Luteinizing hormone/follicle-stimulating hormone (LH/FSH)
Crucial for sex cell production
Growth hormone–releasing hormone (GHRH)
Thyrotropin-releasing hormone (TRH)
Regulates thyroid-stimulating hormone release
Corticotropin-releasing hormone (CRH)
Regulates to release of adrenocorticotropin that is vital to the production of cortisol (stress response hormone).

the ENDOCRINE SYSTEM

Hormones are chemical messengers. They bind to specific target cells with receptors, regulate metabolism and the sleep cycle, and contribute to growth and development. The endocrine glands and organs secrete these hormones all over the body.
The **hypothalamus** is a collection of specialized cells that serve as the central relay system between the nervous and endocrine systems.

- **Growth hormone-releasing hormone (GHRH)**
- **Thyrotropin-releasing hormone (TRH)**
  Regulates the release of thyroid-stimulating hormones
- **Luteinizing hormone/follicle-stimulating hormone (LH/FSH)**
  Crucial for sex cell production
- **Corticotropin-releasing hormone (CRH)**
  Regulates the release of adrenocorticotropin that’s vital to the production of cortisol
The hypothalamus translates the signals from the brain into hormones. From there, the hormones then travel to the **pituitary gland**. Located at the base of the brain inferior to the hypothalamus, the pituitary gland secretes endorphins, controls several other endocrine glands, and regulates the ovulation and menstrual cycles.
The *anterior lobe* regulates the activity of the thyroid, adrenals, and reproductive glands by producing hormones that regulate bone and tissue growth in addition to playing a role in the absorption of nutrients and minerals.

**Prolactin**
Vital to activating milk production in new mothers

**Thyrotropin**
Stimulates the thyroid to produce thyroid hormones vital to metabolic regulation

**Corticotropin**
Vital in stimulating the adrenal gland and the “fight-or-flight” response
Antidiuretic hormone (ADH)
Helps maintain the body’s water balance

Oxytocin
Triggers labor contractions in the uterus

The posterior lobe stores hormones produced by the hypothalamus.
The **thyroid** is vital to growth and development. Located below the larynx and wrapped around the front and sides of the trachea, the thyroid regulates metabolism and nervous system activity.

**Calcitonin**
Aids in the regulation of blood calcium levels
On the posterior surface of the thyroid sit the **parathyroids**. These four tiny glands maintain blood calcium homeostasis with the help of calcitonin.
The **thymus** is an organ of the lymphatic system where lymphocytes called T cells, which form in red bone marrow, mature and become specialized. The thymus grows from birth until the time of puberty, and then it begins to atrophy.

**Thymosins**
Regulates the development of T cells
The adrenal glands consist of two structures.

The adrenal cortex is a network of fine connective tissues that secrete a range of steroid hormones affecting mineral and water balance, glucose levels, and adrenal sex hormones.

Cortisol
Primary stress hormone

Testosterone
Male sex hormone (produced in males and females)
The **adrenal glands** consist of two structures.

The **adrenal medulla** is the soft, reddish-brown center that secretes chemicals vital to initiating the increased breathing and heart rate as the first step in the “fight-or-flight” bodily response.

**Epinephrine**  
Adrenaline

**Norepinephrine (noradrenaline)**  
Works with adrenaline to respond to stress
The **pineal gland** is located at the posterior center of the brain and is activated with the absence of light at night to regulate sleep patterns in both circadian (daily) and seasonal rhythms.
The pancreas is an accessory organ of the digestive system. It releases pancreatic juices into the duodenum via the pancreatic duct, and it also releases hormones that regulate blood glucose levels into the bloodstream.

Insulin
Responds to glucose intake

Glucagon
Counteracts insulin
**Gonads** are the primary reproductive organs that produce gametes and sex hormones.

**Testes** produce male gametes (sperm) and a sex hormone that governs early development of the male reproductive system and secondary sexual features.

**Testosterone**
Responsible for the development of the male reproductive system and secondary sexual features.
**Gonads** are the primary reproductive organs that produce gametes and sex hormones.

**Ovaries** produce female gametes (ova, or eggs) and sex hormones that govern early development of the female reproductive system and contribute to the menstrual cycle.

**Progesterone**
Involved in the menstrual cycle, pregnancy, and embryogenesis

**Estrogen**
Responsible for the development and regulation of the female reproductive system and secondary sex characteristics
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