

## Prerequisite Concepts

This unit draws and builds upon your understanding of various hormones of the endocrine system in relation to the maturing and function of the human reproductive systems.

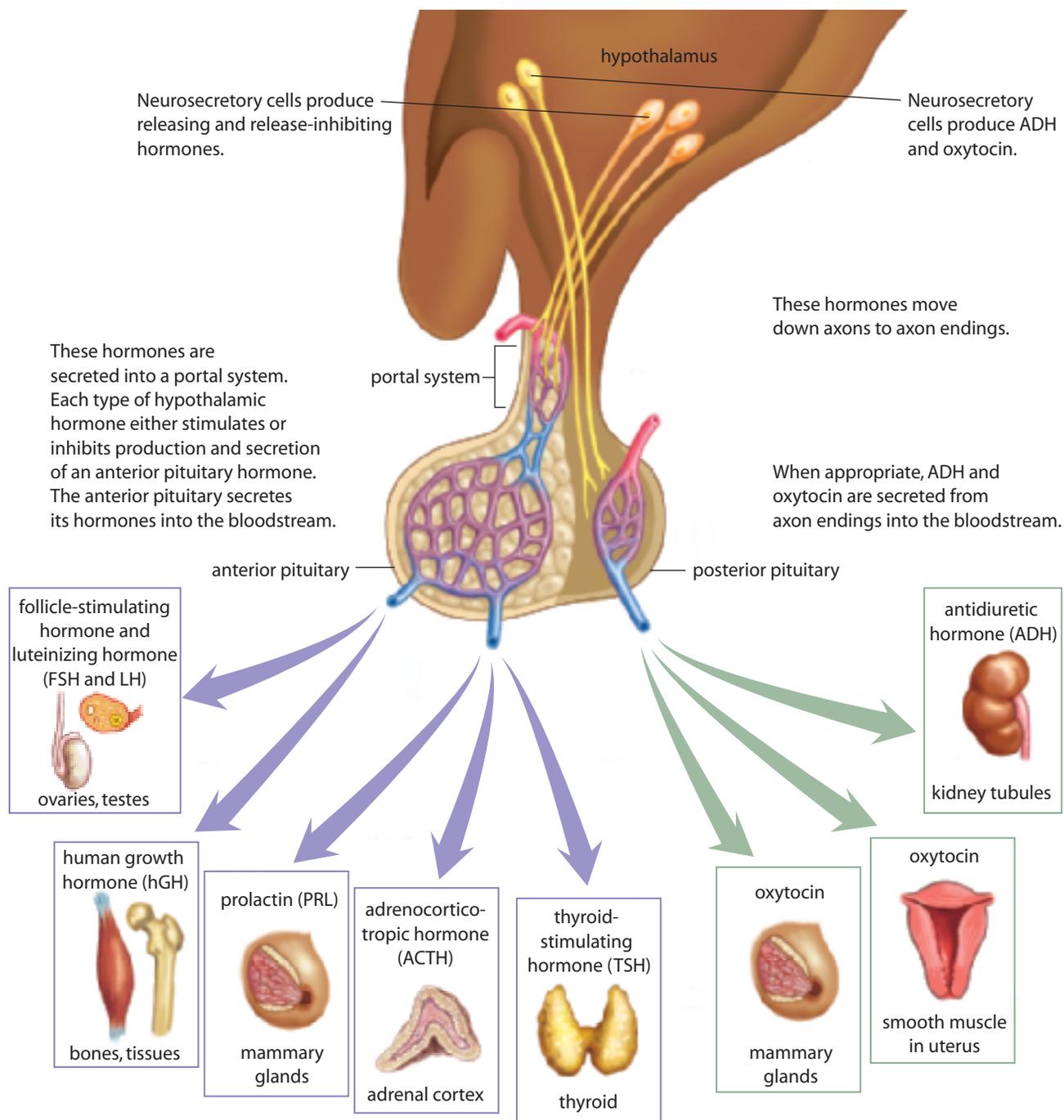
## The Endocrine System

The endocrine system consists of glands and tissues that secrete hormones—chemical signals that affect the activity of other glands or tissues of the body. The endocrine system interacts with the nervous system to regulate activities of other body systems and, as a result, to maintain homeostasis.

Table P6.1 reviews principle endocrine glands and some of their hormones. Figure P6.1 reviews hormones of the pituitary gland. Several of these—oxytocin, prolactin, hGH, FSH, and LH among them—play prominent roles in the development of reproductive organs as well the development of new human life.

**Table P6.1** Principal Glands of the Endocrine System and Some of their Hormones

Endocrine Gland	Hormone Secreted	Effects of Hormone on Target Tissues/Organs
hypothalamus	hypothalamic releasing- and inhibiting-hormones	regulates anterior pituitary hormones
anterior pituitary	human growth hormone (hGH)	stimulates cell division, bone and muscle growth, and metabolic functions
	thyroid-stimulating hormone (TSH)	stimulates the thyroid gland
	adrenocorticotrophic hormone (ACTH)	stimulates the adrenal cortex to secrete glucocorticoids
	follicle-stimulating hormone (FSH)	stimulates production of ova and sperm from the ovaries and testes
	luteinizing hormone (LH)	stimulates sex hormone production from the ovaries and testes
	prolactin (PRL)	stimulates milk production from the mammary glands
posterior pituitary	antidiuretic hormone (ADH)	promotes the retention of water by the kidneys
	oxytocin (OCT)	stimulates uterine muscle contractions and release of milk by the mammary glands
thyroid	thyroxine (T <sub>4</sub> )	affects all tissues increases metabolic rate and regulates growth and development
	calcitonin	targets bones and kidneys to lower blood calcium by inhibiting release of calcium from bone and reabsorption of calcium by kidneys
parathyroid	parathyroid hormone (PTH)	raises blood calcium levels by stimulating the bone cells to release calcium, the intestine to absorb calcium from food, and the kidneys to reabsorb calcium
adrenal cortex	glucocorticoids (e.g., cortisol)	stimulate tissues to raise blood glucose and break down protein
	mineralocorticoids (e.g., aldosterone)	promote reabsorption of sodium and water by the kidneys
	gonadocorticoids	promote secondary sexual characteristics
adrenal medulla	epinephrine and norepinephrine	fight-or-flight hormones raise blood glucose levels
pancreas	insulin	lowers blood glucose levels and promotes the formation of glycogen in the liver
	glucagon	raises blood glucose levels by converting glycogen to glucose
ovaries	estrogen	stimulates uterine lining growth and promotes development of the female secondary sexual characteristics
	progesterone	promotes growth of the uterine lining and prevents uterine muscle contractions
testes	testosterone	promotes sperm formation and development of the male secondary sexual characteristics



**Figure P6.1** The hypothalamus produces two hormones, ADH and oxytocin, which are stored and secreted by the posterior pituitary gland. The hypothalamus also controls the secretions of the anterior pituitary, which itself controls secretions of other endocrine glands such as the gonads.