

CHAPTER 41: Animal Hormones

1. List a few similarities and differences comparing:

a. endocrine system – _____

b. nervous system – _____

2. What is the difference between endocrine and exocrine glands?

3. What is the difference between circulating hormones and local hormones?

4. What is the difference between paracrine and autocrine hormones?

5. Give an example of paracrine signaling.

6. What evidence is there that show that hormones were an early adaptation in the evolution of animals?

7. How are hormones utilized during insect metamorphosis?

8. How do the steroid-based and protein-based hormones differ?

9. Hormone and receptor interactions are based on _____

10. Where are the receptors for steroid-based hormones?

11. Relate your knowledge of integral (transmembrane) proteins and the actions of protein-based hormones.

12. List the three stages of cell signaling of protein-based hormones and where each occurs.

a. _____

b. _____

c. _____

13. What does the "second messenger" do in the cell?

14. Identify molecules that serve as "second messengers" in a cell.

15. What is the advantage of the phosphorylation cascade?

16. Explain what makes the hypothalamus a "hybrid" part of the endocrine system. Elaborate on its role.

17. What are the functions of the following glands:

a. thyroid – _____

b. parathyroid – _____

18. What happens when there is an iodine deficiency?

19. List the sequence of steps of the feedback mechanism to the cell response that involves fluctuation levels of calcium using calcitonin and PTH.

Name: _____

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20. How does the pancreas regulate blood sugar with:

a. insulin – _____

b. glucagon – _____

21. What are two mechanisms that can stimulate the adrenal gland?

22. Describe several actions caused by the release of epinephrine.

23. What is the role of the gonadotropic hormones in males and females?

a. FSH – _____

b. LH – _____

24. What hormones are responsible for the secondary sex traits in males and females?

END OF CHAPTER 41 MULTIPLE CHOICE

1. Before puberty
 - A) the pituitary secretes luteinizing hormone and follicle-stimulating hormone, but the gonads are unresponsive.
 - B) the hypothalamus does not secrete much gonadotropin-releasing hormone.
 - C) males can stimulate massive muscle development through a vigorous training program.
 - D) testosterone plays no role in development of the male sex organs.
 - E) genetic females will develop male genitals unless estrogen is present.

2. Both epinephrine and cortisol are secreted in response to stress. Which of the following statements is also true for both of these hormones?
 - A) They act to increase blood glucose availability.
 - B) Their receptors are on the surfaces of target cells.
 - C) They are secreted by the adrenal cortex.
 - D) Their secretion is stimulated by corticotropin.
 - E) They are secreted into the blood within seconds of the onset of stress.

3. Growth hormone
 - A) can cause adults to grow taller.
 - B) stimulates protein synthesis.
 - C) is released by the hypothalamus.
 - D) can be obtained only from cadavers.
 - E) is a steroid.

4. PTH
 - A) stimulates osteoblasts to lay down new bone.
 - B) reduces blood calcium levels.
 - C) stimulates calcitonin release.
 - D) is produced by the thyroid gland.
 - E) is released when blood calcium levels fall.

5. Steroid hormones
 - A) are produced only by the adrenal cortex.
 - B) have only cell surface receptors.
 - C) are water-soluble.
 - D) act by altering the activity of proteins in the target cell.
 - E) act by altering gene expression in the target cell.

6. The hormone ecdysone
 - A) is released from the posterior pituitary.
 - B) stimulates molting in insects.
 - C) maintains an insect in larval stages unless PTTH is present.
 - D) stimulates the secretion of juvenile hormone from the prothoracic glands.
 - E) keeps the insect exoskeleton flexible to permit growth.

7. The posterior pituitary
 - A) synthesizes oxytocin.
 - B) is under the control of hypothalamic releasing neurohormones.
 - C) secretes tropic hormones.
 - D) secretes neurohormones.
 - E) is under feedback control by thyroxine.

8. Which of the following contributes to the development of goiter?
 - A) Inadequate iodine in the diet
 - B) Autoimmune antibodies that stimulate the TSH receptor
 - C) Lack of feedback from circulating T_3 and T_4
 - D) Overproduction of thyroglobulin
 - E) All of the above

9. Which of the following is a likely cause of diabetes?
 - A) Overproduction of insulin by beta cells of the pancreas
 - B) Loss of alpha cells of the pancreas
 - C) Loss of insulin receptors
 - D) Overproduction of glucagon
 - E) Loss of receptors for somatostatin

10. Which statement is true of all hormones?
 - A) They are secreted by glands.
 - B) They have receptors on cell surfaces.
 - C) They may stimulate different responses in different cells.
 - D) They target cells that are distant from their site of release.
 - E) When the same hormone occurs in different species, it has the same action.