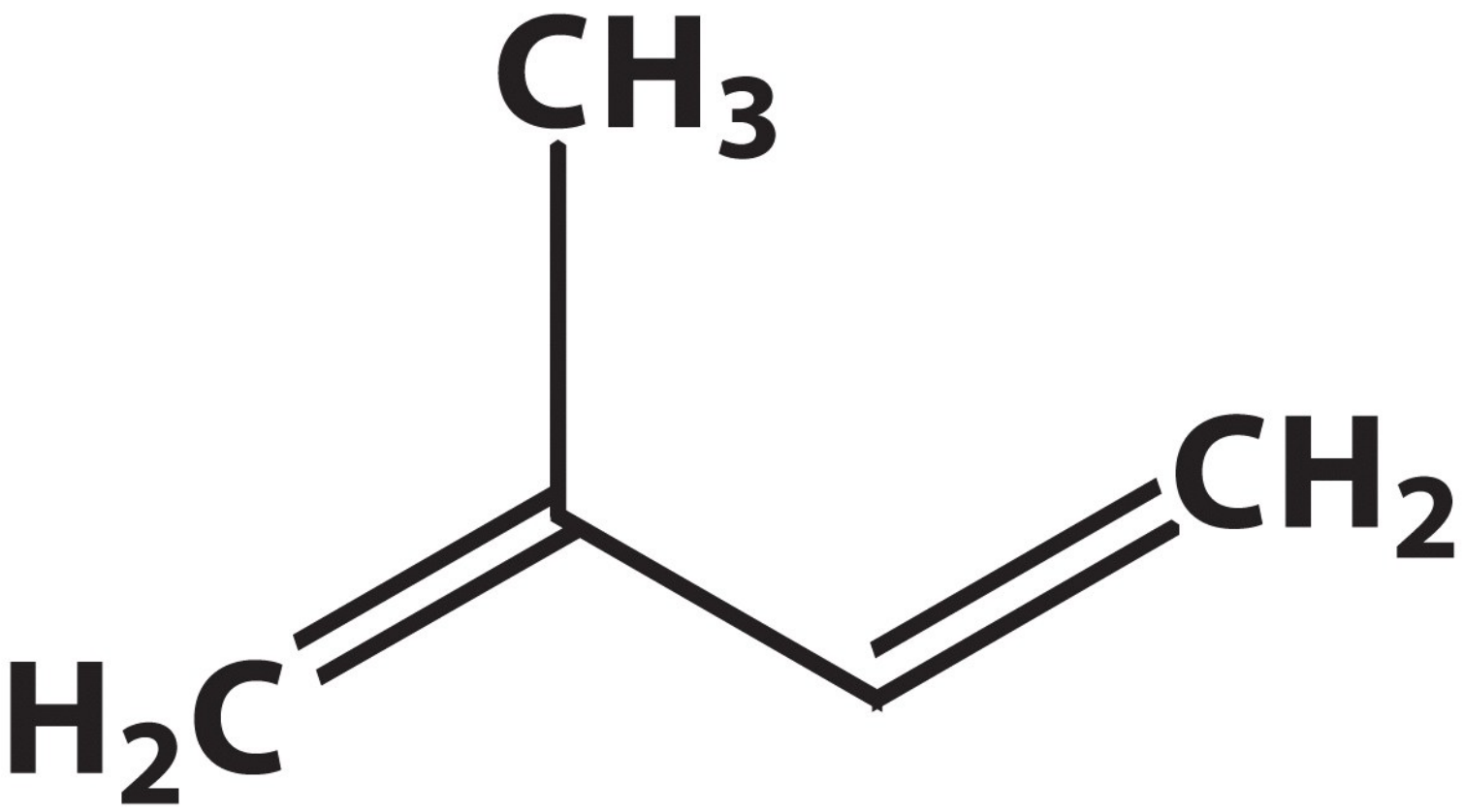


Figure 20.7
Biochemistry: A Short Course, Second Edition



Heme A

Figure 20.8
Biochemistry: A Short Course, Second Edition



Isoprene

Unnumbered 20 p356

Biochemistry: A Short Course, Second Edition

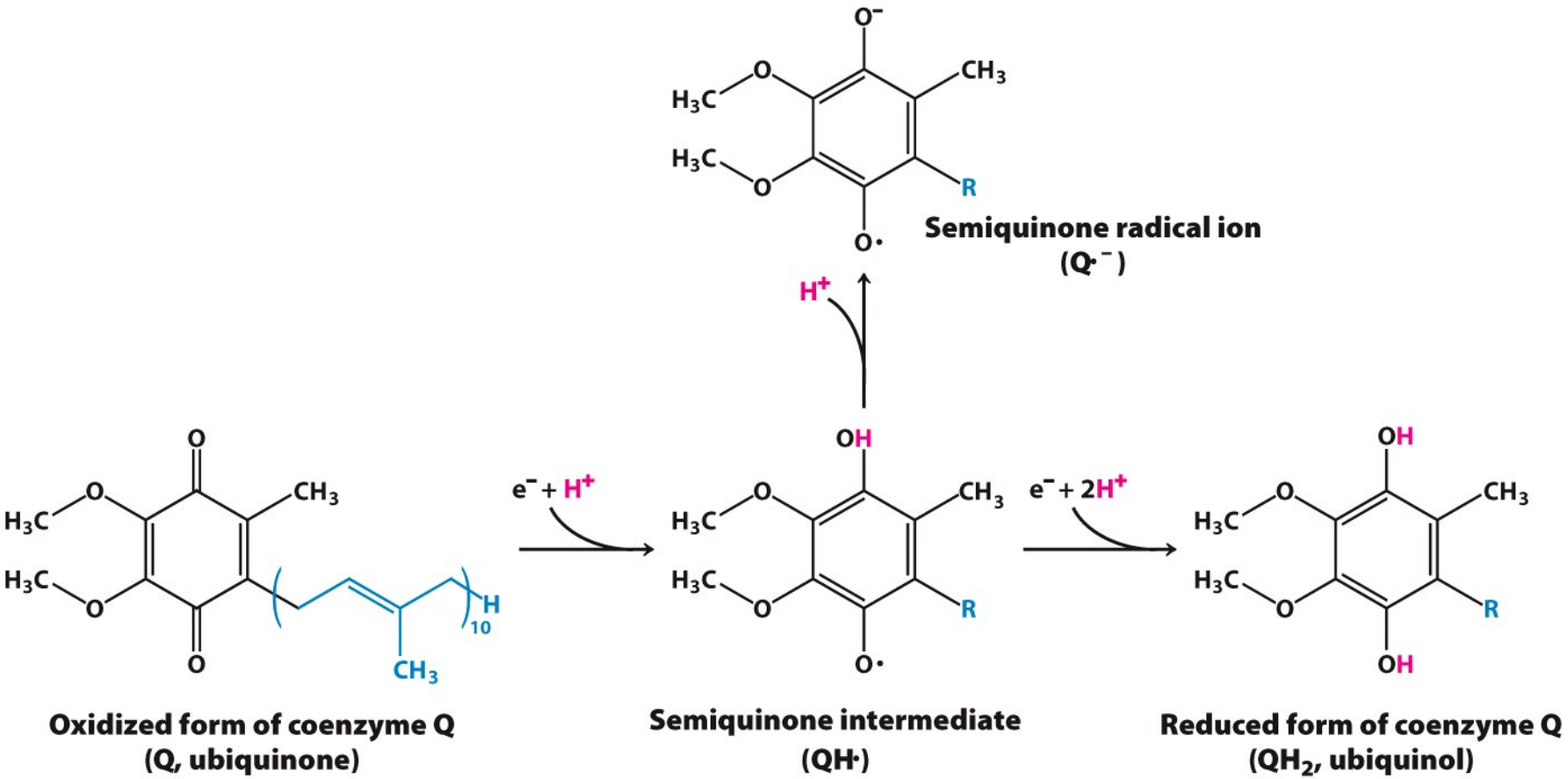


Figure 20.9
Biochemistry: A Short Course, Second Edition

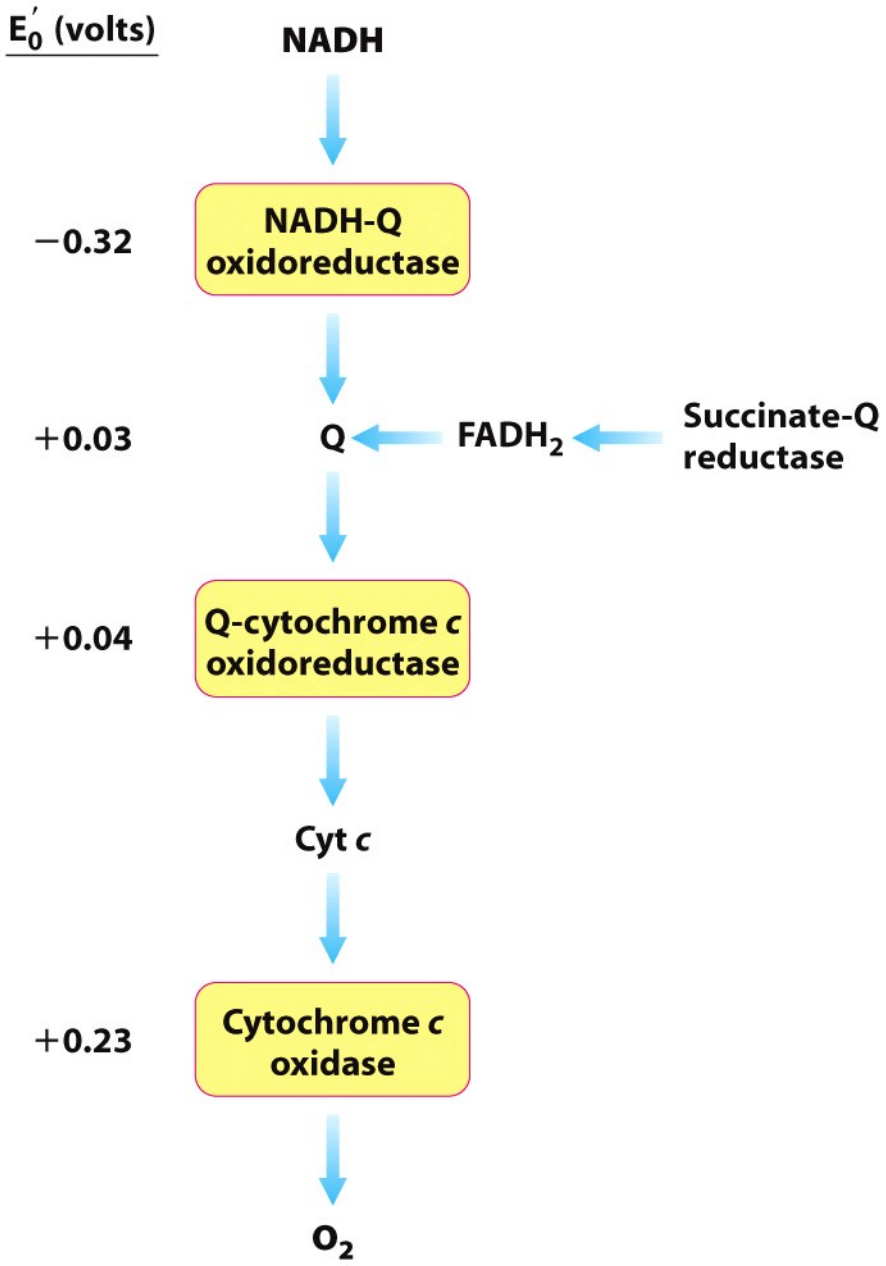


Figure 20.10
Biochemistry: A Short Course, Second Edition

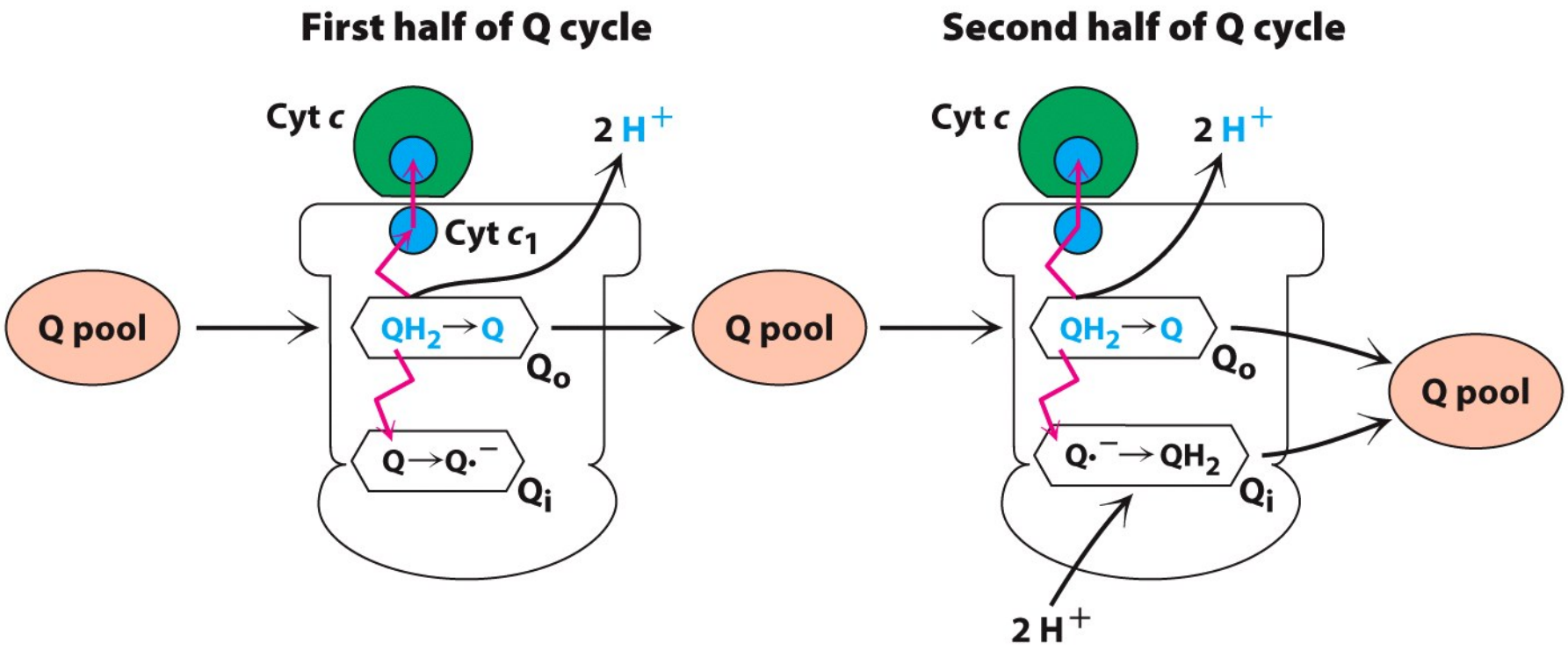


Figure 20.12
Biochemistry: A Short Course, Second Edition

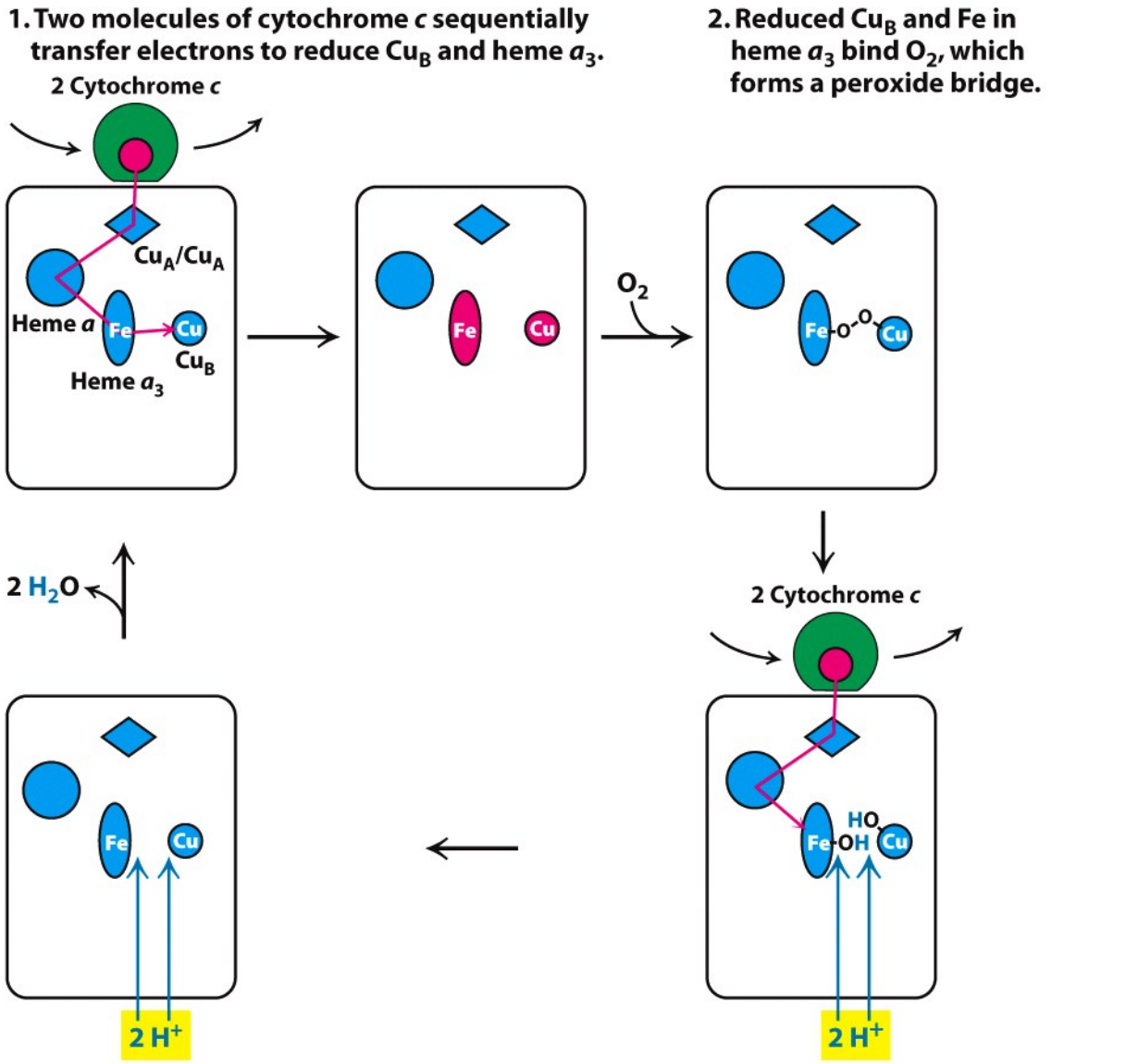


Figure 20.13

Biochemistry: A Short Course, Second Edition

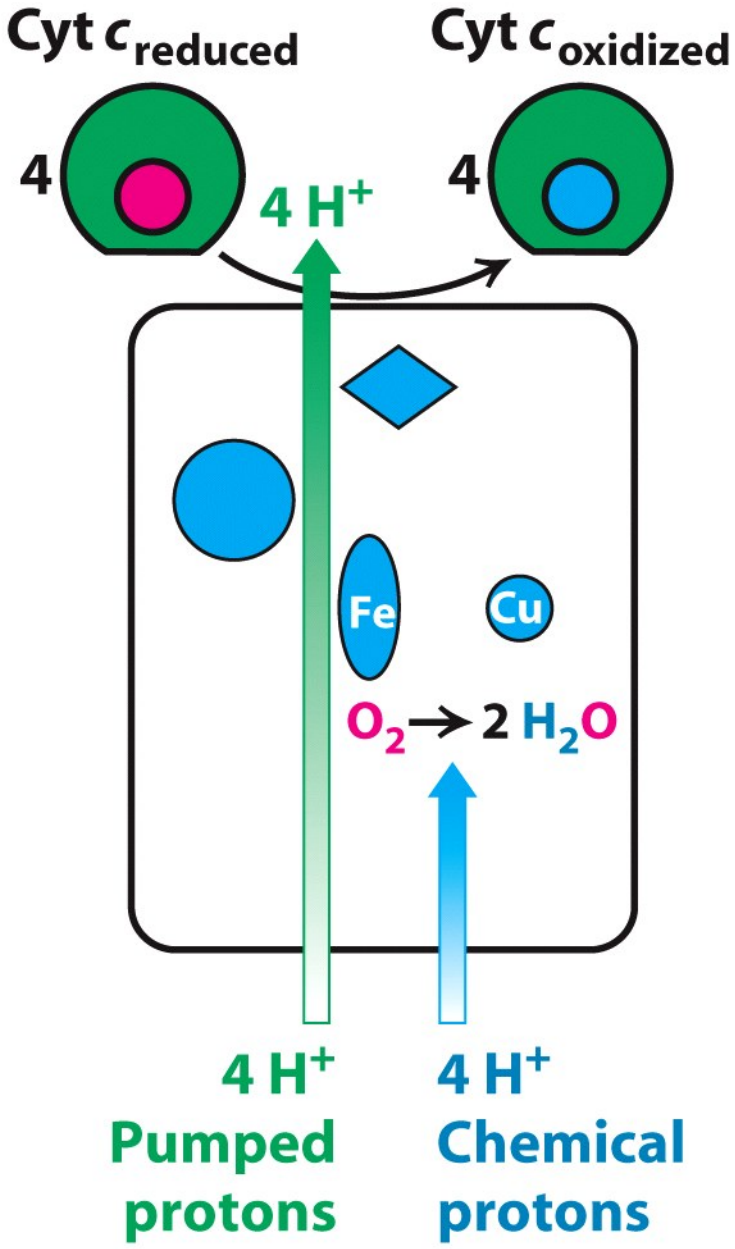


Figure 20.14
Biochemistry: A Short Course, Second Edition

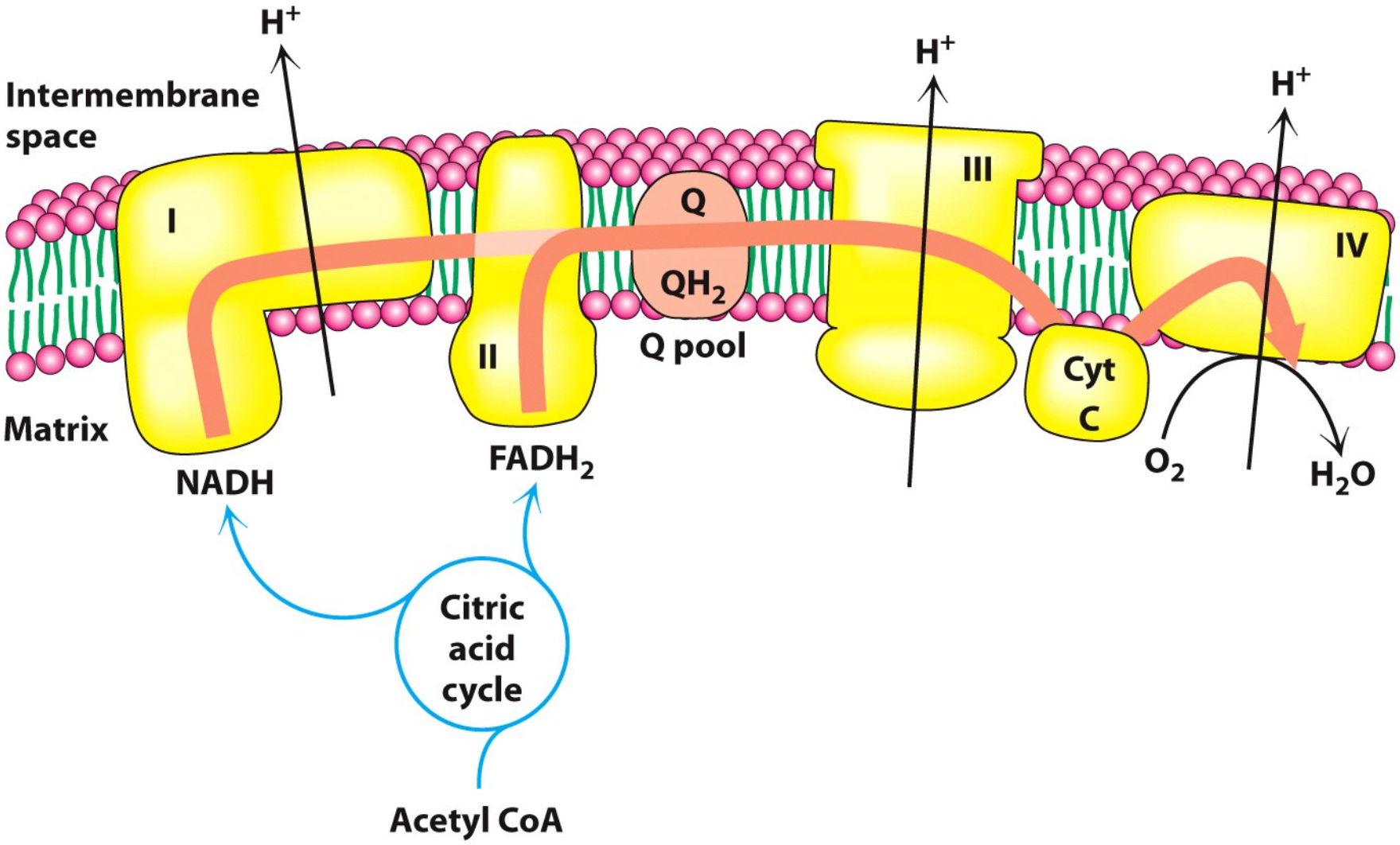


Figure 20.15
Biochemistry: A Short Course, Second Edition

Table 20.3 Pathological and other conditions that may be due to free-radical injury

Atherogenesis	Acute renal failure
Emphysema; bronchitis	Down syndrome
Parkinson disease	Retrolental fibroplasia (conversion of the retina into a fibrous mass in premature infants)
Duchenne muscular dystrophy	Cerebrovascular disorders
Cervical cancer	Ischemia; reperfusion injury
Alcoholic liver disease	
Diabetes	

Source: After D. B. Marks, A. D. Marks, and C. M. Smith, *Basic Medical Biochemistry: A Clinical Approach* (Williams & Wilkins, 1996), p. 331.

Table 20.3
Biochemistry: A Short Course, Second Edition

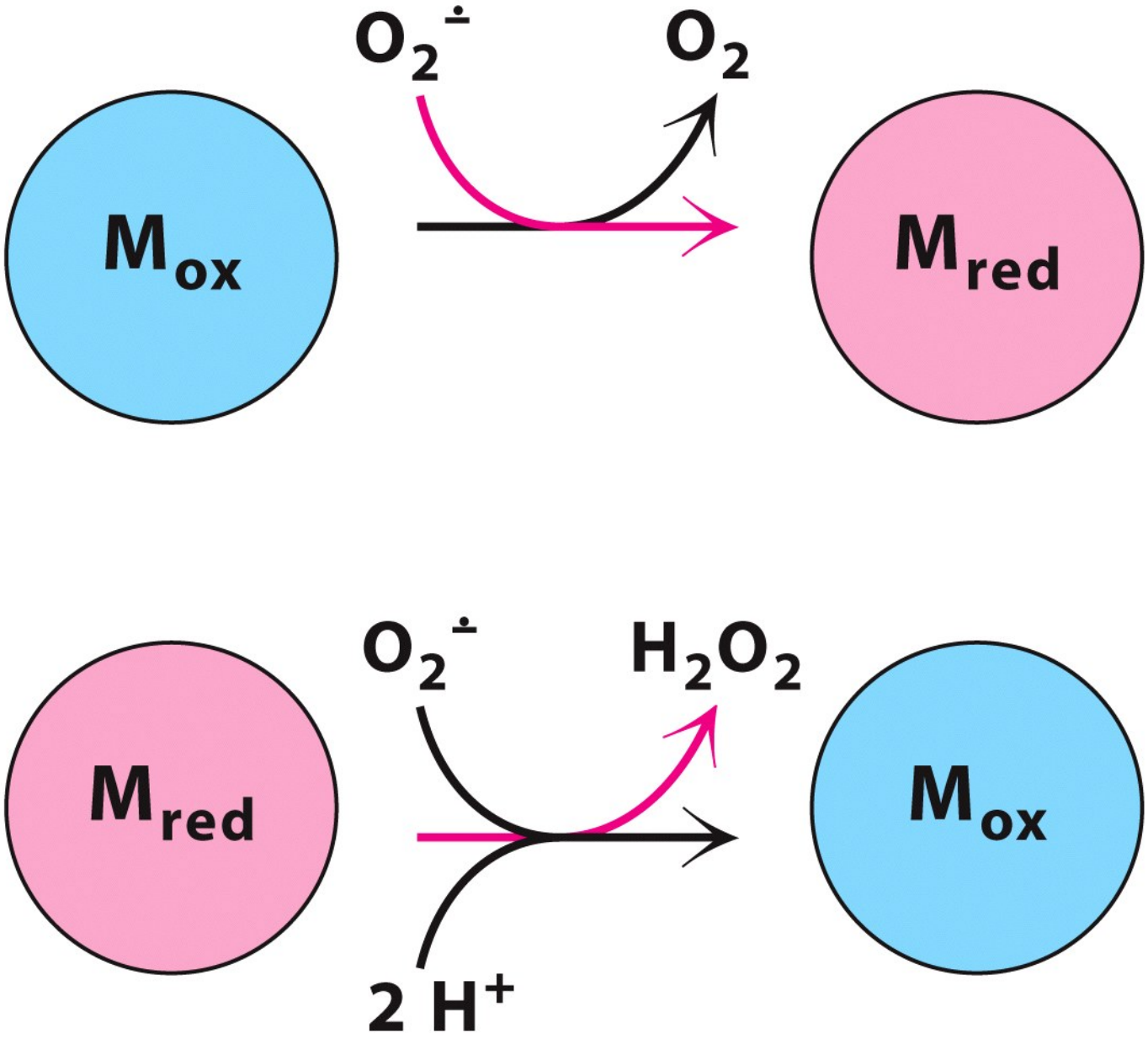


Figure 20.17
Biochemistry: A Short Course, Second Edition