

Boggs Anatomy Period 3

Off-Site Learning Packet Day 5

Procedure

Use the Ch. 12 Endocrine System PowerPoint to complete the guided notes.

Chapter 12: The Endocrine System

Guided Notes

Chapter Objectives:

1. List the functions of hormones
2. Classify hormones into their major chemical categories
3. Describe how the hypothalamus of the brain controls the endocrine system
4. Name the endocrine glands and state where they are located
5. List the major hormones and their effects on the body

Vocabulary

- | | | |
|---------------------------------|----------------------------------|---------------------------------|
| 1. Acidosis | 14. Diabetes mellitus | 27. Luteinizing hormone |
| 2. Addison's disease | 15. Endocrine glands | 28. Melatonin |
| 3. Adrenal glands | 16. Estrogen | 29. Negative feedback loop |
| 4. Adrenalin/epinephrine | 17. Follicle-stimulating hormone | 30. Noradrenalin/norepinephrine |
| 5. Adrenocorticotrophic hormone | 18. Glucagon | 31. Ovaries |
| 6. Aldosterone | 19. Goiter | 32. Oxytocin |
| 7. Androgens | 20. Grave's disease | 33. Pituitary gland |
| 8. Calcitonin | 21. Growth hormone | 34. Progesterone |
| 9. Chief cells | 22. Homeostasis | 35. Serotonin |
| 10. Cortisol/hydrocortisone | 23. Hormones | 36. Testes |
| 11. Cortisone | 24. Hyperglycemia | 37. Testosterone |
| 12. Cretinism | 25. Insulin | |
| 13. Cushing's syndrome | 26. Lactogenic hormone/prolactin | |

Introduction

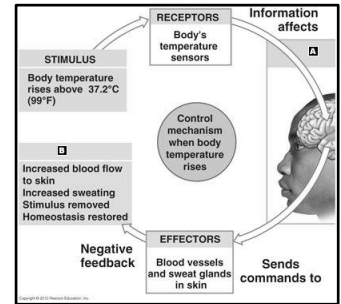
- The endocrine system exerts _____ control over the body by maintaining the body's internal environment within certain narrow ranges (_____)
- Endocrine glands are _____ glands that secrete hormones directly into the _____
- The endocrine system, along with the nervous system, control:
 1. _____
 2. _____
 3. _____
 4. _____
 5. _____

The Functions of Hormones

- Hormones control the _____ environment of the body (at the _____ and _____ levels of organization)
- Many hormones are regulated by a _____ feedback loop

Negative Feedback Loop

- When a concentration of a particular hormone reaches a certain _____ in the body, the gland that secreted that hormone is _____, thus _____ the secretion of the hormone
- This process is like a thermostat in a home



Classification of Hormones

- ★ Hormones are Classified into 3 chemical categories:

1. _____
2. _____
3. _____

Modified Amino Acids

- ★ Work by binding to _____ on the membranes of cells of the target organs
- ★ Examples:
 1. Hormones secreted by the _____
 2. Hormones secreted by the _____
 3. _____
 4. _____
 5. _____
 6. _____

Protein Hormones

- ★ Work by binding to receptor sites on the _____ of cells of the target organs
- ★ Examples:
 1. _____
 2. _____
 3. Growth hormone from the _____

Steroid Hormones

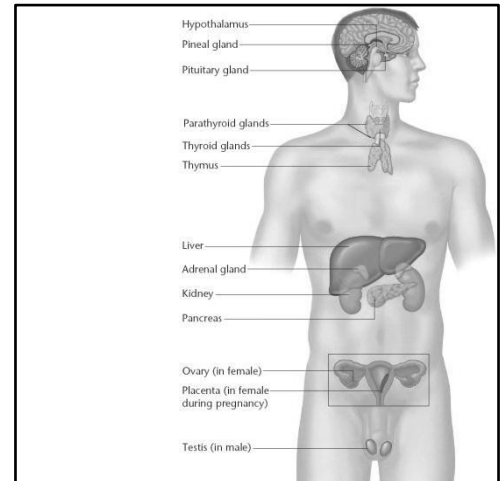
- ★ Work by _____ across the cell membrane and binding to receptor molecules on the _____ of the cell
- ★ Fat soluble
- ★ Can diffuse across the lining of the _____ and _____ to get to the circulatory system
- ★ Can be taken orally
- ★ Examples:
 1. _____
 2. _____
 3. _____

Hypothalamus of the Brain

- Controls the pituitary gland by:
 - Producing _____ that stimulate the release from a particular hormone from the pituitary gland
 - Producing releasing _____ that inhibit the release of a particular hormone in the pituitary gland
- The pituitary gland is connected to the hypothalamus by a stalk called the _____
- The pituitary gland is referred to as the " _____ " because it _____ many other endocrine _____ in the body

Major Endocrine Glands

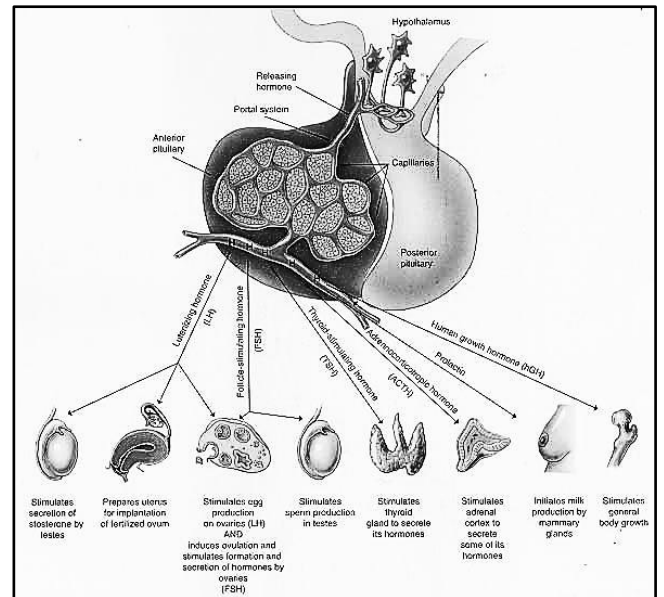
- _____
- _____
- _____
- _____
- _____
- _____
- _____ (pancreas)
- _____
- _____



The Anterior Pituitary Gland

★ The anterior pituitary gland produces 7 hormones:

1. Growth hormone (_____): stimulates cell _____, stimulates _____ and _____ growth
2. Thyroid-stimulating hormone (_____): stimulates the _____
3. Adrenocorticotropic hormone (_____): stimulates the adrenal cortex to produce _____. Helps reduce _____.
4. Melanocyte-stimulating hormone (_____): increases _____ production in the _____, producing darker _____
5. Follicle-stimulating hormone (_____): stimulates development of the _____ in females, stimulates the production of _____ cells in males
6. Luteinizing hormone (_____): stimulates _____, production of progesterone and helps _____ in females and stimulates the production of _____ in males



7. Lactogenic hormone (____) / _____: Stimulates _____ production, maintains progesterone levels in females. In males may cause a _____ in male _____.

The Posterior Pituitary Gland

- ★ Special neurons in the hypothalamus produce the hormones of the posterior pituitary lobe:
- 1. Antidiuretic hormone (____)/ _____: Maintains the body's _____.
- ADH deficiency can cause _____.
- 2. Oxytocin (____): stimulates _____ of the _____ in childbirth and stimulates _____.

The Pineal Gland

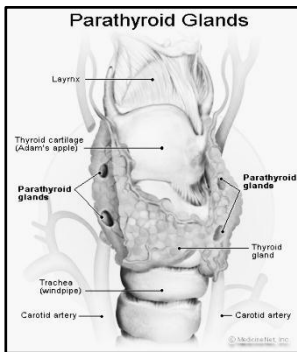
- Located in the diencephalon of the brain

Secretes:

1. _____
 - affects _____ patterns, _____, onset of _____
2. _____
 - _____
 - stimulates _____ muscle contraction and slows _____ secretions

The Thyroid

- ★ Requires _____ to function properly (lack of iodine can result in formation of a _____)
- ★ The hormones produced by the thyroid regulate metabolism of _____, _____ and _____
- ★ Necessary for normal _____ and development, _____ system maturation



The Parathyroid Glands

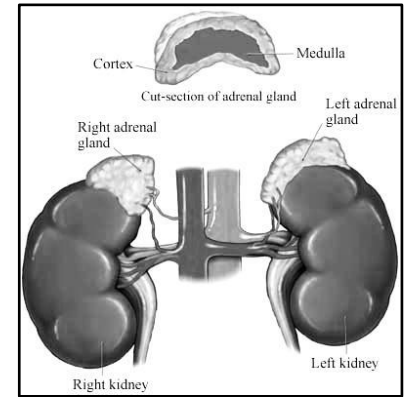
- Consists of ___ glands (about the size of _____) on the thyroid
- Secretes parathyroid hormone/ parathormone (____)
- Releases ___ and ___ ions into the blood by breaking down bone matrix tissue

The Thymus

- Found in the _____
- Larger in _____
- Important early in life for the development of the _____ system
- Shrinks and is replaced with _____ and _____ tissue as we age
- Secretes _____, which produce T lymphocytes (_____)

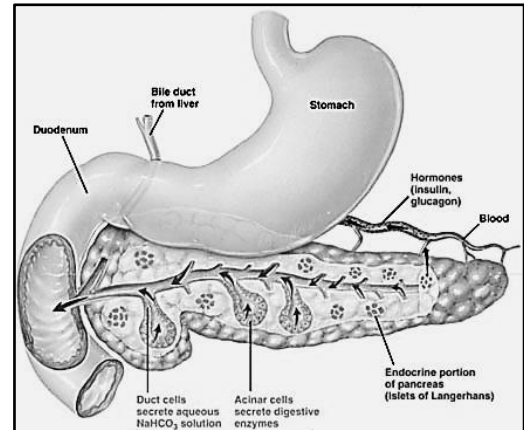
The Adrenal Glands

- Also known as the _____ glands
- Located on top of each _____
- Divided into 2 parts, each functions as a separate endocrine gland:
 1. _____ (inner portion)
 - Produces _____ (epinephrine)
 - Produces _____ (norepinephrine)
 2. _____ (outer portion)
 - Produces _____ (regulates _____ reabsorption and _____ excretion by the kidneys)
 - The middle layer of the adrenal cortex secretes _____ (hydrocortisone): reduces _____
 - Secretes _____ (sex hormones)



The Pancreas

- Produces:
 1. _____ (beta cells): released when blood glucose levels _____
 2. _____ (alpha cells): released when blood glucose levels _____



The Testes and Ovaries

- Testes (male)
 - _____: development of male reproductive structures
 - Promotes facial and body _____, _____ of voice, _____ development and bone growth that results in _____ shoulders and _____ hips
- Ovaries (female)
 - _____ and _____: development of female reproductive structures
 - Promotes breast enlargement, _____ deposits on the _____ and _____, bone development resulting in _____ hips and a _____ pitched voice
 - _____ cycle is also controlled by these hormones