

HUMAN ENDOCRINE SYSTEM

Organs involved in the endocrine system produce the hormones that regulate a multitude of biological processes from conception to death. That includes growth, brain development and function, metabolism and reproduction, all acting in concert with each other.

HYPOTHALAMUS

A part of the brain, the hypothalamus is the primary connection between the brain and the rest of the endocrine system via the pituitary. Metabolic processes that are largely automatic, such as body temperature, thirst and fatigue, are regulated through the hypothalamus.

PINEAL GLAND

A tiny gland in the brain, the pineal's primary function is to produce melatonin, which helps regulate sleep patterns. The pineal gland may also contribute to the release of sex hormones by the pituitary gland, which regulates reproduction.

THYROID GLAND

Located at the front of the neck, the thyroid gland releases hormones that affect the body's metabolic rate, protein synthesis and blood-calcium levels. A release of thyroid hormones increases the burning of fat and glucose, boosts the heart beat and raises the breathing rate. During fetal development, thyroid hormones play a critical role in brain maturation.

PITUITARY GLAND

Sometimes called the "master gland," the pituitary is a pea-sized structure that takes signals from the hypothalamus and releases a variety of hormones, which in turn trigger hormone secretion in other endocrine glands.

THYMUS GLAND

Important in early development, the thymus stimulates the production of T cells, important to a body's immune response. After puberty, when T cells have reached an adequate number, sex hormones begin to shut down the thymus, which continues to atrophy through adult life.

OVARIES

Besides producing eggs, the ovaries secrete estrogen, testosterone and progesterone. Estrogen is responsible for sexual maturation in females and maintenance of reproductive organs. Progesterone prepares the uterus for pregnancy and helps regulate reproductive cycles. In women, small amounts of testosterone can regulate mood, bone growth and other conditions.

PANCREAS

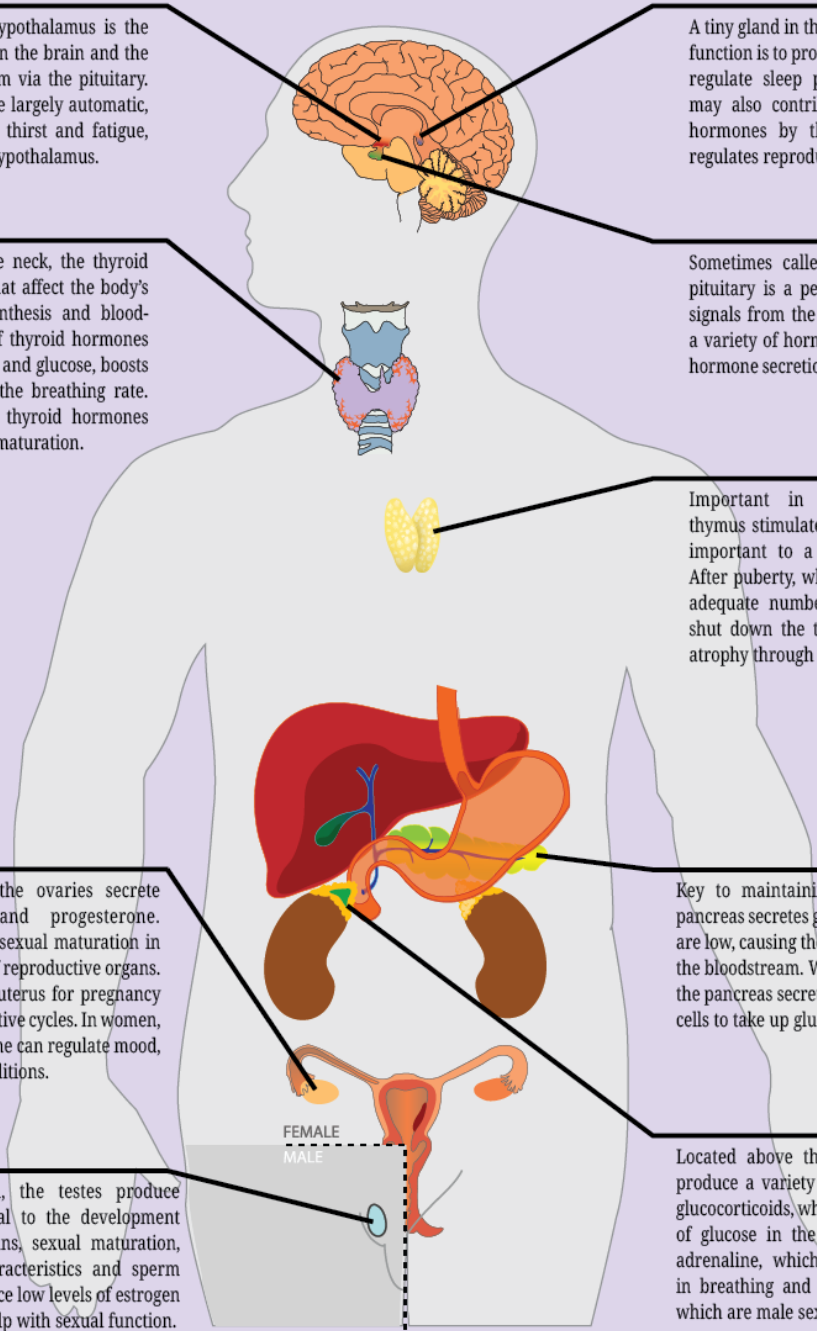
Key to maintaining blood-sugar levels, the pancreas secretes glucagon when glucose levels are low, causing the liver to release glucose into the bloodstream. When glucose levels are high, the pancreas secretes insulin, which signals the cells to take up glucose from the bloodstream.

TESTES

Besides producing sperm, the testes produce mainly testosterone, critical to the development of male reproductive organs, sexual maturation, maintenance of male characteristics and sperm production. Men also produce low levels of estrogen and progesterone, which help with sexual function.

ADRENAL GLANDS

Located above the kidneys, adrenal glands produce a variety of hormones. They include glucocorticoids, which stimulate the production of glucose in the liver among other things; adrenaline, which triggers a rapid increase in breathing and heart rate; and androgens, which are male sex hormones.



Source: UW Puget Sound Institute