-医-学-英-语-系-列-教-材-

医学英语阅读教程

（第2册）

戴月兰 高 丽 主编

Medical English Reading Course

南京大学出版社

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(第2册)

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前　言

随着医学科学的发展及国际交流日益频繁，由此对我国医学从业人员英语要求也在不断提高。以提高医学从业人员的英语水平为导向，使我国高等学校医学院校学生掌握医学文章的阅读能力，更好地了解国际医学科学的发展，已成为我国高等学校医学院校学生必须掌握的能力之一。

本书是“医学英语系列教材”的分册之一，是基于医学主题阅读的专用英语教材，旨在通过系统、丰富的医学主题阅读，培养学习者医学专业英语扎实的语言基础。主要供我国高等学校医学专业已完成大学英语基础阶段学习的本科生使用，同时也适用于研究生及对医学英语有兴趣及需求的人士。通过本书的学习，可提高医学英语阅读能力，掌握医学知识。

本教材不拘泥于传统的医学英语阅读教材，在体例、内容和编排上有自己的特色，充分体现了大学医学专业英语教学改革下的教改要求。本书共有九个单元，分别是：内分泌系统、神经系统、泌尿系统、生殖系统、皮肤、眼睛和耳朵、肿瘤学、药物、遗传和发育。每个单元包括两篇同一主题的文章，其中 Text A 有关该系统的解剖和生理，Text B 有关该系统疾病的描述。所有文章都选自国外最新权威医学教科书，内容经典，语言精练，可读性强。在编写过程中，编者参考了国外医学专业教材编撰体例，突出英语实用技能的培养。为了便于读者学习，书后附有总词汇表。Text A 和 Text B 后配有构词法相关知识以及多种形式的练习，便于读者学习、巩固和应用。

《医学英语阅读教程》(第 1 册)已由南京大学出版社有限公司 2012 年 9 月出版，与本教程配套出版的还有《医学英语阅读教程自主学习教程》。

本书得以付梓得到多方的帮助和支持，在此编者一并表示感谢。囿于编者水平，疏漏和不足之处在所难免，敬请同行专家批评指正。

编　者

2013 年 3 月

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Unit 1 The Endocrine System

The endocrine system is an information signaling system much like the nervous system. However, the nervous system uses nerves to conduct information, whereas the endocrine system uses blood vessels as information channels. Homeostasis depends on the precise regulation of the organs and organ systems of the body. The nervous and endocrine systems are two major systems responsible for that regulation. Together they regulate and coordinate the activity of nearly all other body structures. In this unit, you will first have an overall understanding of the structure and function of the endocrine system in text A. Some common disorders of the endocrine system are discussed in text B. And the nervous system will be discussed in the next unit.

Theme Reading

Text A Endocrine Glands and Their Hormones

Objectives

- ◇ *List the glands that make up the endocrine system.*
- ◇ *State the location of each endocrine gland in the body.*
- ◇ *Name the hormones secreted by each endocrine gland and their functions.*

A gland is any organ that produces a secretion. Endocrine glands (Figure 1 - 1), also called ductless glands, are organized groups of tissues which use materials from the blood or lymph to make new compounds called hormones. The products of the endocrine glands were named hormones (Gk. Horman, to urge on, to stir up) because those first discovered had the effect of stimulating physiologic action. The name is not entirely suitable because some hormones "depress" rather than "excite", and others still have other functions. Although produced in extremely small quantities—"trace" amounts—they have remarkable effects in the regulation of bodily functions.

Why is the endocrine gland also called ductless gland?

There is another type of gland called an exocrine gland, in which the secretions from the gland must go through a duct. This duct then carries the secretion to a body surface or organ. Exocrine glands include the sweat gland, the salivary glands,

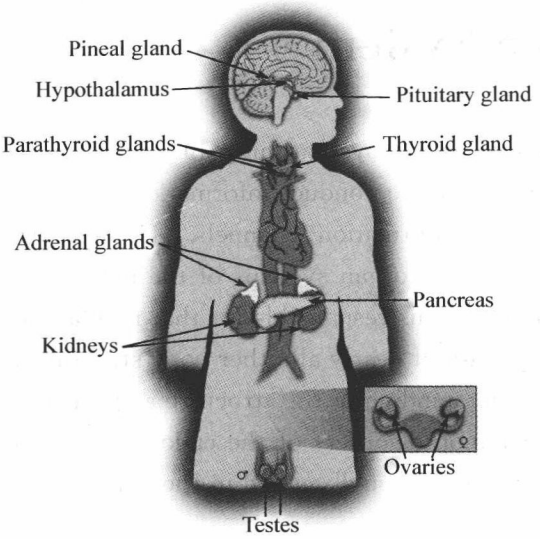


Figure 1 – 1 The Endocrine Glands

the lacrimal gland, and the pancreas. In fact, the pancreas performs both as an exocrine gland and an endocrine gland.

Pituitary Gland

The pituitary gland, also called the hypophysis, is a small gland about the size of a pea. It is located at the base of the brain within the sella turcica, a small bony depression in the sphenoid bone inferior to the hypothalamus of the brain. The hypothalamus is an important autonomic nervous system and endocrine control center of the brain located inferior to the thalamus. The pituitary gland is connected to the hypothalamus by a stalk called the infundibulum. The pituitary is divided into two lobes: the larger anterior pituitary lobe is made up of epithelial cells; the smaller posterior pituitary lobe consists primarily of nerve fibers and neuroglial cells that support the nerve fibers. The pituitary gland is known as the master gland of the body because of its major influence on the body's activities, such as growth, kidney function, birth, milk production, etc.

Why is the pituitary gland called the master gland of the body?

Anterior Pituitary Lobe

The anterior pituitary lobe secretes six hormones. Growth

hormone (GH), also called somatotropin, stimulates the growth of bones, muscles, and other organs by increasing protein synthesis. It also resists protein breakdown during periods of food deprivation and favors fat breakdown. Prolactin hormone (PRL) helps promote development of the breast during pregnancy and stimulates the production of milk after childbirth. The function in males is unknown. Thyroid-stimulating hormone (TSH), also called thyrotropin, stimulates the growth and secretion of the thyroid gland. Adrenocorticotropic hormone (ACTH), also called corticotropin, stimulates the growth and secretion of the adrenal cortex. ACTH increases the secretion of a hormone from the adrenal cortex called cortisol, or hydrocortisone, and ACTH is required to keep the adrenal cortex from degenerating. ACTH molecules also bind to melanocytes in the skin and increase skin pigmentation. Follicle-stimulating hormone (FSH) stimulates the growth of the graafian follicle and the production of estrogen in females, and stimulates the production of sperm in males. Luteinizing hormone (LH) stimulates the growth of the graafian follicle, the production of estrogen and the formation of the corpus luteum after ovulation, which produces progesterone in the female. In males, LH stimulates the secretion of the sex hormone testosterone from the testes. It is sometimes called the interstitial cell-stimulating hormone (ICSH) because it stimulates interstitial cells of the testes to secrete testosterone.

List the hormones secreted by the anterior pituitary lobe and the main functions of each hormone.

What are the functions of growth hormone? What happens when too much or too little growth hormone is secreted?

Posterior Pituitary Lobe

The hormones produced by the hypothalamus are stored in the posterior pituitary lobe. Vasopressin is converted to antidiuretic hormone or ADH in the bloodstream. The name vasopressin may lead to confusion because it causes little or no vasoconstriction. ADH maintains the water balance by increasing the absorption of water in the kidney tubules. Sometimes drugs called diuretics are used to inhibit the action of ADH. The result is an increase in urinary output and a decrease in blood volume, thus decreasing blood pressure. Oxytocin is released during childbirth, causing strong contractions of the uterus and milk ejection, or milk "let-down", from the breasts in lactating women. Commercial preparations of oxytocin are

What is the difference between contraction and constriction?

given under certain conditions to assist in childbirth and to constrict uterine blood vessels following childbirth.

Thyroid Gland

The thyroid gland is a butterfly-shaped mass of tissue located in the anterior part of the neck. It lies on either side of the larynx over the trachea. Its general shape is that of the letter H. It is about 2 inches long with two lobes joined by strands of thyroid tissue called the isthmus. Coming from the isthmus is a fingerlike lobe of tissue known as the intermediate lobe. This intermediate lobe projects upward toward the floor of the mouth, as far up as the hyoid bone. The thyroid gland has a rich blood supply. In fact, it has been estimated that about 4 to 5 liters of blood pass through the gland every hour.

What are the functions of thyroid hormones, and how is their secretion controlled?

The thyroid gland secretes three hormones: thyroxine, triiodothyronine and calcitonin. The first two are iodine-bearing derivatives of the amino acid, tyrosine. Triiodothyronine is 5 to 10 times more active than thyroxine, but its activity is less prolonged. However, the two have the same effect and both hormones are produced by the follicle cells of the thyroid gland. The functions of thyroxin (T_4) and triiodothyronine (T_3) are as follows: (1) controls the rate of metabolism in the body; (2) stimulates protein synthesis and thus helps tissue growth; (3) stimulates the breakdown of liver glycogen to glucose. The thyroid-stimulating hormone (TSH) controls the production and secretion of the thyroid hormones from the thyroid gland. Calcitonin is another hormone produced and secreted by the thyroid gland. It controls the calcium ion concentration in the body by maintaining a proper calcium level in the bloodstream. The constant level of calcium in the blood and tissues is maintained by the action of calcitonin and parathormone.

Parathyroid Glands

Explain how calcitonin, parathyroid hormone, and vitamin D are involved in maintaining Ca^{2+} levels.

The parathyroid glands are tiny glands attached to the posterior surface of the thyroid gland. They secrete the hormone parathormone, which also controls the concentration of calcium in the bloodstream. Parathormone stimulates an increase in the number and size of specialized bone cells referred

to as osteoclasts. Osteoclasts quickly invade hard bone tissue, digesting large amounts of the bony material containing calcium. As this process continues, calcium leaves the bone and is released into the bloodstream, increasing the calcium blood level. Thus, parathormone and calcitonin have opposite, or antagonistic, effects to one another.

Adrenal Glands

The two adrenal glands are located on top of each kidney. Each gland has two parts: the cortex and the medulla. Adrenocorticotropic hormone (ACTH) from the pituitary glands stimulates the activity of the cortex of the adrenal gland. The hormones secreted by the adrenal cortex are known as corticoids. The corticoids are very effective as anti-inflammatory drugs.

List the hormones secreted from the adrenal gland, give their functions, and compare the means by which the secretion rate of each is controlled.

The cortex secretes three groups of corticoids, each of which is of great importance. Mineralocorticoids—mainly aldosterone, affect the kidney tubules by speeding up the reabsorption of sodium into the blood circulation and increasing the excretion of potassium from the blood. They also speed up the reabsorption of water by the kidneys. Aldosterone is used in the treatment of Addison's disease to replace deficient secretion of mineralocorticoids.

Glucocorticoids—namely cortisone and cortisol—increase the amount of glucose in the blood. This is done by the conversion of proteins and fats to glycogen in the liver, followed by breakdown of the glycogen into glucose. These glucocorticoids also help the body resist the aggravations caused by various everyday stresses. In addition, these hormones seem to decrease edema in inflammation and reduce pain by inhibiting pain-causing prostaglandin.

The third class of hormones secreted by the adrenal cortex is the androgens. They are able to stimulate the development of male sexual characteristics. Small amounts of androgens are secreted from the adrenal cortex in both males and females. In adult males, most androgens are secreted by the testes. In adult females, the adrenal androgen influences the female sex drive. If the secretion of sex hormones from the adrenal cortex is abnormally high, exaggerated male characteristics develop in

both males and females. This condition is most apparent in females and males before puberty when the effects are not masked by the secretion of androgen by the testes.

The medulla of the adrenal gland secretes epinephrine and norepinephrine. Epinephrine, or adrenalin, is a powerful cardiac stimulant. It functions by bringing about a release of more glucose from stored glycogen or muscle activity and increasing the force and rate of the heartbeat. This chemical activity increases cardiac output and venous return and raises the systolic blood pressure. The adrenal medulla responds to the sympathetic nervous system. Epinephrine and norepinephrine are referred to as the fight-or-flight hormones because of their role in preparing the body for vigorous physical activity.

Which hormones prepare the body for fight or flight?

Pancreas

The pancreas is located behind the stomach and performs both as an exocrine gland and an endocrine gland. The pancreas produces pancreatic juices which go through a duct into small intestines and it also has a special group of cells known as islets of Langerhans which secrete the hormone insulin directly into the bloodstream.

Why is the pancreas sometimes called a dual gland?

The islet cells are distributed throughout the pancreas. These cells were named the islets of Langerhans after the doctor who discovered them. Beta cells produce insulin, which (1) promotes the utilization of glucose in the cells, necessary for the maintenance of normal levels of blood glucose; (2) promotes fatty acid transport and fat deposition into cells; (3) promotes amino acid transport into cells; and (4) facilitates protein synthesis. Lack of insulin secretion by the islet cells causes diabetes mellitus.

How is the rate of insulin and glucagon secretion affected immediately following a large meal rich in carbohydrates, and after 12 hours without eating?

The alpha cells contained in the islets of Langerhans secrete the hormone glucagon. The action of glucagon may be antagonistic or opposite to that of insulin. Glucagon's function is to increase the level of glucose in the bloodstream. This is done by stimulating the conversion of liver glycogen to glucose. The control of glucagon secretion is achieved by negative feedback. Low glucose levels in the bloodstream stimulate the alpha cells to secrete glucagon, which quickly increases the

glucose level in the bloodstream.

185 (1,651 words)

Vocabulary

adrenocorticotropic [ˌædriːnəʊˌkɔːtɪkəʊˈtrɒpɪk] *adj.* acting on or stimulating the adrenal cortex 促肾上腺皮质的

aggravation [ˌægrəˈveɪʃən] *n.* an increase in intensity, seriousness, or severity 加重，恶化

aldosterone [ælˈdɒstərəʊn] *n.* a hormone produced by the adrenal cortex, instrumental in the regulation of sodium and potassium reabsorption by the cells of the tubular portion of the kidney 醛固酮

androgen [ˈændrədʒən] *n.* any substance, as testosterone or androsterone, that promotes male characteristics 雄激素

antagonistic [ænˌtægəˈnɪstɪk] *adj.* marked by or resulting from antagonism 对抗的

antidiuretic [ˌæntɪˌdaɪjʊəˈretɪk] *adj.* pertaining to or causing suppression of urine 抗利尿的；*n.* an agent that reduces the output of urine 抗利尿激素

calcitonin [ˌkælsɪˈtəʊnɪn] *n.* a polypeptide hormone especially from the thyroid gland that lowers the level of calcium in the blood plasma 降钙素

corpus luteum 黄体

corticoid [ˈkɔːtɪkɒɪd] *n.* any steroid hormone produced by the adrenal cortex that affects carbohydrate, protein, and electrolyte metabolism, gonad function, and immune response 类皮质激素

corticotropin [ˌkɔːtɪkəʊˈtrəʊpɪn] *n.* a preparation of ACTH that is used especially in the treatment of rheumatoid arthritis and rheumatic fever 促皮质素，促肾上腺皮质激素

cortisol [ˈkɔːtɪsɒl] *n.* a steroid hormone, more specifically a glucocorticoid, produced by the adrenal gland 皮质醇

degenerate [dɪˈdʒenəreɪt] *v.* to evolve or develop into a less autonomous or less functionally active form 退化；变质，变性

deprivation [ˌdeprɪˈveɪʃən] *n.* the act or process of removing or the condition resulting from removal of something normally present and usually essential for mental or physical well-being 剥夺；丧失，缺乏

epinephrine [ˌepɪˈnefrɪn] *n.* also called *adrenaline*, the principal blood-pressure raising hormone secreted by the adrenal medulla and is used medicinally especially as a heart stimulant, a vasoconstrictor in controlling hemorrhages of the skin, and a muscle relaxant in bronchial asthma 肾上腺素

follicle [ˈfɒlɪkl] *n.* a small anatomical cavity or deep narrow-mouthed depression; a vesicle in the mammalian ovary that contains a developing egg surrounded by a

covering of cells 滤泡,小囊;卵泡

glucagon ['gluːkəgɒn] *n.* a hormone secreted by the pancreas that acts in opposition to insulin in the regulation of blood glucose levels 高血糖素

glucocorticoid [ˌgluːkəʊ'kɔːtɪkɒɪd] *n.* any of a class of steroid hormones that are synthesized by the adrenal cortex of vertebrates and have anti-inflammatory activity 糖皮质激素

glycogen ['glaɪkəʊdʒən] *n.* a white, tasteless polysaccharide, molecularly similar to starch, constituting the principal carbohydrate storage material in animals and occurring chiefly in the liver, in muscle, and in fungi and yeasts 糖原

graafian follicle 囊状滤泡,格拉夫氏卵泡,成熟滤泡

hydrocortisone [ˌhaɪdrəʊ'kɔːtɪsəʊn] *n.* a steroid hormone, of the adrenal cortex, active in carbohydrate and protein metabolism 氢化可的松

hyoid bone 舌骨

hypophysis [haɪ'pɒfɪsɪs] *n.* (pl. hypophyses) pituitary gland 垂体

hypothalamus [ˌhaɪpəʊ'θæləməs] *n.* a basal part of the diencephalon that lies beneath the thalamus on each side, forms the floor of the third ventricle, and includes vital autonomic regulatory centers 下丘脑

infundibulum [ˌɪnfʌn'dɪbjʊləm] *n.* (pl. infundibula) any of various funnel-shaped organs or parts 漏斗[状器官]

insulin ['ɪnsjʊlɪn] *n.* polypeptide hormone that regulates blood glucose levels 胰岛素

interstitial [ˌɪntə'stɪʃəl] *adj.* relating to or situated in the interstices 间隙的;间质的

islets of Langerhans 胰岛

isthmus ['ɪsməs] *n.* (pl. isthmi) a contracted anatomical part or passage connecting two larger structures or cavities 峡

lacrimal ['lækrɪməl] *adj.* of, relating to, or being glands that produce tears 泪的

luteinizing hormone (LH) 黄体生成素

melanocyte [melənəʊ'saɪt] *n.* an epidermal cell that produces melanin 黑[色]素细胞

mineralocorticoid [ˌmɪnərələʊ'kɔːtɪkɒɪd] *n.* any of a group of corticosteroid hormones, synthesized by the adrenal cortex, that regulate the excretion or reabsorption of sodium and potassium by the kidneys, salivary glands, and sweat glands 盐皮质激素

neuroglia [njʊə'rɒglɪə] *n.* a class of cells in the brain and spinal cord that form a supporting structure for the neurons and provide them with insulation 神经胶质

norepinephrine [ˌnɔːrepɪ'nefrɪn] *n.* a neurotransmitter, released by adrenergic nerve terminals in the autonomic and possibly the central nervous system, that has such effects as constricting blood vessels, raising blood pressure, and dilating bronchi 去甲肾上腺素

osteoclast ['ɒstɪəˌklæst] *n.* any of the large multinucleate cells closely associated with areas of bone resorption 破骨细胞

ovulation [ˌəʊvjʊˈleɪʃən] *n.* the discharge of a mature ovum from the ovary 排卵

oxytocin [ˌɒksɪˈtəʊsɪn] *n.* a pituitary hormone that stimulates especially the contraction of uterine muscle and the secretion of milk 催产素

parathormone [ˌpærəˈθɔːməʊn] *n.* parathyroid hormone 甲状旁腺激素

pigmentation [ˌpɪgmənˈteɪʃən] *n.* an excessive deposition of bodily pigment 色素沉着

potassium [pəˈtæsjəm] *n.* a silvery-white metallic element that oxidizes rapidly in the air and whose compounds are used as fertilizer and in special hard glasses 钾

progesterone [prəʊˈdʒestərəʊn] *n.* a female steroid sex hormone that is secreted by the corpus luteum to prepare the endometrium for implantation and later by the placenta during pregnancy to prevent rejection of the developing embryo or fetus 黄体酮，孕酮

prolactin [prəʊˈlæktɪn] *n.* a protein hormone of the anterior lobe of the pituitary that induces lactation 催乳素

prostaglandin [ˌprɒstəˈglændɪn] *n.* any of a class of unsaturated fatty acids that are involved in the contraction of smooth muscle, the control of inflammation and body temperature, and many other physiological functions 前列腺素

sella turcica 蝶鞍点

somatotropin [ˌsəʊmətəʊˈtrəʊpɪn] *n.* (also called growth hormone) a hormone produced by the anterior pituitary gland and promotes growth in humans 促生长激素

sphenoid bone 蝶骨

sympathetic [ˌsɪmpəˈθetɪk] *adj.* of or relating to the sympathetic nervous system 交感的 *n.* 交感神经

systolic [sɪsˈtɒlɪk] *adj.* (of blood pressure) indicating the maximum arterial pressure occurring during contraction of the left ventricle of the heart 收缩的

testis [ˈtestɪs] *n.* (pl. testes) the male gonad or reproductive gland, either of two oval glands located in the scrotum 睾丸

testosterone [tesˈtɒstərəʊn] *n.* a hormone that is a hydroxy steroid ketone produced especially by the testes or made synthetically and that is responsible for inducing and maintaining male secondary sex characters 睾酮

thyrotropin [θaɪˈrɒtrəpɪn] *n.* (also called thyroid-stimulating hormone) a peptide hormone synthesized and secreted by the anterior pituitary gland, which regulates the endocrine function of the thyroid gland 促甲状腺[激]素

thyroxine [θaɪˈrɒksi(ː)n] *n.* an iodine-containing hormone $C_{15}H_{11}I_4NO_4$ that is an amino acid produced by the thyroid gland as a product of the cleavage of thyroglobulin, increases metabolic rate, and is used to treat thyroid disorders 甲状腺素

triiodothyronine [ˌtraɪˌaɪədəʊˈθaɪrəniːn] *n.* an iodine-containing hormone $C_{15}H_{12}I_3NO_4$ that is an amino acid derived from thyroxine 三碘甲状腺素

tyrosine [ˈtaɪərəsiːn] *n.* a phenolic amino acid $C_9H_{11}NO_3$ that is a precursor of several important substances 酪氨酸

uterine ['juːtərɪn] *adj.* of, relating to, occurring in, or affecting the uterus 子宫的
vasopressin [ˌveɪzəʊ'presɪn] *n.* a polypeptide hormone secreted by the posterior lobe of the pituitary gland or obtained synthetically that increases blood pressure and decreases urine flow 血管加压素

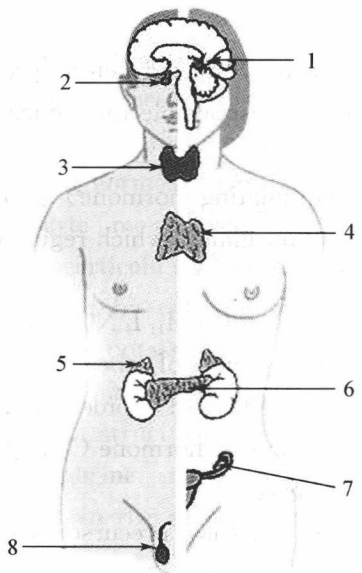
Passage Review

Direction: *Try to get familiar with the content and learn it by heart.*

The endocrine system is the system of glands, each of which secretes hormones directly into the bloodstream to regulate the body. In this unit, some endocrine glands and their hormones are reviewed. The pituitary gland, also called the master gland, can be divided into two lobes. The anterior pituitary lobe, also called adenohypophysis, secretes six hormones: GH, PRL, TSH, ACTH, FSH and LH. The posterior pituitary lobe, also called neurohypophysis, contains two hormones: vasopressin and oxytocin. The thyroid gland secretes three hormones: thyroxin, triiodothyronine and calcitonin. The parathyroid gland secretes parathormone, which has the opposite effect to calcitonin. The adrenal cortex secretes glucocorticoid, mineralocorticoid and androgen, while the adrenal medulla produces epinephrine and norepinephrine. The alpha cells in islets of Langerhans secrete glucagon while the beta cells secrete insulin.

Labeling

Direction: *Study the following diagram and name the labeled endocrine glands.*



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6. _____
7. _____
8. _____

Review Questions

Direction: *Select the letter of the choice that best completes the statement or answers the question.*

1. The master gland of the endocrine system is known as _____.
   A. the pituitary gland
   B. the pancreas
   C. the thyroid gland
   D. the adrenal gland
2. Growth hormone is secreted by _____.
   A. the thyroid gland
   B. the adrenal gland
   C. the anterior pituitary lobe
   D. the posterior pituitary lobe
3. Which of the following glands performs both as an endocrine gland and an exocrine gland?
   A. The parathyroid gland.
   B. The pituitary gland.
   C. The adrenal gland.
   D. The pancreas.
4. The hormone that is responsible for stimulating ovulation is _____.
   A. TSH B. FSH C. ICSH D. PRL
5. The hormone _____ is released during childbirth, causing strong contractions of the uterus and milk ejection.
   A. vasopressin
   B. antidiuretic hormone
   C. oxytocin
   D. prolactin hormone
6. The hormones which can stimulate the production of milk from breast include _____.
   A. prolactin and oxytocin
   B. prolactin and vasopressin
   C. vasopressin and oxytocin
   D. estrogen and testosterone
7. The gland located in the anterior part of the neck is called _____.
   A. the pituitary gland
   B. the thymus gland
   C. the thyroid gland

D. the parathyroid gland

8. The hormones which can regulate the calcium level in the bloodstream include _____.

A. thyroxin and triiodothyronine

B. TSH and calcitonin

C. calcitonin and parathormone

D. corticotrophin and progesterone

9. The hormones that prepare us to fight or flee are _____.

A. aldosterone and renin

B. epinephrine and norepinephrine

C. cortisol and corticoid

D. thyroxine and triiodothyronine

10. Insulin is secreted by _____.

A. alpha islet cells

B. beta islet cells

C. gamma islet cells

D. adrenal cortex

Matching

Direction: *Match each abbreviation in Column Ⅰ with its correct description in Column Ⅱ.*

Column Ⅰ	Column Ⅱ
1. ADH	a. thyroid-stimulating hormone
2. ACTH	b. follicle-stimulating hormone
3. LH	c. prolactin hormone
4. FSH	d. thyroxin
5. TSH	e. luteinizing hormone
6. PTH	f. somatotropin
7. PRL	g. antidiuretic hormone
8. T4	h. interstitial cell-stimulating hormone
9. GH	i. adrenocorticotropic hormone
10. ICSH	j. parathormone

1. _____ 2. _____ 3. _____ 4. _____ 5. _____

6. _____ 7. _____ 8. _____ 9. _____ 10. _____