

Al-Mamoun university collage

Physiology

Medical lab Tech

Second stage

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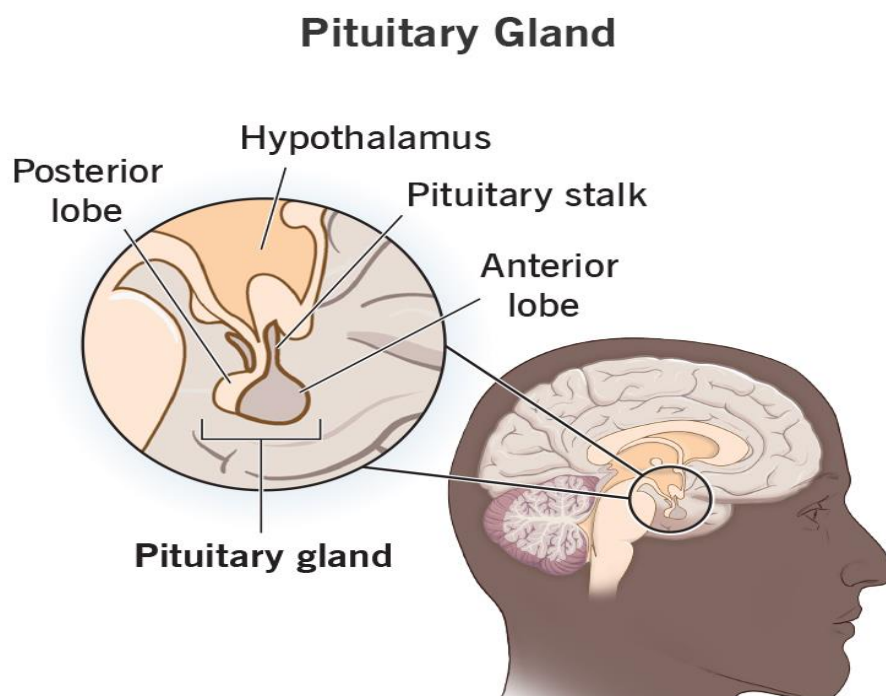
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Lecture 9

Pituitary gland , pinal gland and hypothalamas

Pituitary gland (also known as hypophysis) is a small, pea-sized gland located at the base of your brain below your hypothalamus.. It's a part of your endocrine system and is in charge of making several essential hormones. Pituitary gland also tells other endocrine system glands to release hormones.

Pituitary gland is divided into two main sections: the anterior pituitary (front lobe) and the posterior pituitary (back lobe). Your pituitary is connected to your hypothalamus through a stalk of blood vessels and nerves called the pituitary stalk (also known as infundibulum).



What is the function of the pituitary gland?

The main function of your pituitary gland is to produce and release several hormones that help carry out important bodily functions, including:

1. Growth.
2. Metabolism (how your body transforms and manages the energy from the food you eat).
3. Reproduction.
4. Response to stress or trauma.
5. Lactation.
6. Water and sodium (salt) balance.
7. Labor and childbirth

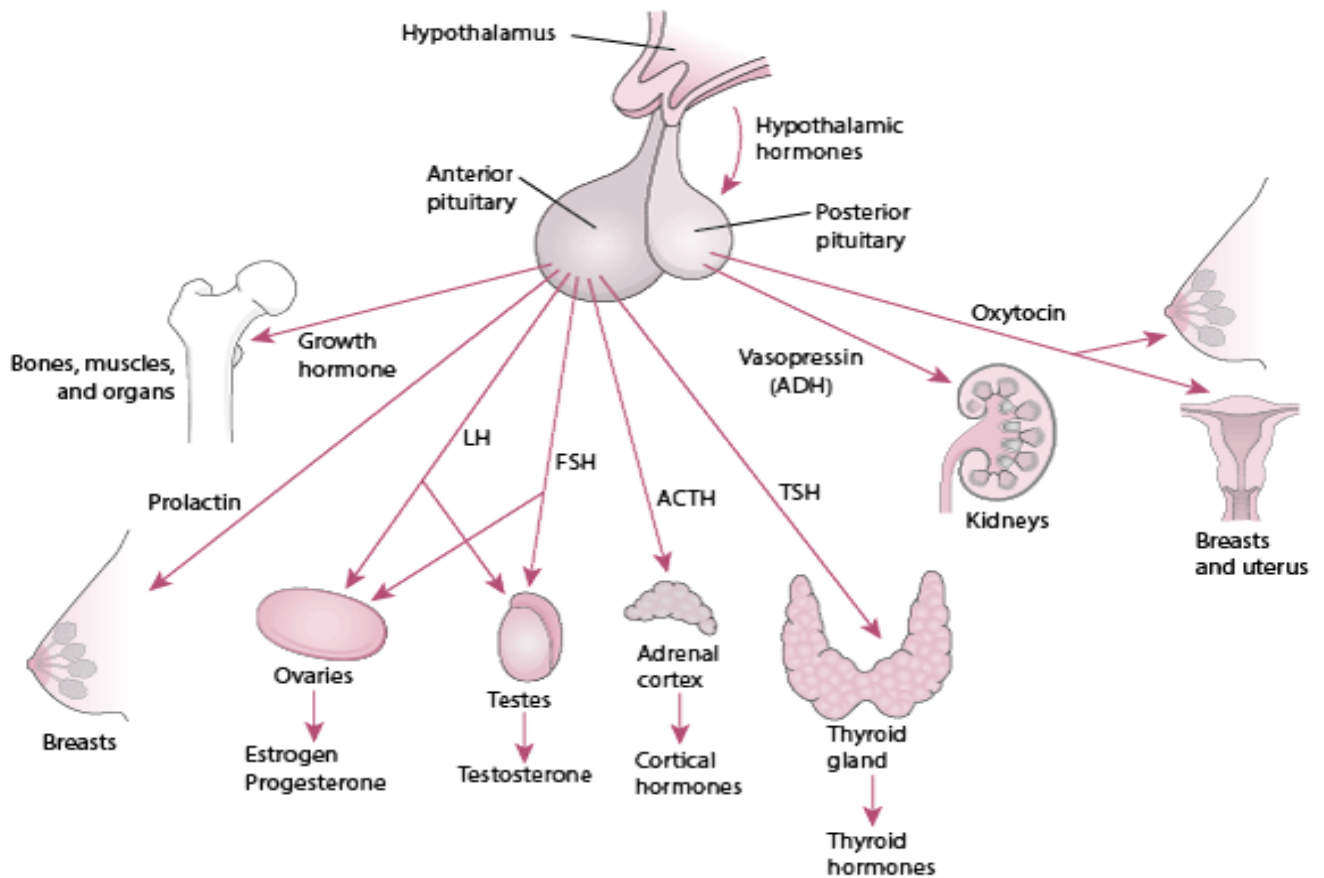
Hormones does the pituitary gland make

1. The posterior lobe of your pituitary gland stores and releases the following hormones, but your hypothalamus makes them
 1. **Antidiuretic hormone (ADH, or vasopressin):** This hormone regulates the water balance and sodium levels in your body.
 2. **Oxytocin:** hypothalamus makes oxytocin, and pituitary gland stores and releases it. **Oxytocin** helps labor to progress during childbirth by sending signals to their uterus to contract. It also causes breast milk to flow and influences the bonding between parent and baby. In people assigned male at birth, oxytocin plays a role in moving sperm.

2-The **anterior lobe** of pituitary gland makes and releases the hormones:

1. **Adrenocorticotrophic hormone (ACTH or corticotrophin):** ACTH plays a role in how your body responds to stress. It stimulates your adrenal glands to produce cortisol (the “**stress hormone**”), which has many functions, including regulating metabolism, maintaining blood pressure, regulating blood glucose (blood sugar) levels and reducing inflammation, among others.
2. **Follicle-stimulating hormone (FSH):** FSH stimulates sperm production in people assigned male at birth. FSH stimulates the ovaries to produce estrogen and plays a role in egg development in people assigned female at birth. This is known as a gonadotrophic hormone.
3. **Growth hormone (GH):** In children, growth hormone stimulates growth. In other words, it helps children grow taller. In adults, growth hormone helps maintain healthy muscles and bones and impacts fat distribution. GH also impacts your metabolism (how your body turns the food you eat into energy).
4. **Luteinizing hormone (LH):** LH stimulates ovulation in people assigned female at birth and testosterone production in people assigned male at birth. LH is also known as a gonadotrophic hormone because of the role it plays in controlling the function of the ovaries and testes, known as the gonads.
5. **Prolactin:** Prolactin stimulates breast milk production (lactation) after giving birth. It can affect fertility and sexual functions in adults.

6. **Thyroid-stimulating hormone (TSH)**: TSH stimulates your thyroid to produce thyroid hormones that manage your metabolism, energy levels and your nervous system.



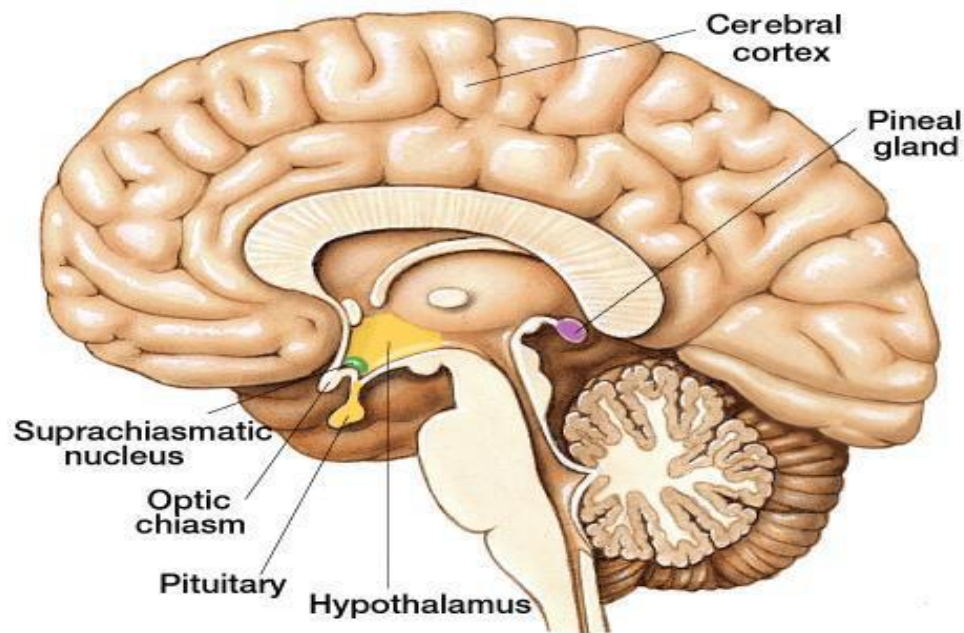
Pituitary gland is connected to your hypothalamus through a stalk of blood vessels and nerves (the pituitary stalk). Through that stalk, your hypothalamus communicates with the anterior pituitary lobe via hormones and the posterior lobe through nerve impulses. Hypothalamus also creates oxytocin and antidiuretic hormone and tells your posterior pituitary when to store and release these hormones

Signs and Symptoms of Pituitary Disorders

Pituitary disorders can occur when the gland has a growth and/or produces too much or too little of certain hormones leading to a range of symptoms. Some common signs and symptoms of pituitary disorders include headaches, vision problems, fatigue, weight gain, menstrual irregularities, and growth abnormalities. Additionally, individuals may experience changes in mood, increased thirst and urination, and weakened bones.

Pineal gland

Your pineal gland, also called the pineal body is a tiny gland in your brain. It's a part of your endocrine system and secretes the hormone **melatonin**. Your pineal gland's main job is to help control the circadian cycle of sleep and wakefulness by secreting melatonin



The main function of your pineal gland is to receive information about the daily light-dark (day-night) cycle from the retinas in your eyes and then produce and release (secrete) melatonin accordingly elevated levels at night (during dark hours) and low levels during the day (during light hours).

Melatonin

Melatonin is a natural hormone that's mainly produced by your **pineal gland**, which is a tiny gland in your brain. Your pineal gland is part of your endocrine system .

The full impact of melatonin in humans isn't totally clear, but most research shows it helps to synchronize circadian rhythms in different parts of your body. Circadian rhythms are physical, mental and behavioral changes that follow a 24-hour cycle. The most important and well-known of these circadian rhythms is your sleep-wake cycle. These natural processes respond primarily to light and dark. Your pineal gland secretes the highest levels of melatonin during the night and minimal amounts during the day.