

Name: \_\_\_\_\_ Lab Day/Time: \_\_\_\_\_

**Endocrine System  
Study Guide, Chapter 23**

**Part I. Clinical Applications**

1. Pete is very short for his chronological age of 8. What hormone levels should be checked to determine if he has pituitary dwarfism?
2. A young girl is brought to the clinic by her father. The girl fatigues easily and seems mentally sluggish. You notice a slight swelling in the anterior neck. What condition do you suspect? What is a possible cause and treatment?
3. Mrs. Jackson claims she is not menstruating and reports that her breasts are producing milk although she has never been pregnant. What hormone is being hypersecreted?
4. A friend of yours just found out he has diabetes. Being the caring inquisitive person that you are, you ask what type of diabetes he has. He is not sure and didn't realize that there are different types of the disorder. Explain the different types of diabetes

Part I

The following terms are to be used throughout the study guide. Terms may be used more than once or not at all. There may be times when none of the terms fit and you will need to refer to notes or book.

Abdominopelvic cavity	Glucocorticoids	Parathyroid
Acini	Glucagon	Parathyroid hormone (PTH)
Adenohypophysis	Hormones	Pineal
Adrenal cortex	Infundibulum	Pituitary gland
Adrenal gland	Inhibiting hormones	Promote
Adrenal medulla	Insulin	Receptors
Aldosterone	Islets of Langerhans	Releasing hormones
Antidiuretic (ADH)	Isthmus	Reticularis
Calcitonin	Master	Sella turcica
Capillaries (blood)	Melatonin	Sodium
Chief (principal)	Mineral corticoids	Surface
Cortex	Nervous	Target
Diabetes insipidus	Neurohypophysis	Thyroid gland
Diabetes mellitus	Neurosecretory	Thyroxin (T4)
Ducts	Norepinephrine	Triiodothyronine (T3)
Endocrine	Oxyphil	Trachea
Epinephrine	Oxytocin	Tropic
Follicular	Pancreatic islets	Tropic hormones
Gigantism	Parafollicular	Water

1. The two regulatory systems of the body are the \_\_\_\_\_ and the \_\_\_\_\_. The former controls homeostasis via neurons, while the latter releases chemical messenger molecules, called \_\_\_\_\_.
2. Exocrine glands secrete their products into \_\_\_\_\_ or to the outer \_\_\_\_\_ of the body, whereas the endocrine glands release their secretions into the extracellular space and then into the \_\_\_\_\_.
3. List the five (*exclusive*) endocrine glands named in the textbook.
  - a.
  - b.
  - c.
  - d.
  - e.
4. A given hormone will travel throughout the body via the circulatory system. It affects only specific cells called \_\_\_\_\_ cells. These cells are influenced by binding of hormones to large protein or glycoprotein molecules called \_\_\_\_\_.
5. The pituitary has the nickname the "\_\_\_\_\_ " gland because it secretes several hormones that control other endocrine glands. Located in the sella turcica, the pituitary gland is (*anterior? posterior?*) to the optic chiasma.
6. The (*pars intermedia? infundibulum?*) is a stalklike structure that attaches the pituitary gland to the hypothalamus.
7. Melatonin is secreted by the \_\_\_\_\_ gland.

8. The pituitary gland is divided structurally and functionally into an anterior lobe called the \_\_\_\_\_ and a posterior lobe referred to as the \_\_\_\_\_.

9. Release of anterior pituitary hormones is stimulated by \_\_\_\_\_ and suppressed by \_\_\_\_\_ from the hypothalamus.

Match the glandular cell with its secretion.

- |  |
|--|
| corticotroph cells<br>gonadotroph cells<br>lactotroph cells<br>somatotroph cells<br>thyrotroph cells |
|--|

- \_\_\_\_\_ 10. human growth hormone (hGH)  
 \_\_\_\_\_ 11. luteinizing hormone (LH)  
 \_\_\_\_\_ 12. thyroid-stimulating hormone (TSH)  
 \_\_\_\_\_ 13. prolactin (PRL)  
Corticotroph cells 14. melanocyte-stimulating hormone (MSH)  
 \_\_\_\_\_ 15. follicle-stimulating hormone (FSH)

16. A \_\_\_\_\_ hormone is one that influences another endocrine gland.

The neurohypophysis does not synthesize hormones; rather, it stores hormones produced

17. by \_\_\_\_\_ cells of the hypothalamus. The two hormones stored in the posterior pituitary gland are \_\_\_\_\_ hormone and \_\_\_\_\_.

**Thyroid Gland**

18. The thyroid gland is located inferior to the larynx and has two lobes connected by a mass called the \_\_\_\_\_. The gland has an excellent blood supply, receiving about \_\_\_\_\_ to \_\_\_\_\_ ml of blood per minute.

19. Name the two types of cells associated with the thyroid follicles and the hormones they secrete.

Cell	Hormone(s)
a.	
b.	

**Parathyroid Glands**

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20. The parathyroid glands are attached to the (*anterior? posterior?*) surfaces of the lateral lobes of the thyroid gland. The two types of cells contained in the parathyroid glands are \_\_\_\_\_ and \_\_\_\_\_ cells.

**Adrenal (Suprarenal) Glands**

21. The adrenal glands are structurally and functionally divided into two regions: the outer \_\_\_\_\_ and the inner \_\_\_\_\_.

22. The outer region of the adrenal gland is subdivided into three zones. Complete the table below by matching the zone with its hormone grouping.

Zone	Hormone Grouping
a. Glomerulosa	
b. Fasciculata	
c.	Gonadocorticoids

23. The cells of the adrenal medulla are called chromaffin cells. These cells are directly innervated by preganglionic cells of the (*parasympathetic? sympathetic?*) division of the ANS.

24. The two principal hormones synthesized by the adrenal medulla are \_\_\_\_\_ and \_\_\_\_\_.

Pancreas

25. The endocrine portion of the pancreas consists of cell clusters called \_\_\_\_\_.

26. The exocrine portion of the pancreas is formed by clusters of cells called \_\_\_\_\_, which are responsible for the secretion of digestive enzymes.

**Pineal Gland (Epiphysis Cerebri)**

27. Where is the pineal gland located?

28. One hormone secreted by the pineal gland is \_\_\_\_\_, which is liberated during darkness and is thought to \_\_\_\_\_ sleep.

### Part III

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1. An example of a gland in the body that functions as a neural tissue and an endocrine tissue is the \_\_\_\_\_.
2. The hypophysis lies nestled within a depression in the sphenoid bone called the \_\_\_\_\_.
3. The pituitary gland is connected to the hypothalamus by a slender, funnel-shaped structure called the \_\_\_\_\_.
4. The hypothalamic neurons of the posterior lobe of the pituitary gland manufacture \_\_\_\_\_ and \_\_\_\_\_.
5. Because they turn on endocrine glands or support the functions of other organs, the hormones of the anterior lobe are called \_\_\_\_\_.
6. Underproduction of ADH by the posterior lobe of the pituitary gland results in a condition called \_\_\_\_\_.
7. Overproduction of GH by the anterior lobe of the pituitary gland results in a condition called \_\_\_\_\_.
8. The two lobes of the thyroid gland are united by a slender connection, \_\_\_\_\_.
9. The thyroid gland curves across the anterior surface of the \_\_\_\_\_.
10. The hormone produced by the C cells of the thyroid gland that causes a decrease in  $\text{Ca}^{2+}$  concentrations in body fluids is \_\_\_\_\_.
11. The two pairs of parathyroid glands are embedded in the posterior surfaces of the \_\_\_\_\_.
12. The hormone secreted by the chief cells of the parathyroid gland that causes an increase in  $\text{Ca}^{2+}$  concentrations in body fluids is \_\_\_\_\_.
13. The superficial portion of the adrenal glands is the \_\_\_\_\_.
14. The principal mineralocorticoid produced by the adrenal cortex is \_\_\_\_\_.
15. The hormonal effect of aldosterone in the kidneys is to increase reabsorption of \_\_\_\_\_.
16. The endocrine pancreas consists of cell clusters known as the \_\_\_\_\_.
17. The pancreas lies within the \_\_\_\_\_.
18. A peptide hormone released by beta cells when glucose levels exceed normal is \_\_\_\_\_.
19. The hormone released by alpha cells that raises blood glucose levels is \_\_\_\_\_.
20. An underproduction of insulin by the endocrine pancreas causes a condition known as \_\_\_\_\_.
21. The specialized cells in the parathyroid glands that secrete *parathyroid hormone*
  - a. chief cells
  - b. C cells
  - c. follicular epithelial cells
  - d. cells of the pars distalis

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22. The most notable effect of ADH produced in the neurohypophysis of the pituitary gland is to:
- increase the amount of water lost at the kidneys
  - decrease the amount of water lost at the kidneys
  - stimulate the contraction of uterine muscles
  - increase or decrease calcium ion concentrations in body fluids
23. Stimulation of contractile cells in mammary tissue and uterine muscles in the female is initiated by secretion of:
- oxytocin from the posterior pituitary
  - melatonin from the pineal gland
  - oxytocin from the adenohypophysis
  - melatonin from the neurohypophysis
24. The pituitary gland is connected to the hypothalamus by a slender, funnel-shaped structure called the:
- hypophysis
  - sella turcica
  - adenohypophysis
  - infundibulum
25. The hormonal effect(s) of ADH produced by the neurohypophysis is (are):
- reabsorption of water
  - elevation of blood volume
  - elevation of blood pressure
  - a, b, and c are correct
26. When the posterior lobe of the pituitary gland no longer releases adequate amounts of ADH, the result is development of:
- hypergonadism
  - diabetes insipidus
  - decreased urine production
  - decreased blood glucose levels
27. The adrenal cortex consists of a:
- posterior, anterior, and lateral lobe
  - zona glomerulosa, zona fasciculata, zona reticularis
  - pars tuberalis, pars distalis, pars intermedia
  - C cell population, chief cells, oxyphils
28. The net result of parathyroid <sup>Hormone</sup> (PTH) secretion is:
- it inhibits the reabsorption of  $Ca^{2+}$  at the kidneys
  - it increases the rate of calcium deposition in bone
  - it increases  $Ca^{2+}$  concentration in body fluids
  - it increases the urinary output and losses
29. The pinealocytes of the pineal gland produce the hormone melatonin, which is believed to:
30. Which gland is responsible for the secretion of thyroid-stimulating hormone?
- thyroid
  - hypothalamus
  - anterior pituitary
  - posterior pituitary
  - A and D are correct
31. Exocrine glands release their secretions into a duct or onto a surface, whereas endocrine glands secrete into
- muscle tissue
  - open cavities
  - closed cavities
  - extracellular space around the secretory cells
  - none of the above are correct
32. Antidiuretic hormone and oxytocin are produced by the
- anterior pituitary
  - posterior pituitary
  - parathyroid glands
  - hypothalamus
  - A and D are correct
33. Giantism is associated with hypersecretion of a hormone from the
- anterior pituitary
  - thyroid
  - adrenals
  - posterior pituitary
  - testes
34. Thyroxine production is dependent upon adequate dietary intake of which ion?
- calcium
  - potassium
  - iodine
  - magnesium
  - sodium
35. If an individual has type I diabetes mellitus, which pancreatic cells are involved with this disorder?
- delta
  - alpha
  - beta
  - F-cells
  - none of the above are correct
36. Which of the following is a gonadotropin?
- ACTH
  - FSH
  - PRL
  - MSH
  - hGH
37. The principal hormone secreted by the cells of the zona glomerulosa is \_\_\_\_\_ (Hint: it is a mineralocorticoid.)
- cortisol
  - aldosterone
  - estrogen
  - androgens
  - C and D are both correct