

Table 7-1

TABLE 7-1 Comparison of Peptide, Steroid, and Amino Acid-Derived Hormones				
	PEPTIDE HORMONES	STEROID HORMONES	TYROSINE DERIVATIVES	
			Catecholamines	Thyroid Hormones
Synthesis and storage	Made in advance; stored in secretory vesicles	Synthesized on demand from precursors	Made in advance; stored in secretory vesicles	Made in advance; precursor stored in secretory vesicles
Release from parent cell	Exocytosis	Simple diffusion	Exocytosis	Simple diffusion
Transport in blood	Dissolved in plasma	Bound to carrier proteins	Dissolved in plasma	Bound to carrier proteins
Half-life	Short	Long	Short	Long
Location of receptor	Cell membrane	Cytoplasm or nucleus; some have membrane receptors also	Cell membrane	Nucleus
Response to receptor-ligand binding	Activation of second messenger systems; may activate genes	Activation of genes for transcription and translation; may have nongenomic actions	Activation of second messenger systems	Activation of genes for transcription and translation
General target response	Modification of existing proteins and induction of new protein synthesis	Induction of new protein synthesis	Modification of existing proteins	Induction of new protein synthesis
Examples	Insulin, parathyroid hormone	Estrogen, androgens, cortisol	Epinephrine, norepinephrine	Thyroxine (T ₄)

Figure 7-4

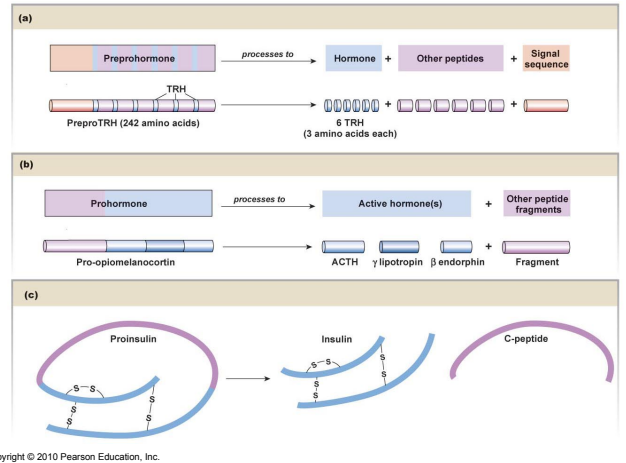
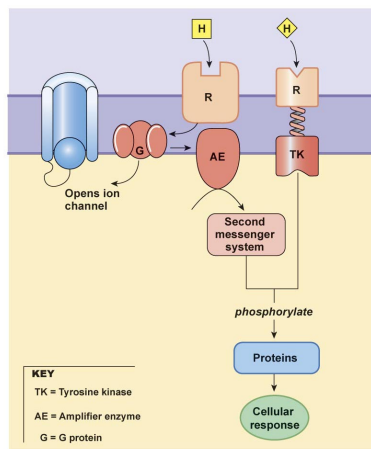


Figure 7-5



KEY
 TK = Tyrosine kinase
 AE = Amplifier enzyme
 G = G protein

Figure 7-6, overview

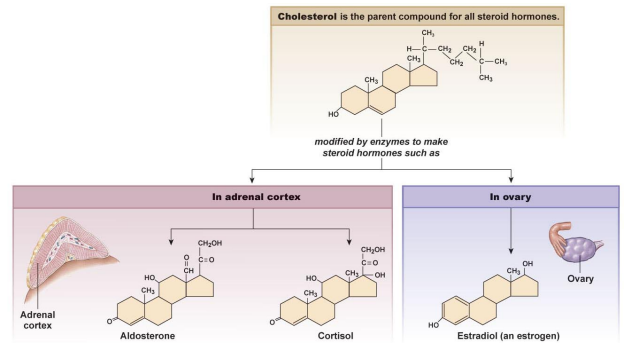
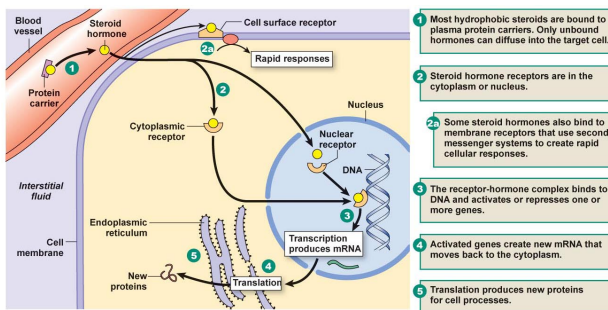
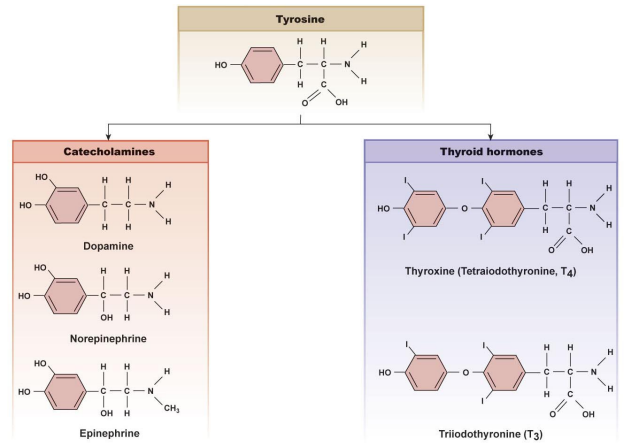


Figure 7-7, overview



- Most hydrophobic steroids are bound to plasma protein carriers. Only unbound hormones can diffuse into the target cell.
- Steroid hormone receptors are in the cytoplasm or nucleus.
- Some steroid hormones also bind to membrane receptors that use second messenger systems to create rapid responses.
- The receptor-hormone complex binds to DNA and activates or represses one or more genes.
- Activated genes create new mRNA that moves back to the cytoplasm.
- Translation produces new proteins for cell processes.

Figure 7-8, overview



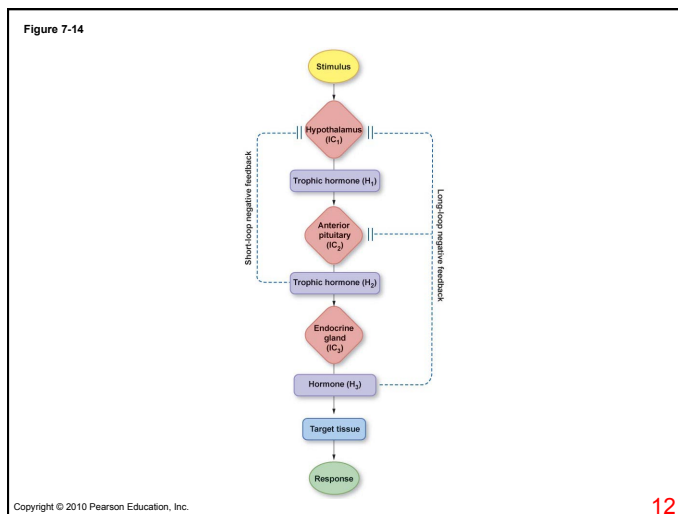
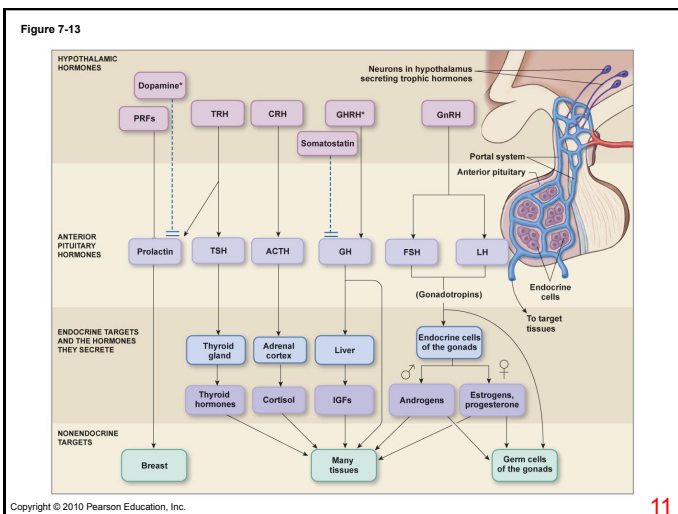
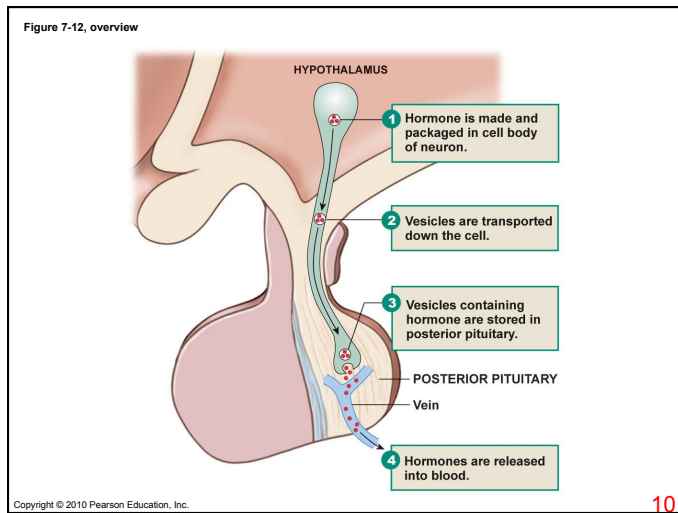
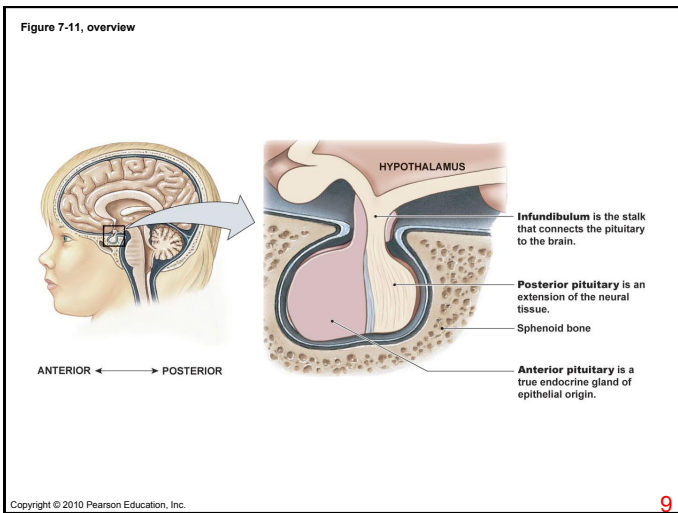
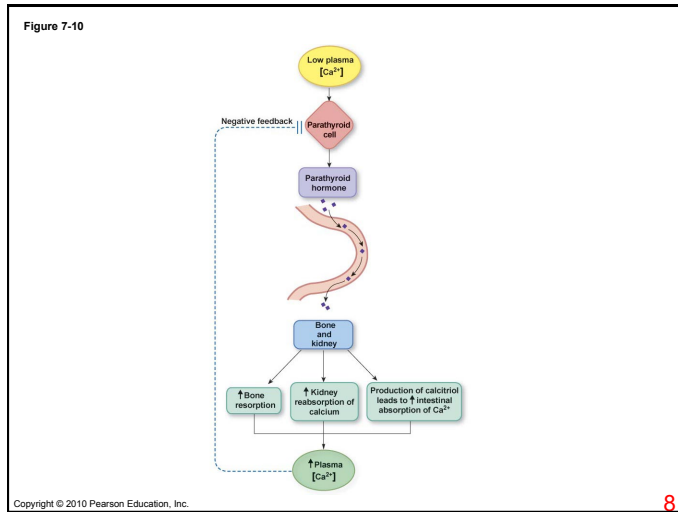
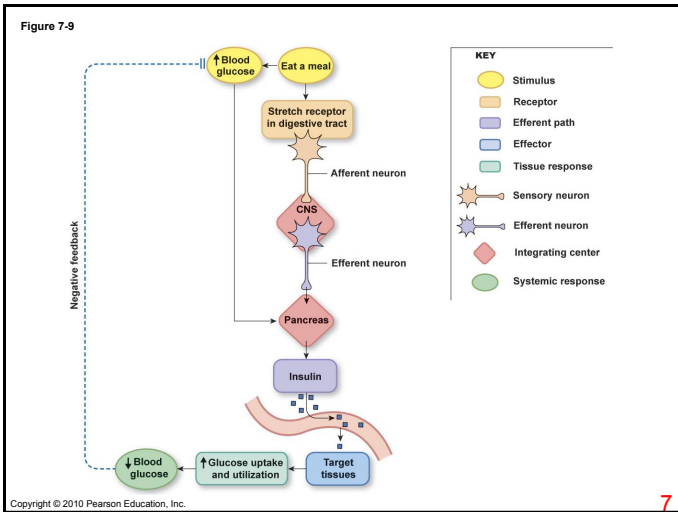
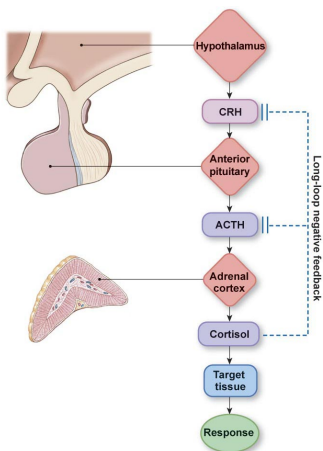


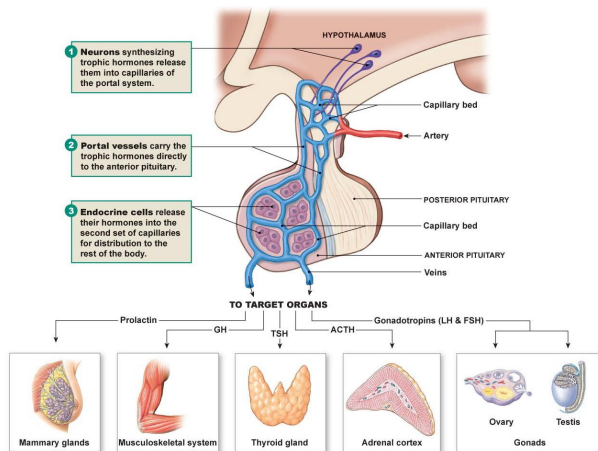
Figure 7-15



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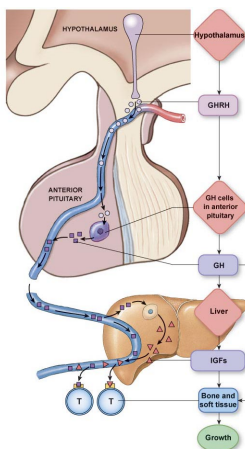
Figure 7-16, overview



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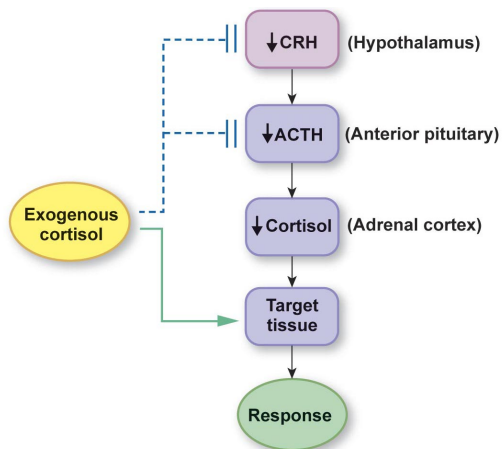
Figure 7-17



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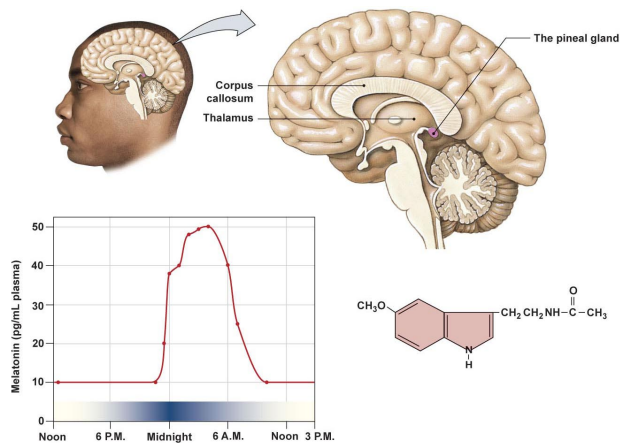
Figure 7-19



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Figure 7-22, overview



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