



## Thyroid Gland

- Found at the base of the throat
- Consists of two lobes and a connecting isthmus
- Produces two hormones
  - Thyroid hormone
  - Calcitonin

Copyright © 2003 Pearson Education, Inc. publishing as Benjamin Cummings

Slide  
9.23a

---

---

---

---

---

---

---

---

## Thyroid Gland

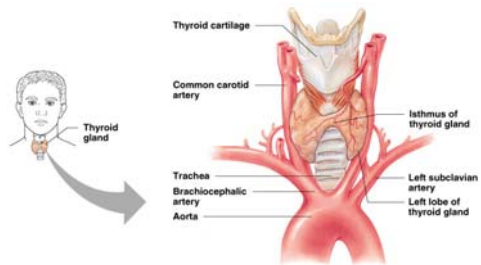


Figure 9.6

(a)

Copyright © 2003 Pearson Education, Inc. publishing as Benjamin Cummings

Slide  
9.23b

---

---

---

---

---

---

---

---

## Parathyroid Glands

- Tiny masses on the posterior of the thyroid
- Secrete parathyroid hormone
  - Stimulate osteoclasts to remove calcium from bone
  - Stimulate the kidneys and intestine to absorb more calcium
  - Raise calcium levels in the blood

Copyright © 2003 Pearson Education, Inc. publishing as Benjamin Cummings

Slide 9.26

---

---

---

---

---

---

---

---

## Pancreatic Islets

- The pancreas is a mixed gland
- The islets of the pancreas produce hormones
  - Insulin – allows glucose to cross plasma membranes into cells from beta cells
  - Glucagon – allows glucose to enter the blood from alpha cells
  - These hormones are antagonists that maintain blood sugar homeostasis

Copyright © 2003 Pearson Education, Inc. publishing as Benjamin Cummings

Slide  
9.32a

---

---

---

---

---

---

---

---

## Pancreatic Islets

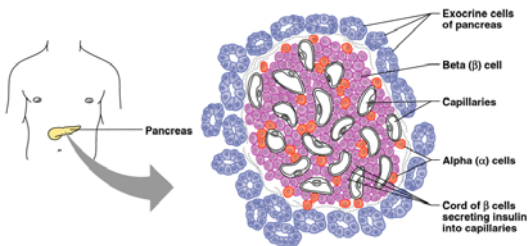


Figure 9.13

Copyright © 2003 Pearson Education, Inc. publishing as Benjamin Cummings

Slide  
9.32b

---

---

---

---

---

---

---

---

## Pineal Gland

- Found on the third ventricle of the brain
- Secretes melatonin
  - Helps establish the body's wake and sleep cycles
  - May have other as-yet-unsubstantiated functions

Copyright © 2003 Pearson Education, Inc. publishing as Benjamin Cummings

Slide 9.34

---

---

---

---

---

---

---

---

## Thymus

- Located posterior to the sternum
- Largest in infants and children
- Produces thymosin
  - Matures some types of white blood cells
  - Important in developing the immune system

Copyright © 2003 Pearson Education, Inc. publishing as Benjamin Cummings

Slide 9.35

---

---

---

---

---

---

---

---

## Other Hormone-Producing Tissues and Organs

- Parts of the small intestine
- Parts of the stomach
- Kidneys
- Heart
- Many other areas have scattered endocrine cells

Copyright © 2003 Pearson Education, Inc. publishing as Benjamin Cummings

Slide 9.39

---

---

---

---

---

---

---

---

## Developmental Aspects of the Endocrine System

- Most endocrine organs operate smoothly until old age
  - Menopause is brought about by lack of efficiency of the ovaries
  - Problems associated with reduced estrogen are common
  - Growth hormone production declines with age
  - Many endocrine glands decrease output with age

Copyright © 2003 Pearson Education, Inc. publishing as Benjamin Cummings

Slide 9.41

---

---

---

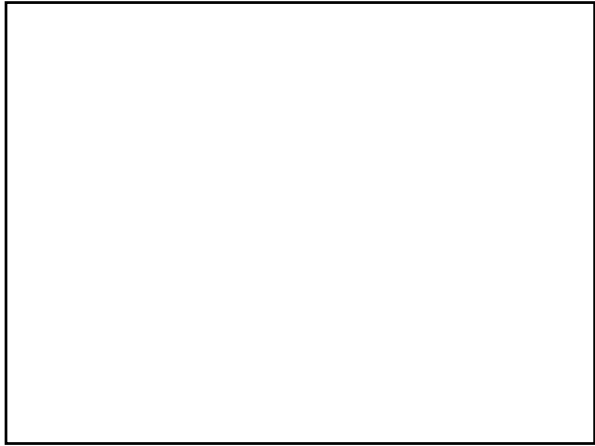
---

---

---

---

---



---

---

---

---

---

---

---

---