

# Endocrine System

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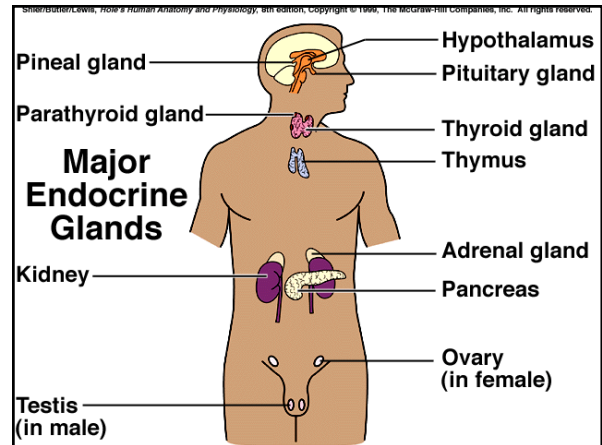
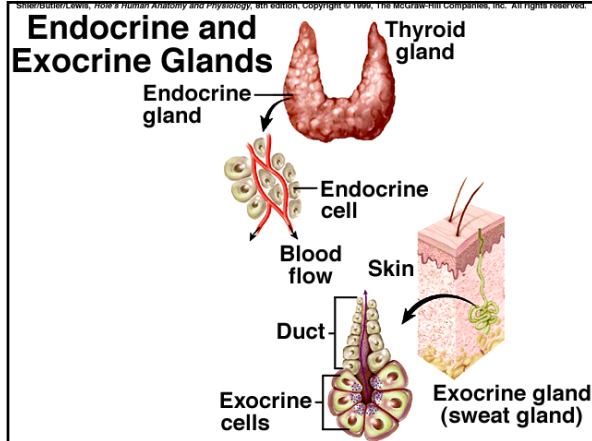
Chapter 13

Karen Webb Smith

Unit Three

## I. General Characteristics of the Endocrine System

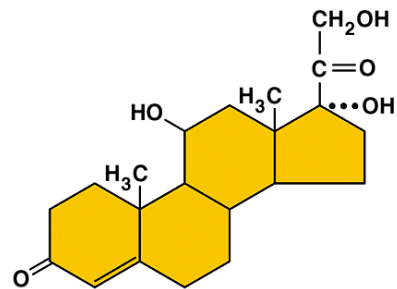
- The endocrine system is made up of the cells, tissues, and organs that secrete hormones into body fluids.
- "Local hormones" include paracrine secretions that are released to interstitial fluid and affect only nearby cells, and autocrine secretions that influence the cell secreting the hormone.
- Endocrine glands and their hormones regulate a number of metabolic processes within cells, as well as reproduction, development, and growth.



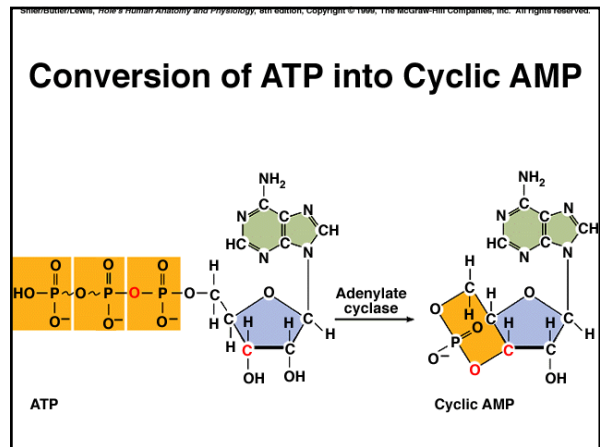
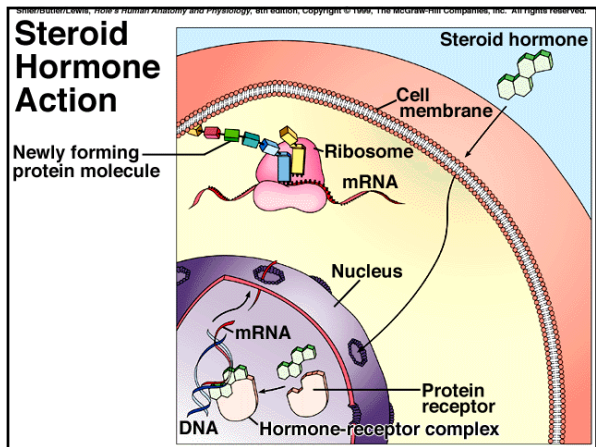
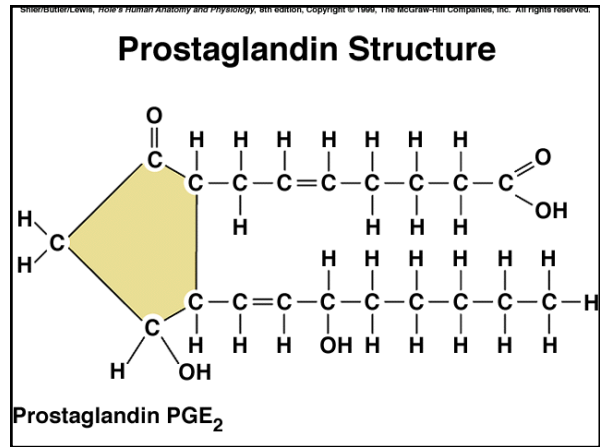
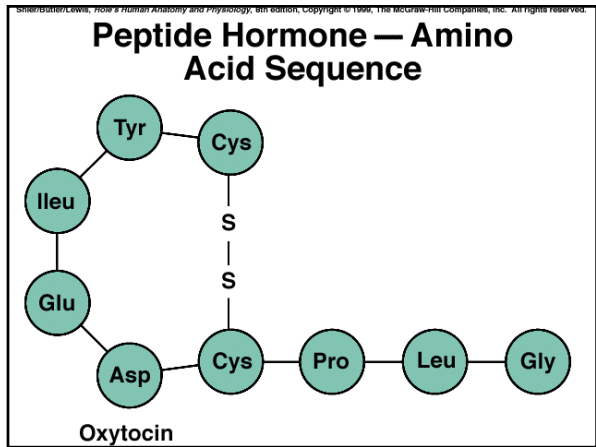
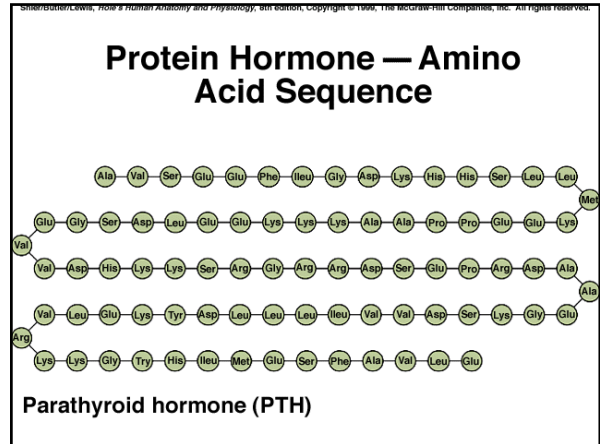
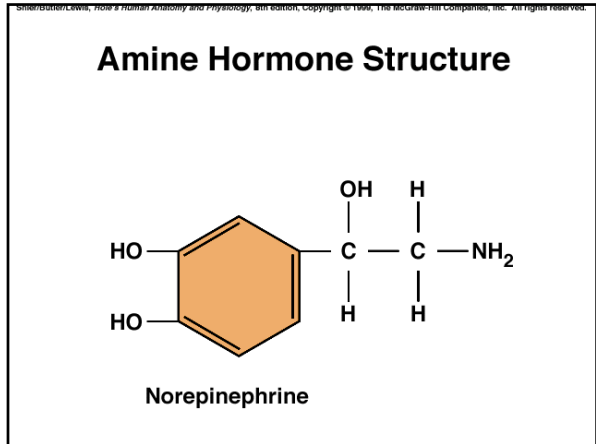
## II. Hormone Action

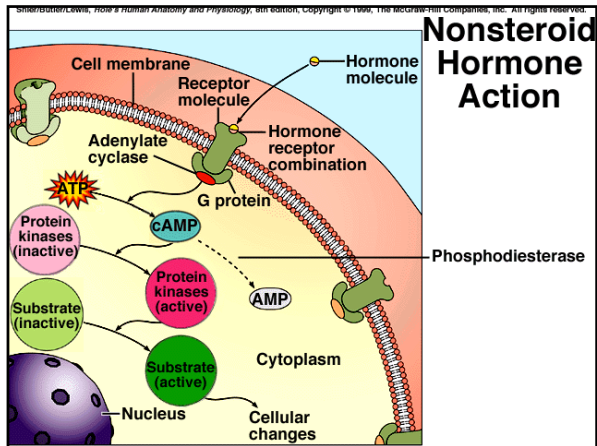
- A hormone is a biochemical secreted by one cell that affects a specific target cell with appropriate cell surface receptors.
- Chemistry of Hormones
- C. Action of Hormones
- D. Prostaglandins

## Steroid Hormone Structure



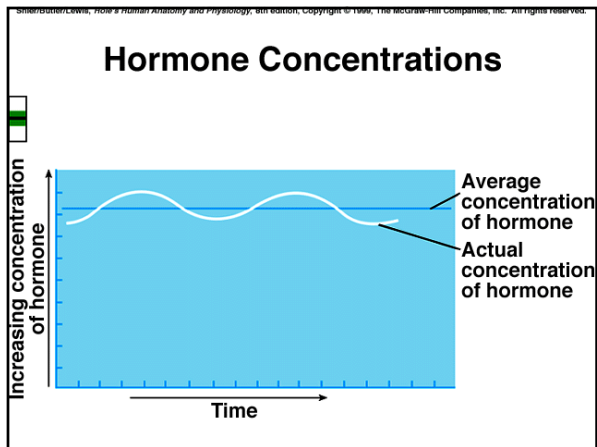
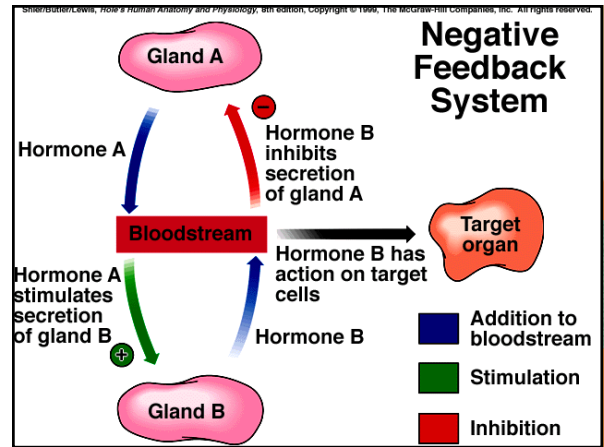
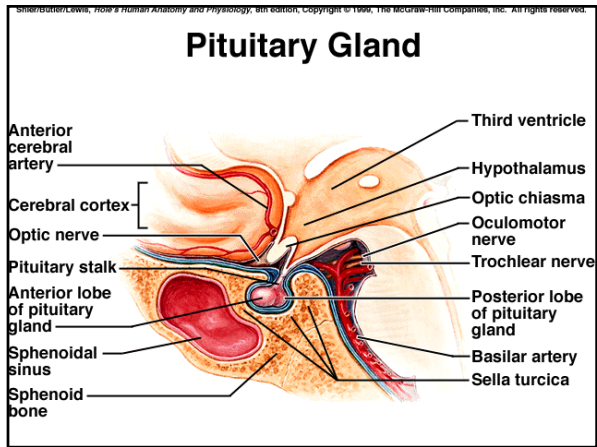
Cortisol





### III. Control of Hormonal Secretions

- A. Hormone levels are very precisely regulated.
- B. Control Sources
- C. Negative Feedback Systems




### IV. Pituitary Gland

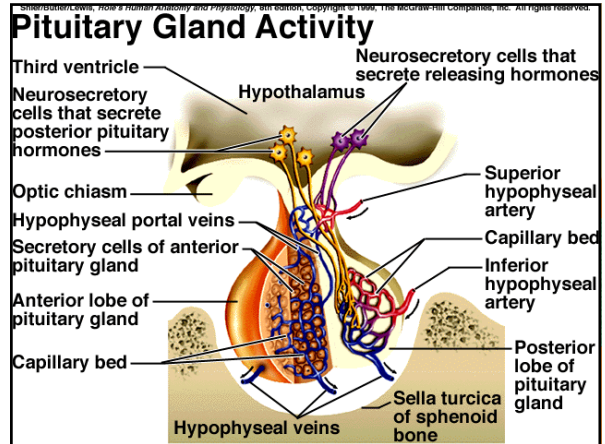
- A. The pituitary gland is attached to the base of the brain and has an anterior lobe (adenohypophysis) and a posterior lobe (neurohypophysis).
- B. The anterior lobe secretes six hormones, and the posterior pituitary stores two hormones secreted by neurosecretory cells.

## IV. Pituitary Gland

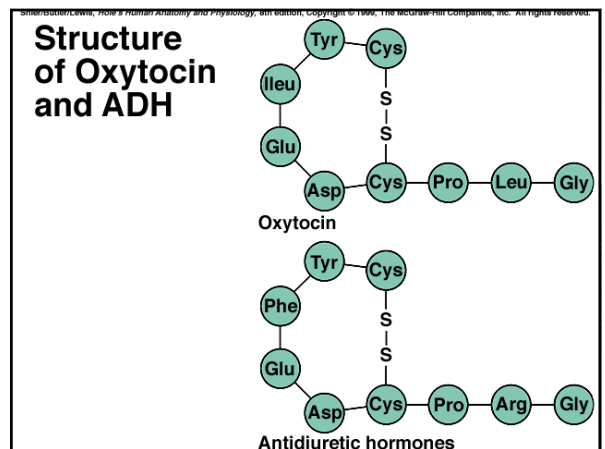
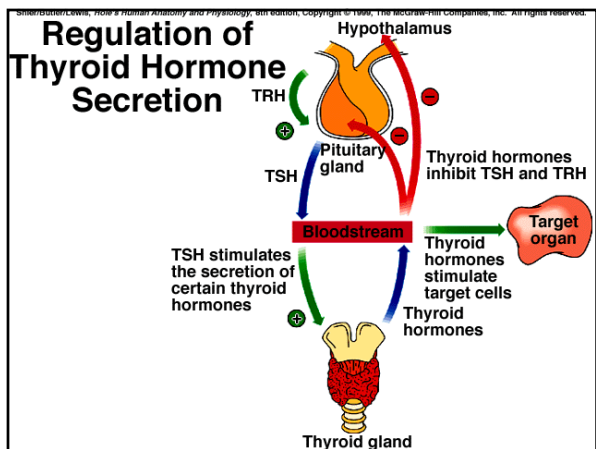
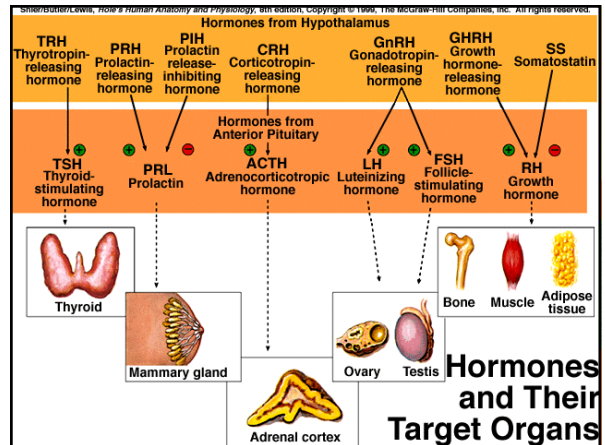
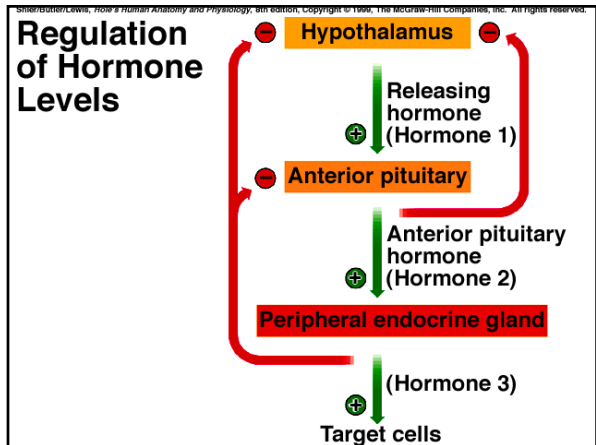
- C. The hypothalamus controls the activity of the pituitary gland.
- D. Anterior Pituitary Hormones
- E. Posterior Pituitary Hormones



### Pituitary Gland Activity




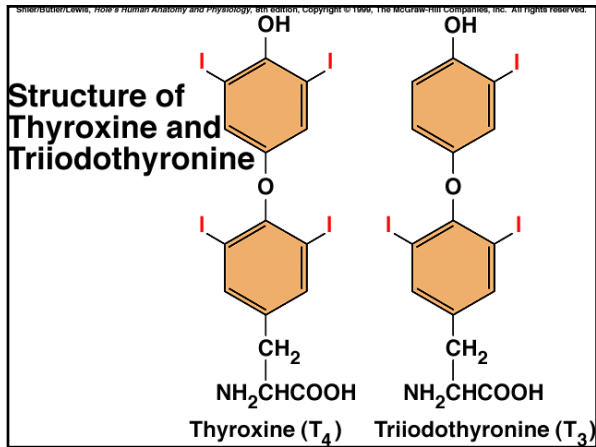
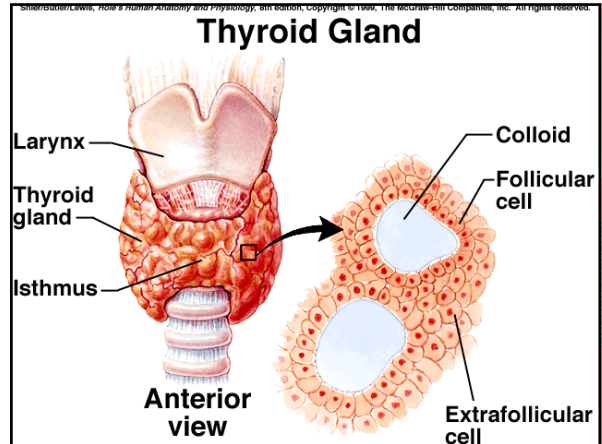
Labels in diagram include: Third ventricle, Neurosecretory cells that secrete releasing hormones, Hypothalamus, Neurosecretory cells that secrete posterior pituitary hormones, Optic chiasm, Hypophyseal portal veins, Secretory cells of anterior pituitary gland, Anterior lobe of pituitary gland, Capillary bed, Superior hypophyseal artery, Capillary bed, Inferior hypophyseal artery, Posterior lobe of pituitary gland, Sella turcica of sphenoid bone, Hypophyseal veins.






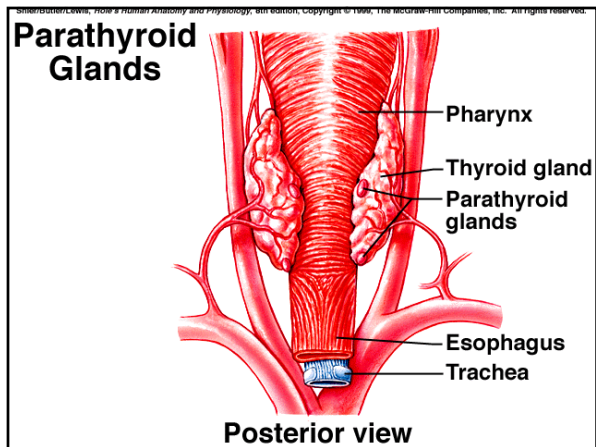
## V. Thyroid Gland

- A. The thyroid gland is located below the larynx and requires iodine.
- B. Structure of the Gland
- C. Thyroid Hormones

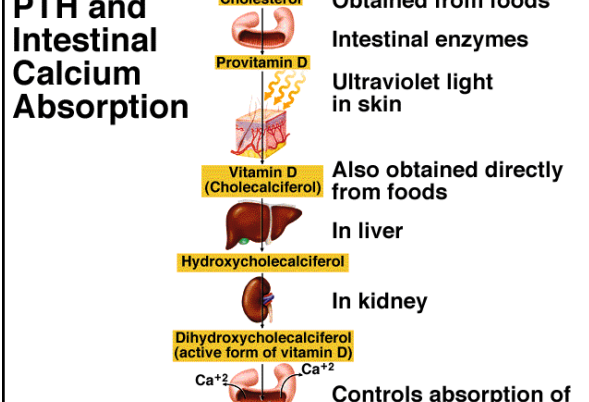



## VI. Parathyroid Glands

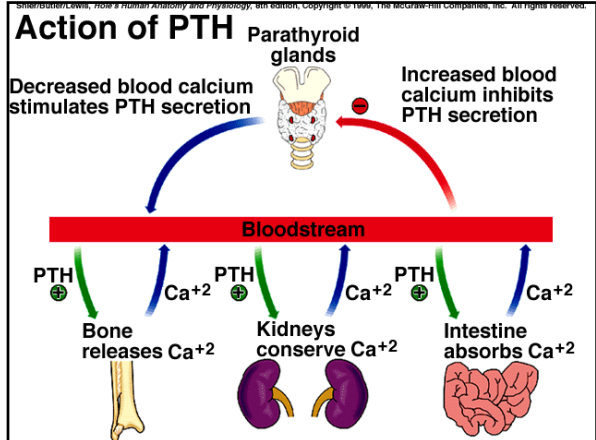
- A. The four, tiny parathyroids are located on the posterior of the thyroid.
- B. Structure of the Glands
- c. Parathyroid Hormone
- D. Calcitonin and PTH exert opposite effects in regulating calcium ion levels in the blood within precise limits.

### PTH and Intestinal Calcium Absorption

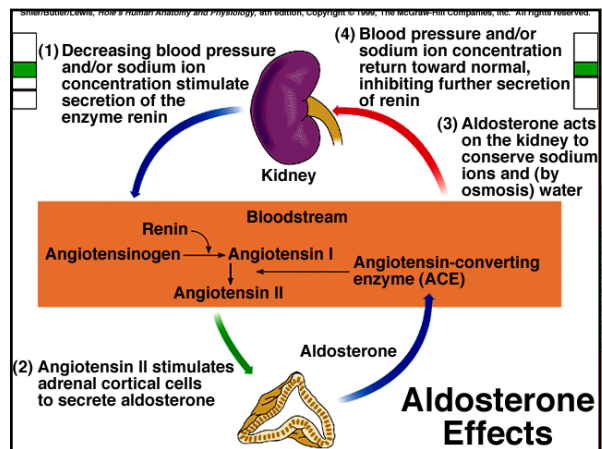
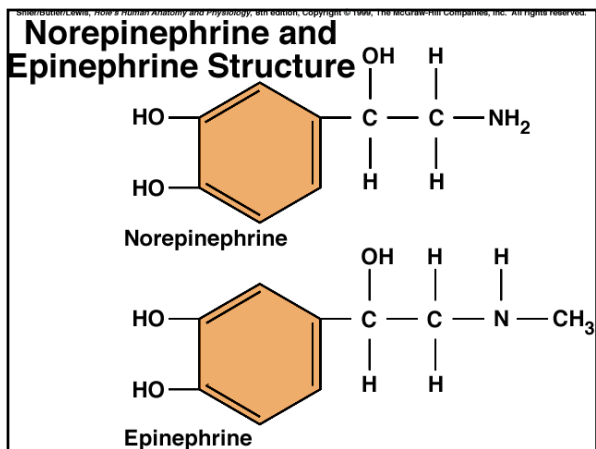
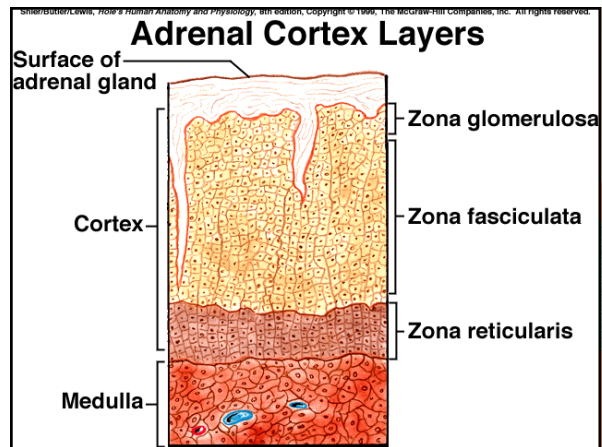
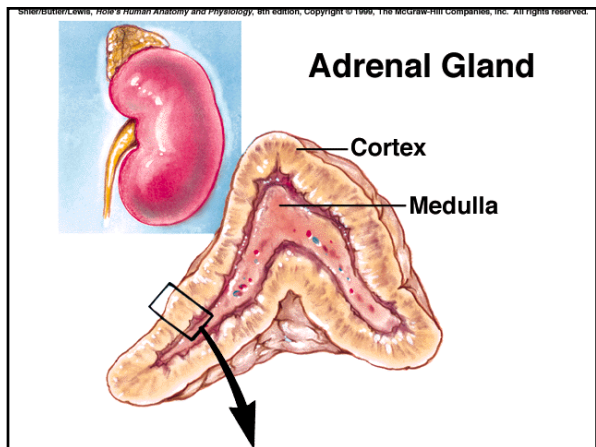


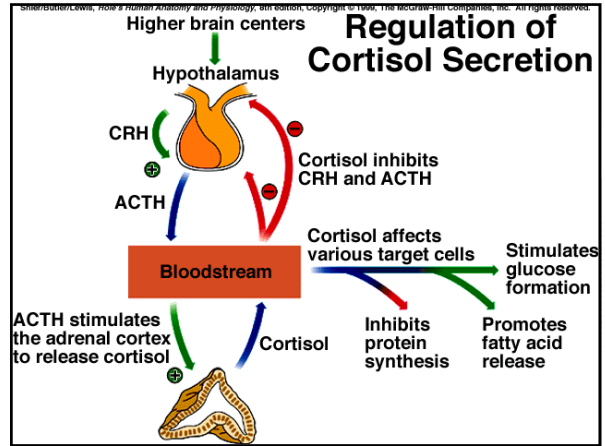
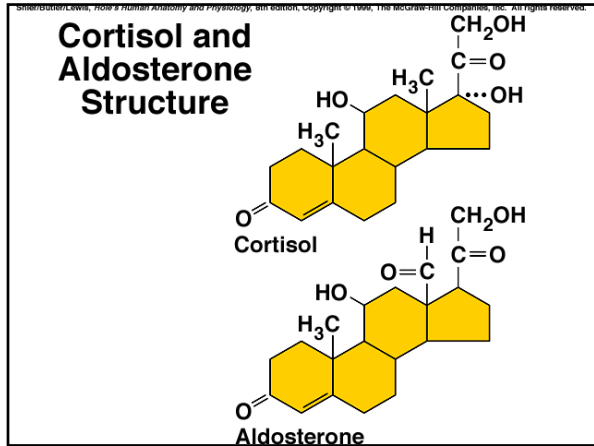
<b>Cholesterol</b>	Obtained from foods
<b>Provitamin D</b>	Intestinal enzymes
	Ultraviolet light in skin
<b>Vitamin D (Cholecalciferol)</b>	Also obtained directly from foods
	In liver
<b>Hydroxycholecalciferol</b>	
	In kidney
<b>Dihydroxycholecalciferol (active form of vitamin D)</b>	
Ca <sup>+2</sup>	Controls absorption of calcium in intestine



## VII. Adrenal Glands

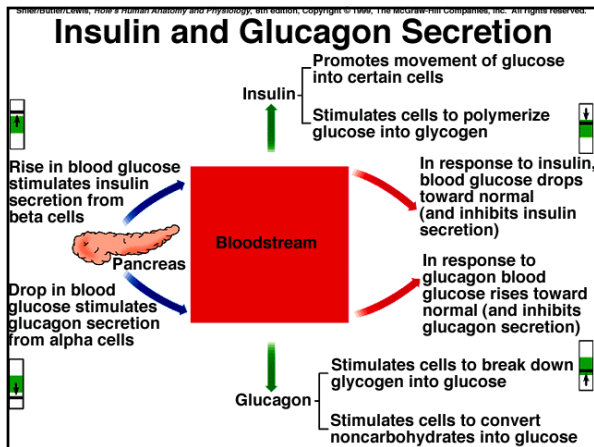
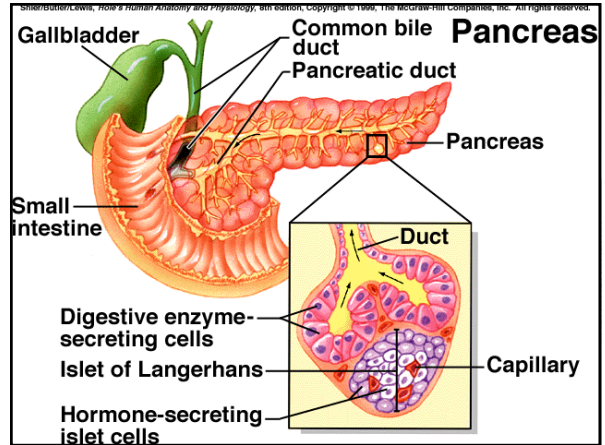
- A. The adrenal glands sit atop the kidneys enclosed in a layer of fat.
- B. Structure of the Glands
- C. Hormones of the Adrenal Medulla
- D. Hormones of the Adrenal Cortex





## VIII. Pancreas

- A. The pancreas secretes hormones as an endocrine gland, and digestive juices as an accessory organ to the digestive tract.
- B. Structure of the Gland
- C. C. Hormones of the Islets of Langerhans


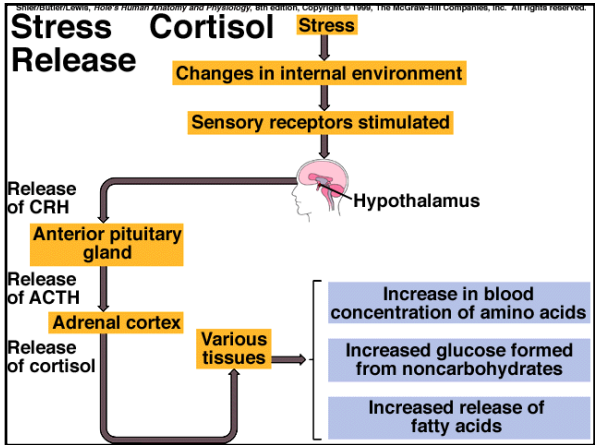
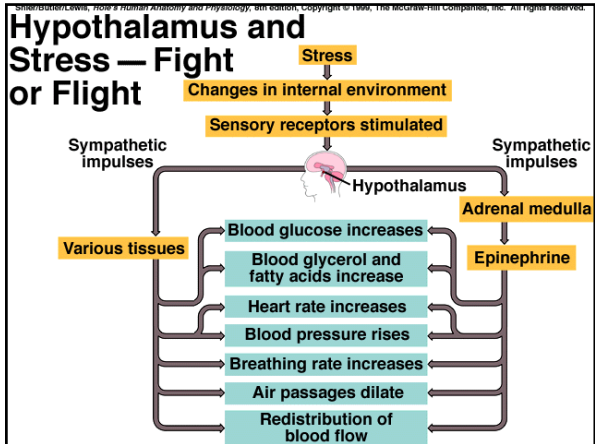


## IX. Other Endocrine Glands

- A. Pineal Gland
- B. B. Thymus Gland
- C. Reproductive Glands
- D. D. Digestive Glands
- E. Other Hormone-Producing Organs

# X. Stress and Its Effects

- A. Factors that serve as stressors to the body produce stress and threaten homeostasis.
- B. Types of Stress
- C. C. Response to Stress

The End.

