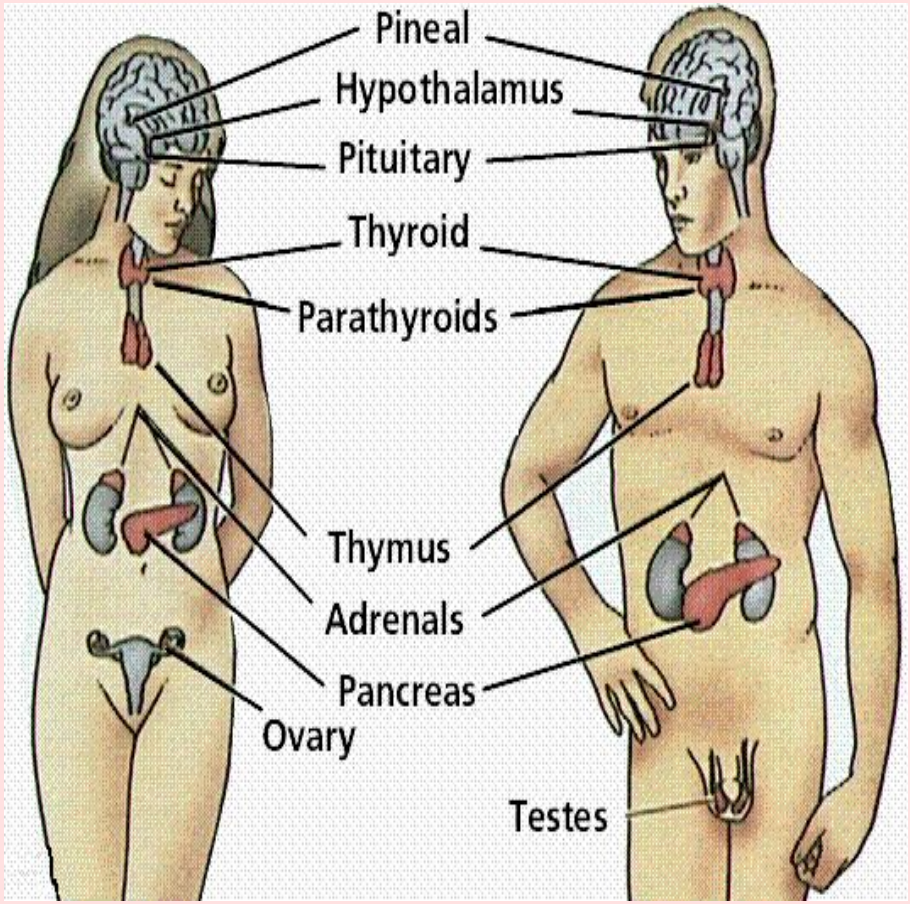
Endocrine glands and their functions

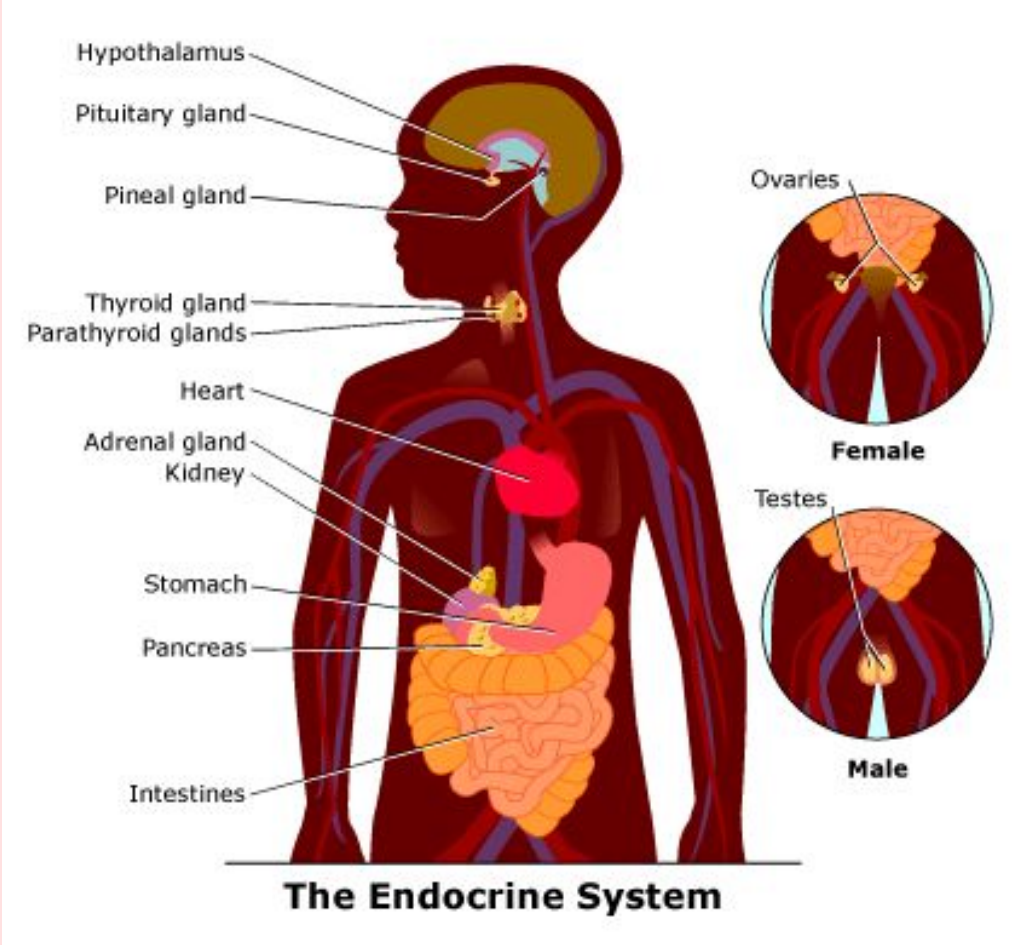
What is the endocrine system?

The endocrine system is made up of glands and the hormones they secrete. Although the endocrine glands are the primary hormone producers, the brain, heart, lungs, liver, skin, thymus, gastrointestinal mucosa, and placenta also produce and release hormones.



What is the endocrine system?

The primary endocrine glands are the pituitary (the master gland), pineal, thyroid, parathyroid, islets of Langerhans, adrenals, ovaries in the female and testes in the male.



The function of the endocrine system is the production and regulation of chemical substances called hormones.

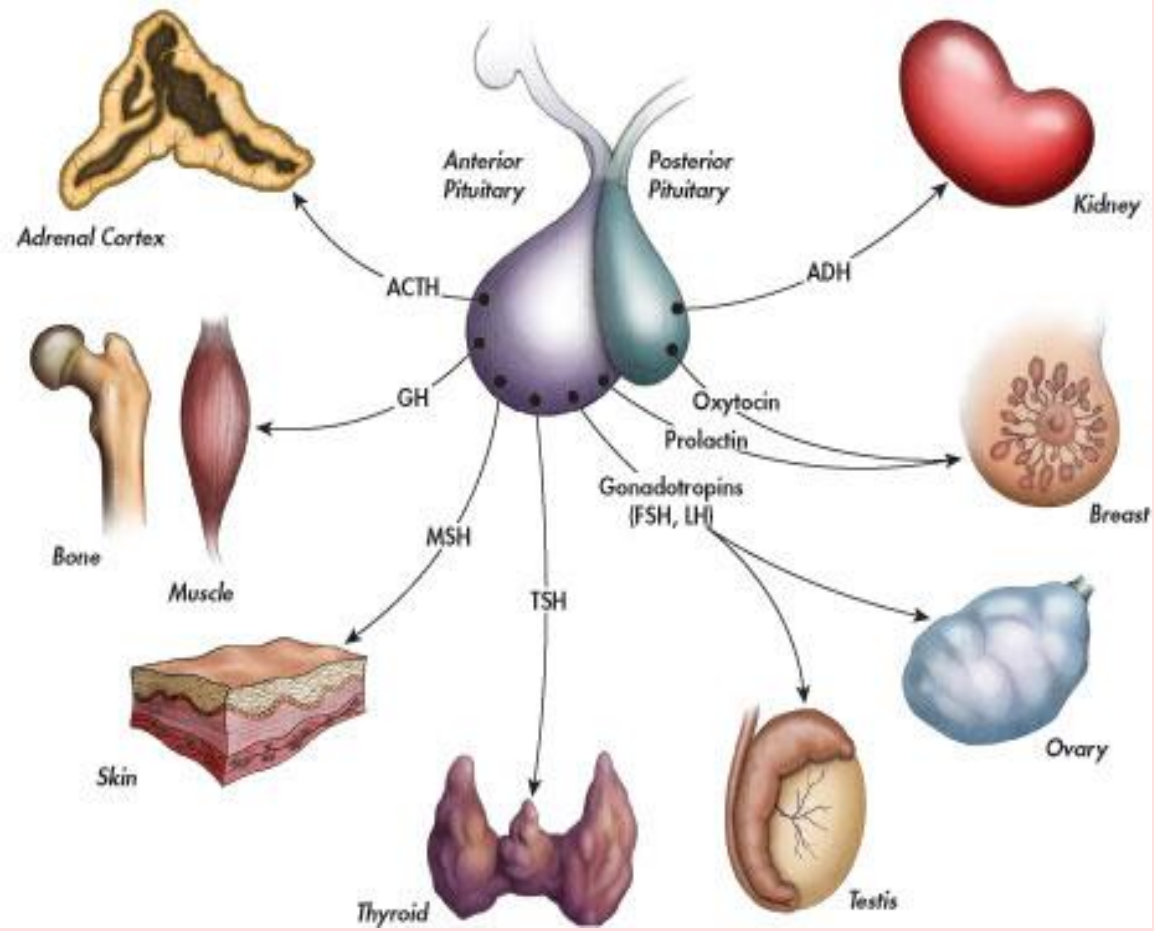
Hormones

A hormone is a chemical transmitter. It is released in small amounts from glands, and is transported in the bloodstream to target organs or other cells. Hormones are chemical messengers, transferring information and instructions from one set of cells to another.

Hormones

Hyposecretion or hypersecretion of any hormone can be harmful to the body. Controlling the production of hormones can treat many hormonal disorders in the body.

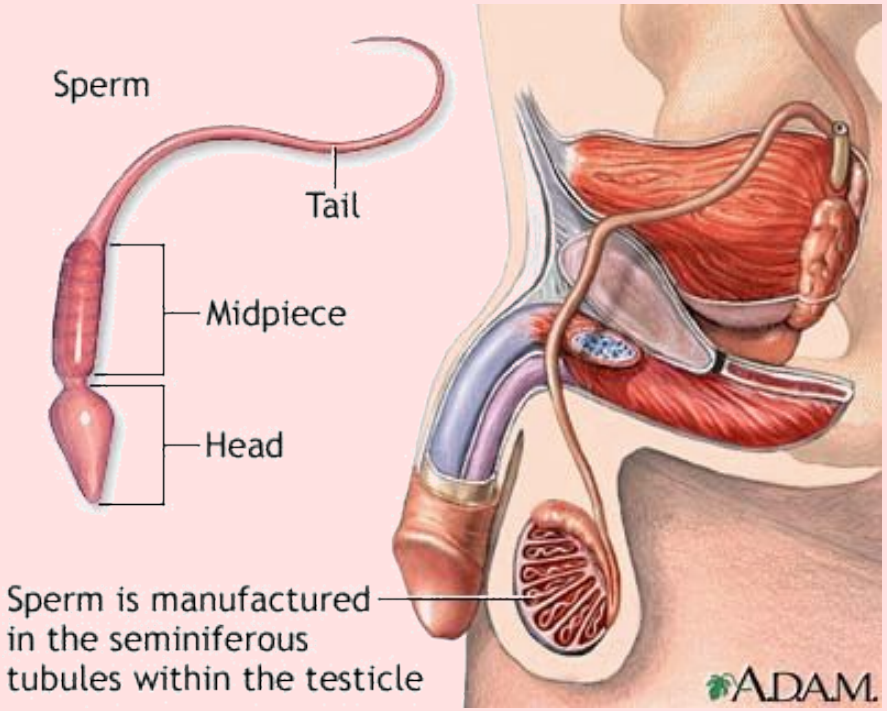
Hormones regulate growth, development, mood, tissue function, metabolism, and sexual function.



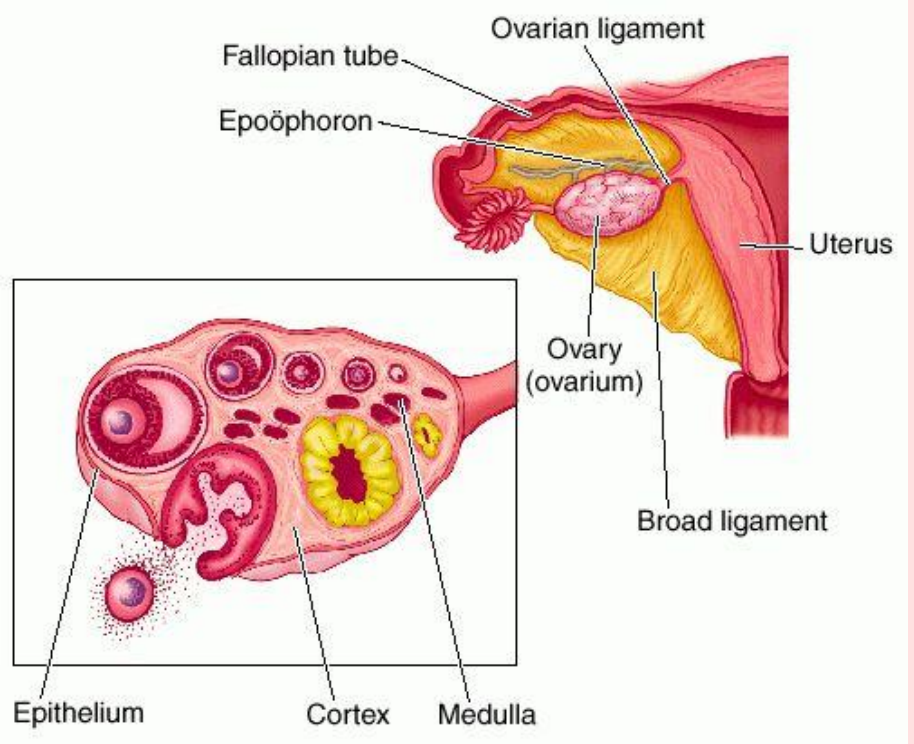
Secretions from the anterior pituitary gland

Growth Hormone (GH):essential for the growth and development of bones, muscles, and other organs. It also enhances protein synthesis, decreases the use of glucose, and promotes fat destruction.

Secretions from the anterior pituitary gland

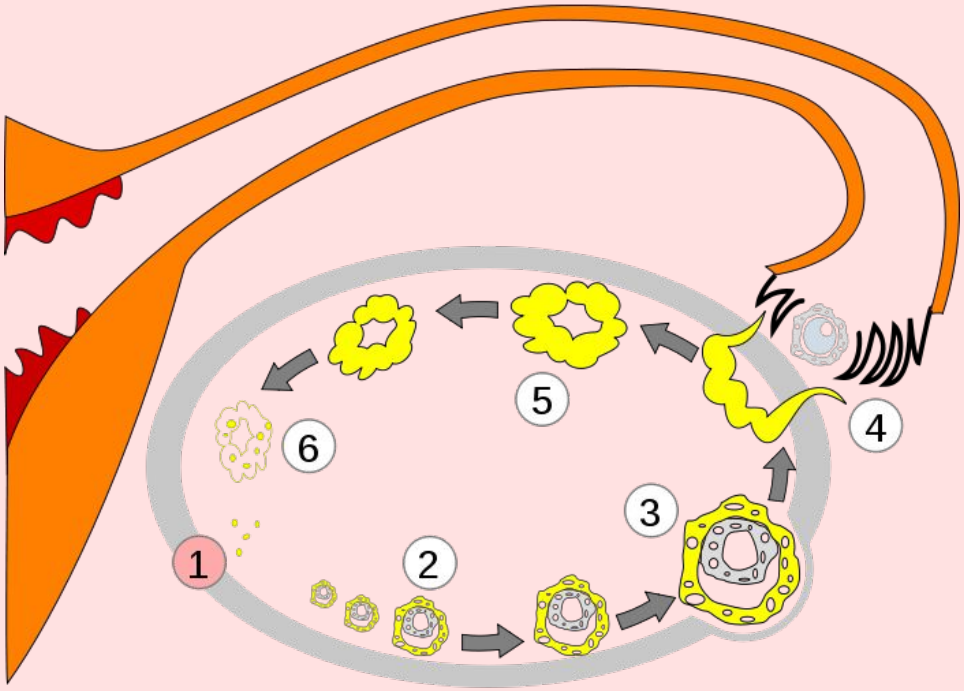


Follicle-Stimulating Hormone (FSH):is a gonadotropic hormone.



It stimulates the growth ovarian follicles in the female and the production of sperm in the male.

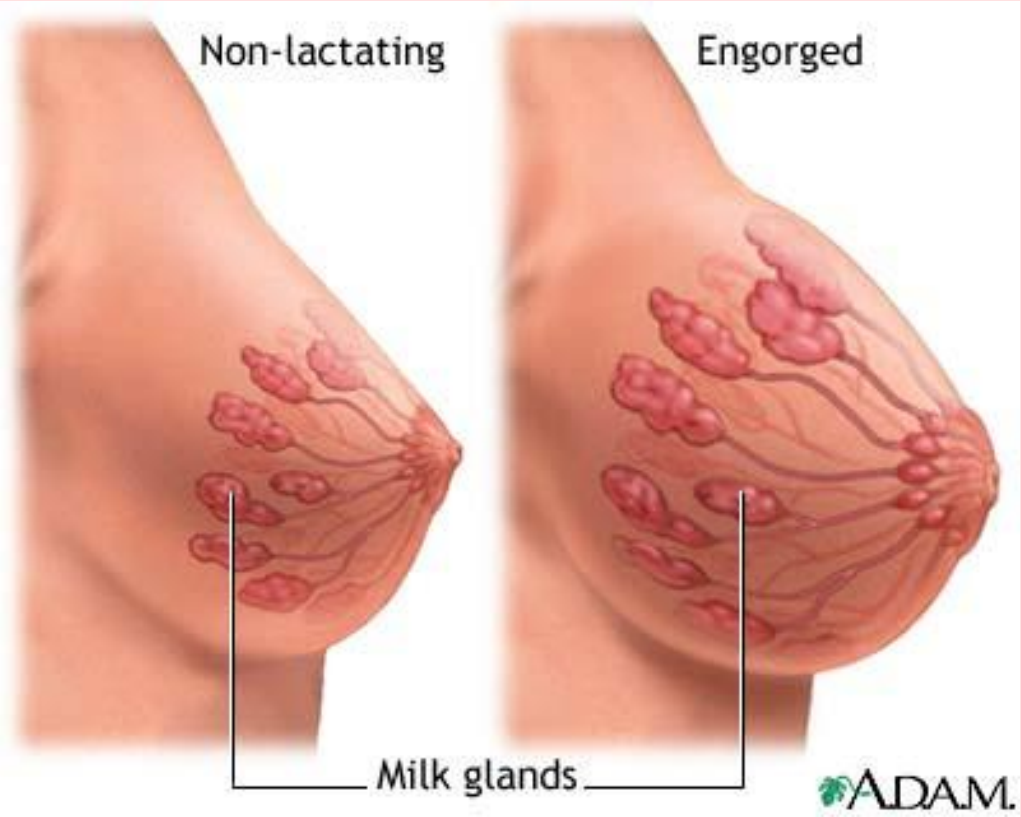
Secretions from the anterior pituitary gland



The yellow corpus luteum remains after ovulation; it produces estrogen and progesterone.

Luteinizing Hormone (LH):is a gonadotropic hormone stimulating the development of corpus luteum in the female ovarian follicles and the production of testosterone in the male.

Secretions from the anterior pituitary gland

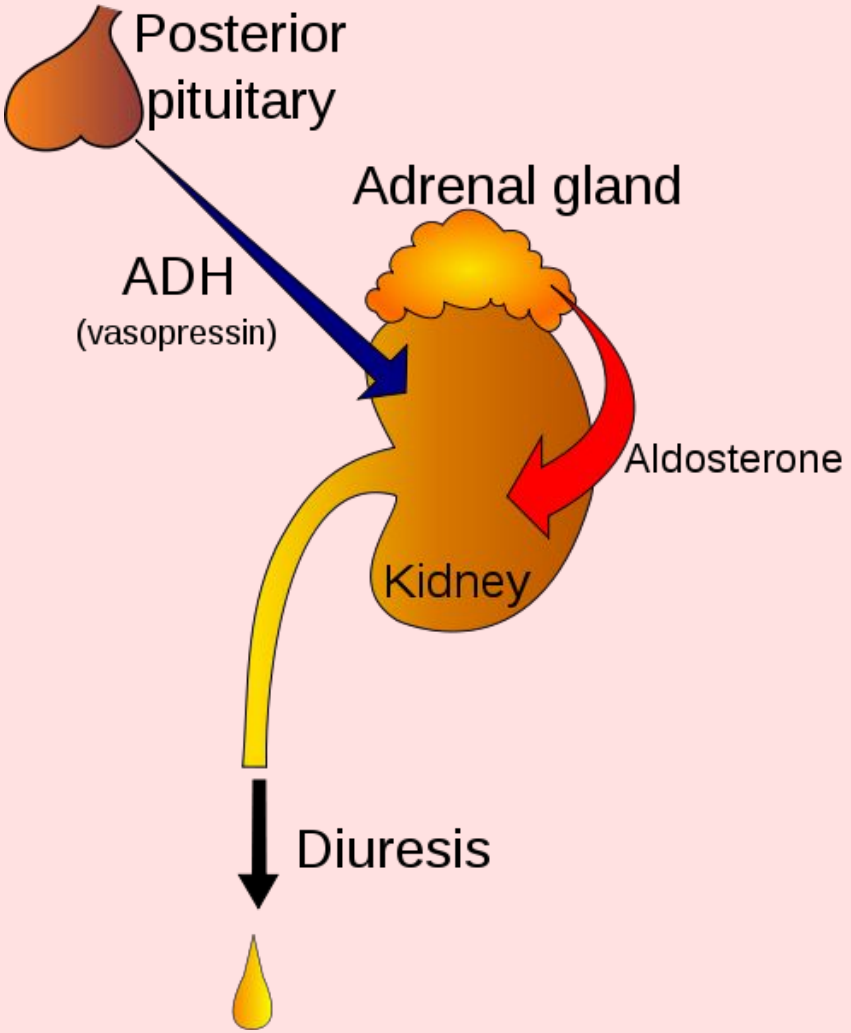


Prolactin (PRL): stimulates the development and growth of the mammary glands and milk production during pregnancy.

The sucking motion of the baby stimulates prolactin secretion.

Secretions from the posterior lobe of the pituitary gland

Antidiuretic Hormone (ADH): stimulates the reabsorption of water by the renal tubules. Hyposecretion of this hormone can result in diabetes insipidus.

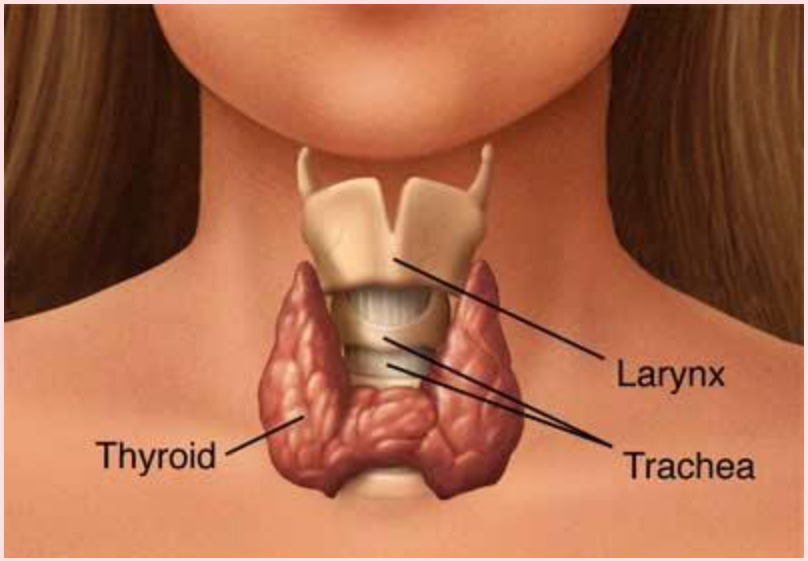


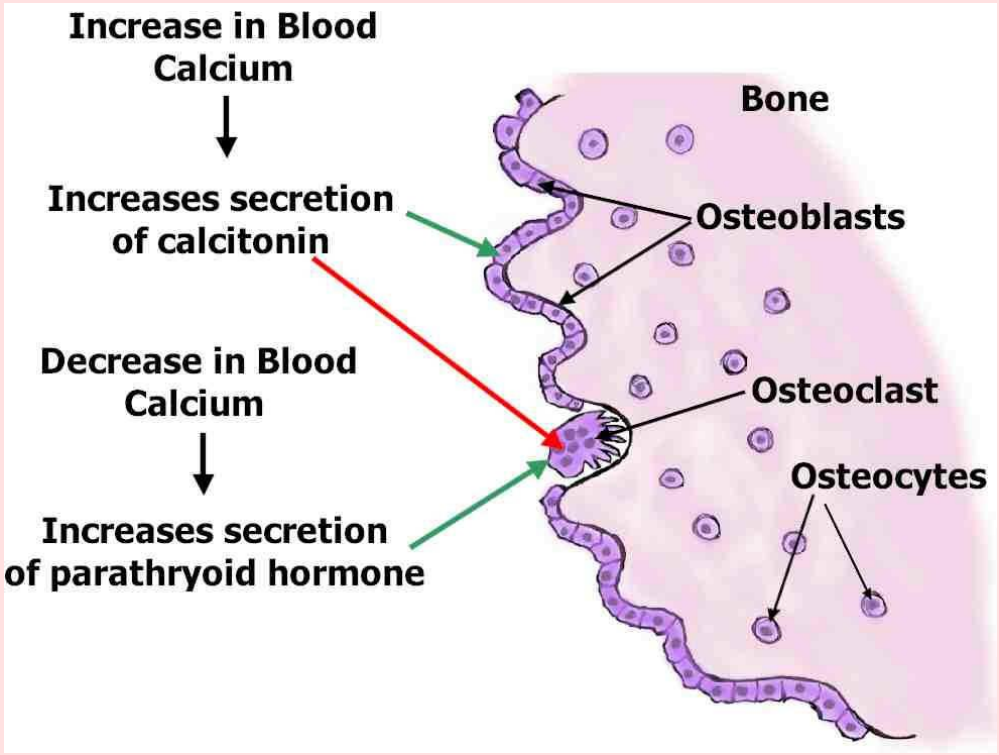
Secretions from the posterior lobe of the pituitary gland

Oxytocin:stimulates the uterus to contract during labor, delivery, and parturition. A synthetic version of this hormone, used to induce labor, is called Pitocin. It also stimulates the mammary glands to release milk.

Secretions of the thyroid gland…

The thyroid gland plays a vital role in metabolism and regulates the body's metabolic processes.

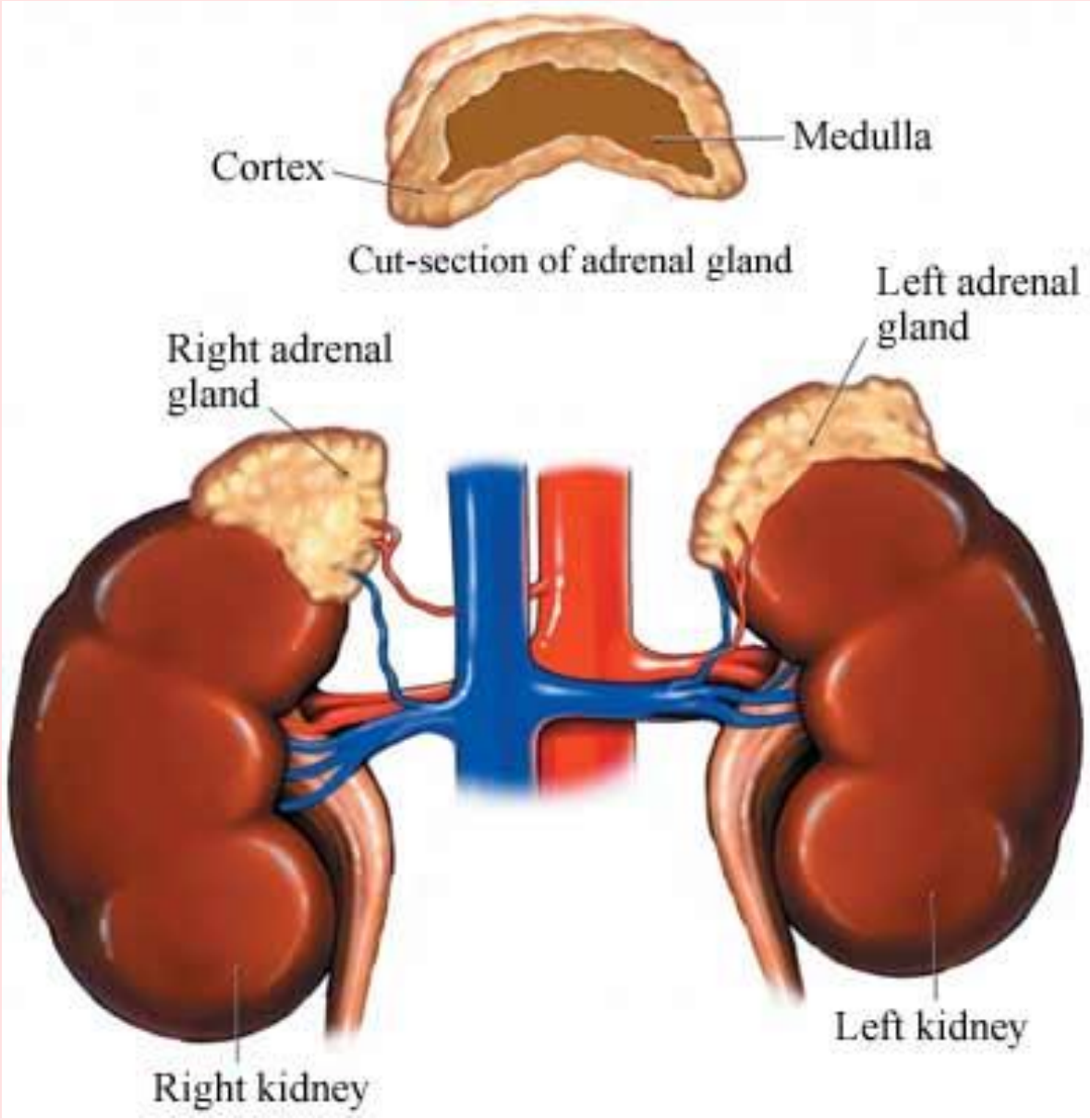




Calcitonin:influences bone and calcium metabolism; maintains a homeostasis of calcium in the blood plasma

The adrenal glands

The triangular-shaped adrenal glands are located on the top of each kidney. The inside is called the medulla and the outside layer is called the cortex.



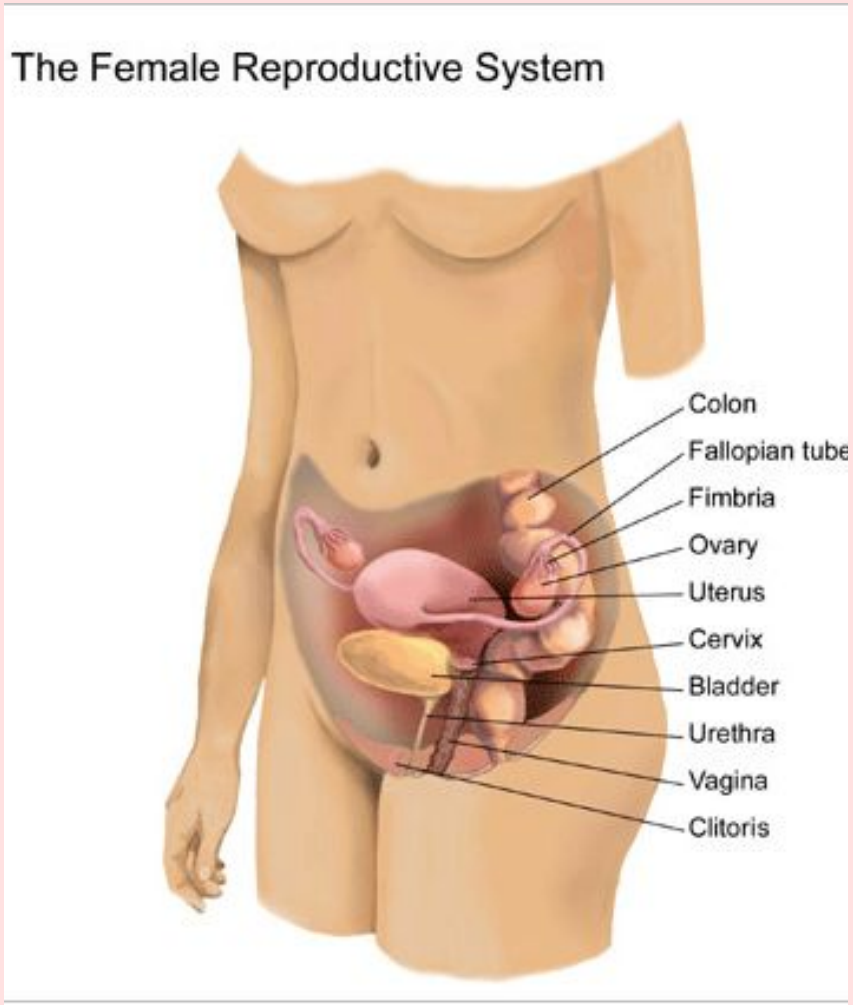
Secretions from the adrenal

Aldosterone: essential in regulating electrolyte and water balance by promoting sodium and chloride retention and potassium excretion.

Androgens: several hormones including testosterone; they promote the development of secondary sex characteristics in the male.

Secretions of the ovaries

The ovaries produce several estrogen hormones and progesterone. These hormones prepare the uterus for pregnancy, promote the development of mammary glands, play a role in sex drive, and develop secondary sex characteristics in the female.



Estrogen is essential for the growth, development, and maintenance of female sex organs.

Secretions of the testes

The testes produce the male sex hormone called testosterone. It is essential for normal growth and development of the male sex organs. Testosterone is responsible for the erection of the penis.