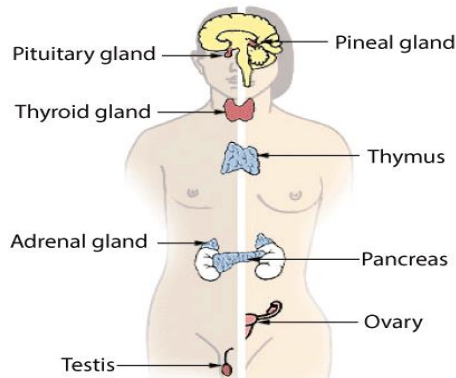




Endocrine and Exocrine Glands Handout

1. Endocrine System Overview :

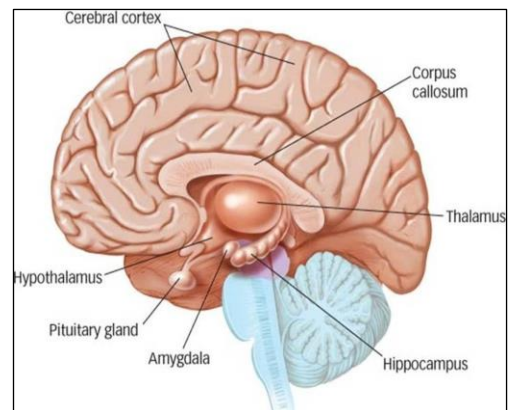
The endocrine system is a complex network of glands that release hormones directly into the bloodstream. These hormones act as chemical messengers, traveling through the circulatory system to target organs and tissues, where they regulate various physiological processes.



Major Endocrine Glands:

1) Hypothalamus

- **Location:** Forebrain, just below the thalamus
- **Functions:** Acts as a crucial link between the nervous and endocrine systems.
- It controls the Pituitary gland by secreting hormones that stimulate or inhibit pituitary hormone release. This regulation affects various physiological processes, including temperature control, hunger, and sleep.



2) Pituitary Gland

- **Location:** At the base of the brain,
- **Functions:** Often termed the "master gland" because it controls other endocrine glands. It releases hormones that regulate growth, metabolism, and reproductive functions.

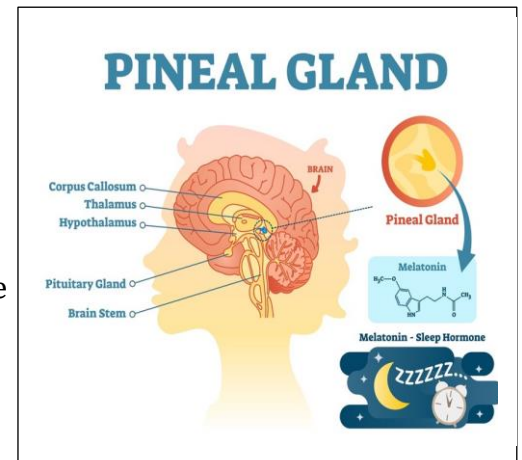
Hormones

1. STH- REGULATES GROWTH OF BODY
2. TSH- stimulate Thyroid gland
3. MSH- to protect skin
4. GTH- to control functions of gonads
5. ADH- control water balance of body
6. LTH- secretion of milk



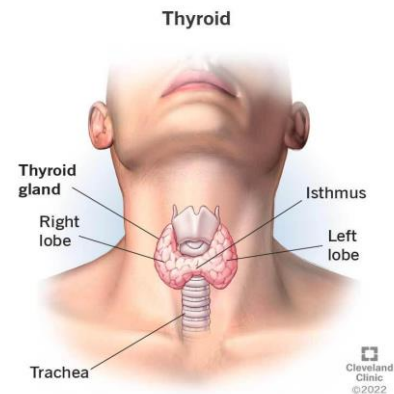
3) Pineal Gland

- **Location:** Located in the epithalamus, near the center of the brain between the two hemispheres
- **Functions:** Known as the "third eye," it secretes melatonin, a hormone that influences sleep patterns and regulates the body's internal clock or circadian rhythm.
- Melatonin levels increase in response to darkness and decrease with light.



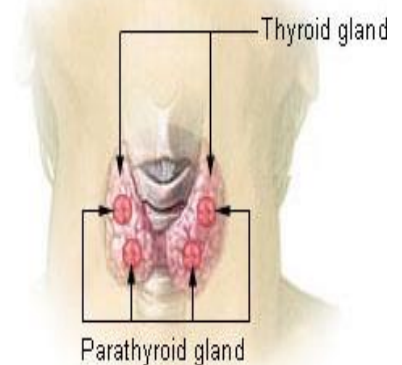
4) Thyroid Gland

- **Location:** Anterior to the trachea, below the larynx
- **Functions:** Produces thyroid hormones T4 (Thyroxine) and T3 (Triiodothyronine), which are crucial for regulating metabolism, energy levels, and body temperature. It also plays a role in maintaining healthy skin, hair, and nails.
- **Common Disorders:** Goitre (enlarged thyroid), Thyroid cancer, Hypothyroidism, and Hyperthyroidism.



5) Parathyroid Glands

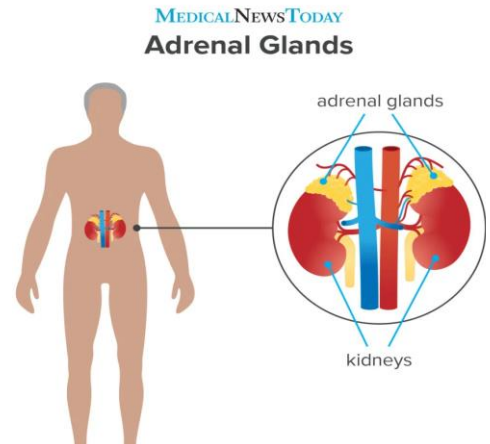
- **Location:** Embedded in the posterior surface of the thyroid gland
- **Functions:** Secretes parathyroid hormone (PTH), which is essential for regulating calcium levels in the blood and bone health.
- Proper calcium balance is crucial for nerve function, muscle contraction, and bone strength.
- **Disorders:** Excessive PTH can cause bone demineralization, leading to conditions such as osteoporosis, and may also contribute to kidney stone formation.





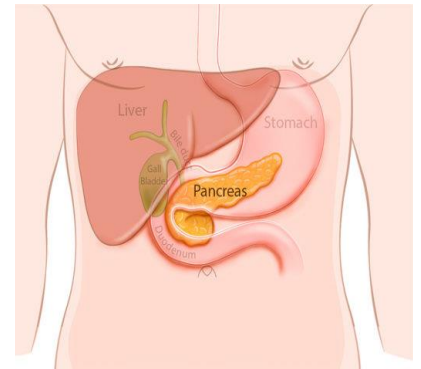
6) Adrenal Glands

- **Location:** Positioned on top of each kidney
- **Functions:** Composed of two parts:
Adrenal Cortex: Produces steroid hormones like cortisol (regulates metabolism and stress response) and aldosterone (controls blood pressure and sodium balance).
Adrenal Medulla: Secretes adrenaline, which are involved in the body's fight-or-flight response, increasing heart rate, blood flow to muscles, and glucose levels.

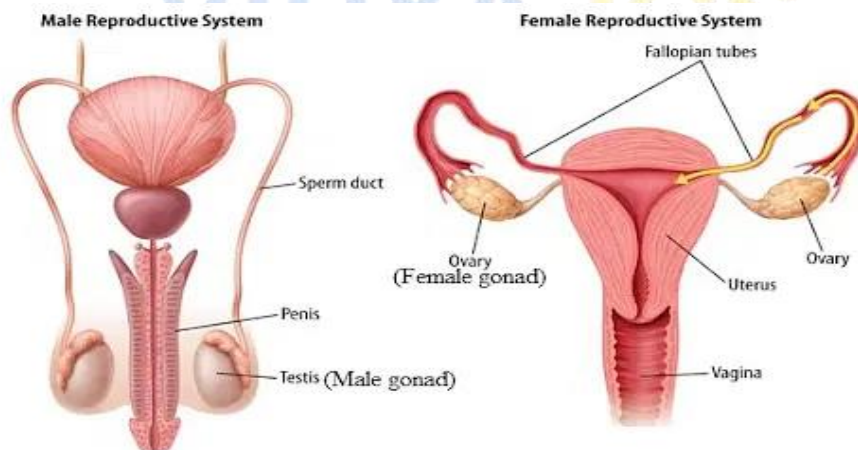


7) Pancreas

- **Location:** Situated behind the stomach
- **Functions:** Exhibits both endocrine and exocrine functions:
Endocrine Function: Secretes insulin and glucagon to regulate blood glucose levels, balancing energy supply and storage.
Exocrine Function: Produces digestive enzymes (amylase, lipase, proteases) that are released into the small intestine to aid in digestion.



8) Gonads



- **Location:** Ovaries in females, testes in males
- **Functions:**



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Ovaries: Produce estrogen and progesterone, hormones that regulate female reproductive functions, menstrual cycle, and secondary sex characteristics such as breast development and body fat distribution.

Testes: Produce testosterone, which is vital for the development of male sex characteristics (e.g., facial hair, deep voice), muscle growth, and sperm production.

2. Exocrine System Overview

The exocrine system consists of glands that release their products through ducts either onto the body's surface or into body cavities. These glands play essential roles in various physiological processes, including digestion and thermoregulation.

Examples of Exocrine Glands:

1) Sweat Glands

- **Function:** Secrete sweat, a fluid that helps regulate body temperature through evaporative cooling. Sweat also excretes waste products like urea and salts.

2) Salivary Glands

- **Function:** Produce saliva, which contains enzymes (such as amylase) that begin the digestion of carbohydrates, lubricates food for easier swallowing, and maintains oral hygiene by washing away bacteria.

3) Pancreas (Exocrine Function)

- **Function:** Releases digestive enzymes into the small intestine via ducts. These enzymes break down carbohydrates, proteins, and fats, facilitating nutrient absorption.

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