SNS COLLEGE OF NURSING

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DEPARTMENT OF NURSING

COURSE NAME : BSC (NURSING) I YEAR

SUBJECT : ANATOMY AND PHYSIOLOGY

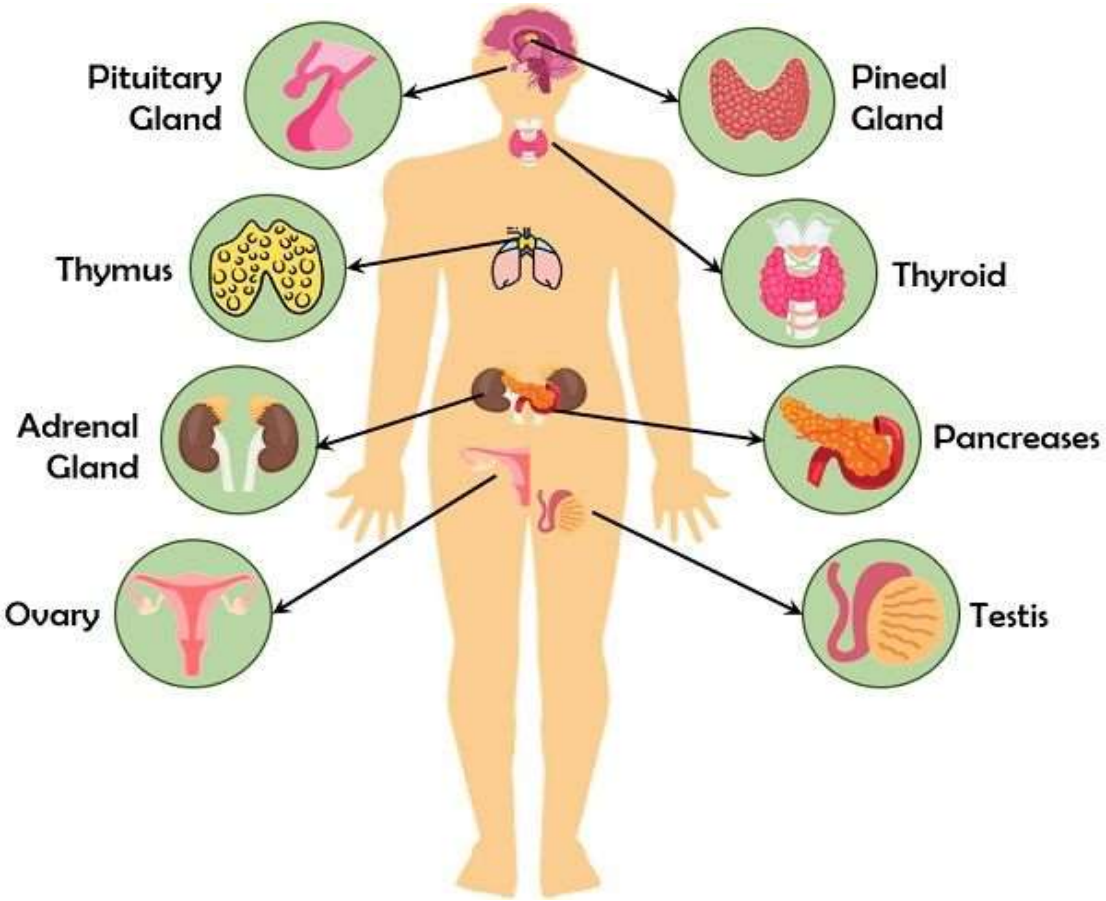
UNIT: ENDOCRINE SYSTEM

TOPIC : ANATOMY OF GLANDS

INTRODUCTION

- The organs of the endocrine system are small and unimpressive.
- Functionally the endocrine organs are huge and very impressive
- Their role in maintaining body homeostasis is considered and
- They are true giants.

ENDOCRINE GLANDS



nctions of the Endocrine Syste

- Water equilibrium.
- Growth, metabolism, and tissue maturation.
- Heart rate and blood pressure management.
- Immune system control.
- Reproductive function controls.
- Uterine contractions and milk release.
- Ion management.
- Blood glucose regulator.
- Direct gene activation.
- Second messenger system.

THE GLANDS

The major endocrine organs are

- Pituitary,
- Thyroid,
- Parathyroid,
- Adrenal,
- Pineal
- Thymus Glands,
- The Pancreas, And
- The Gonads.

Hypothalamus

- The hypothalamus, produces several hormones.
- It is an important autonomic nervous system and endocrine control center of the brain located inferior to the thalamus.
- Although the function of some hormone-producing glands is purely endocrine,
- The function of others (pancreas and gonads) is mixed- both endocrine and exocrine.

PITUITARY GLAND

- **Location.** The pituitary gland hangs by a stalk from the inferior surface of the hypothalamus of the brain, .
- **Lobes.** It has two functional lobes-
- the anterior pituitary (glandular tissue) and
- the posterior pituitary (nervous tissue).

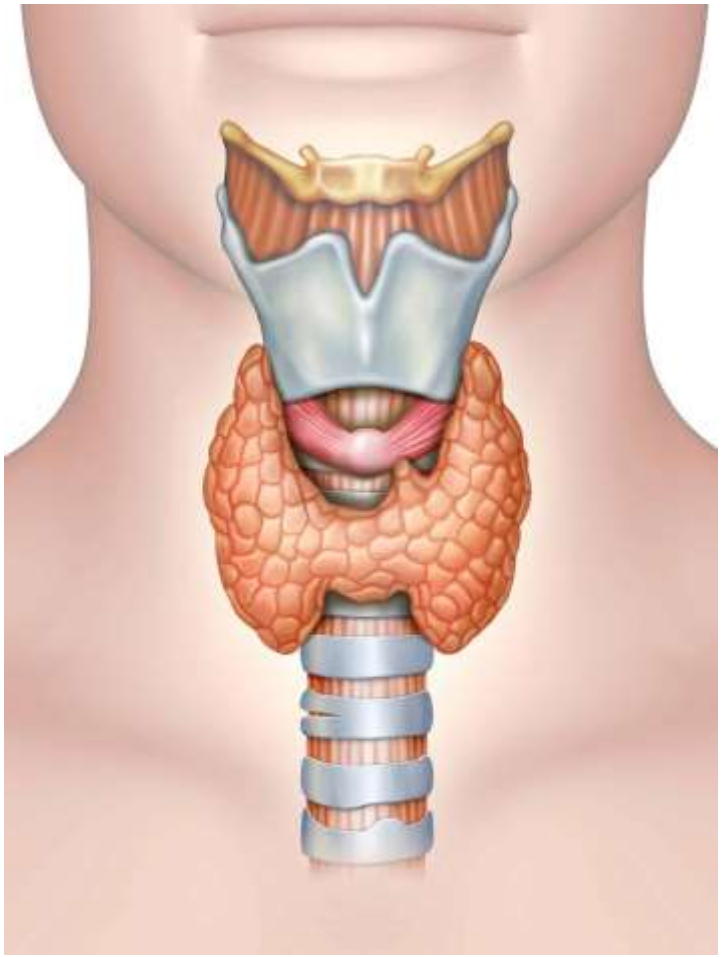
PITUITARY GLAND

- **HORMONES OF THE ANTERIOR PITUITARY**
- Growth hormone (GH).
- Prolactin (PRL)
- Adreno corticotropic hormone (ACTH).
- Thyroid-stimulating hormone (TSH)
- Gonadotropic hormones.
- Follicles-stimulating hormone (FSH).
- Luteinizing hormone (LH).

PITUITARY GLAND

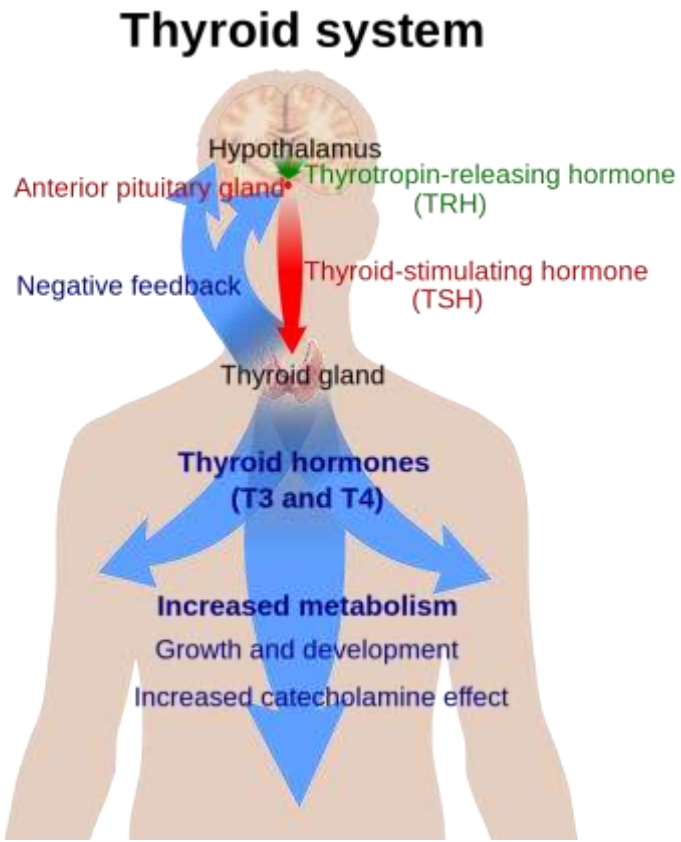
- **HORMONES OF THE ANTERIOR PITUITARY**
- **Oxytocin**
- **Antidiuretic hormone (ADH). -vasopressin.**

THYROID GLAND



- **Location -**at the base of the throat, inferior to the Adam's apple,
- **Lobes.** - two lobes joined by a central mass, or **isthmus**.
- **Composition -** Hollow structures called **follicles**, which store a sticky colloidal material.

THYROID GLAND



THYROID GLAND

- **THYROXINE OR T4**

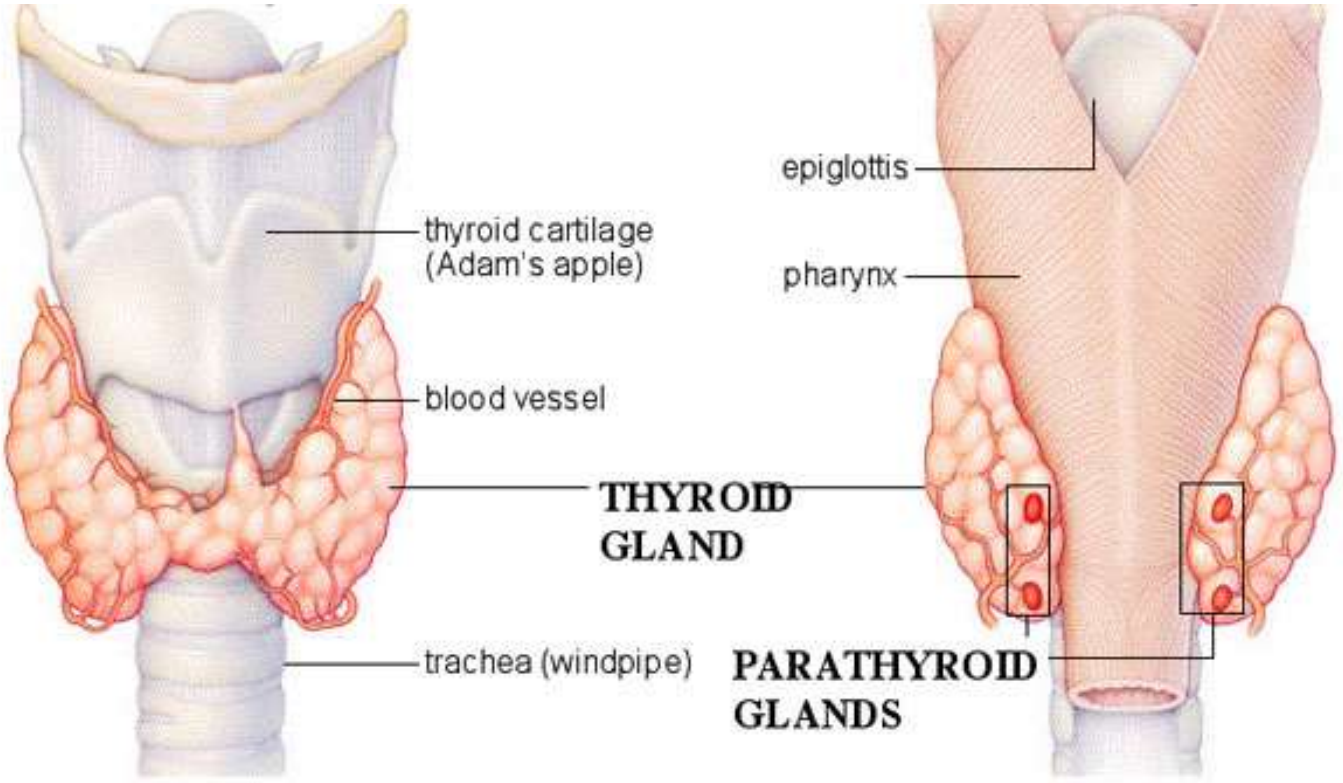
  The major hormone secreted by the thyroid follicles.
- **TRI IODOTHYRONINE OR T3**.

  Formed at the target tissues by conversion of the thyroxine to triiodothyronine.
- **CALCITONIN.**
- Decreases blood calcium levels by causing calcium to be deposited in the bones;
- Made by the **parafollicular cells** found in the connective tissues between the follicles.

PARATHYROID GLANDS

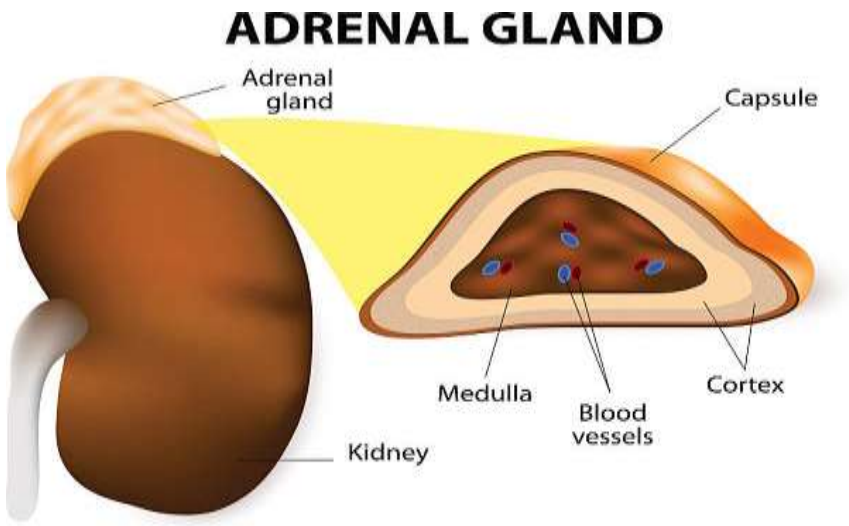
- The tiny masses of glandular tissue.
- **Location.**
- The parathyroid glands are located on the posterior surface of the thyroid gland.
- **Parathormone.**
- The parathyroids secrete **parathyroid hormone (PTH)** or parathormone.

PARATHYROID GLANDS



ADRENAL GLANDS

- The adrenal gland looks like a single organ,
- It is structurally and functionally two endocrine organs in one.



HORMONES OF THE ADRENAL CORTEX

- **Corticosteroids**– mineralocorticoids, glucocorticoids, and sex hormones.
- **Mineralocorticoids** --- aldosterone
- **Renin –** an enzyme
- **Atrial natriuretic peptide (ANP)**
- **Glucocorticoids**.-- cortisone and cortisol
- **Sex hormones. – Androgen** (male sex hormones), **Estrogens** (female sex hormones)

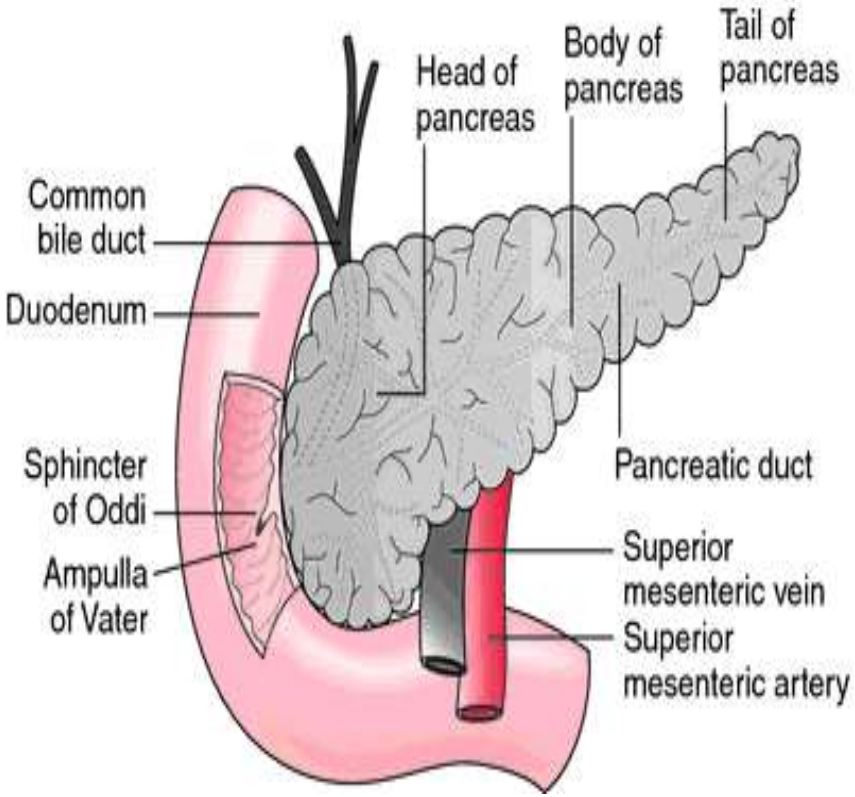
HORMONES OF THE ADRENAL CORTEX

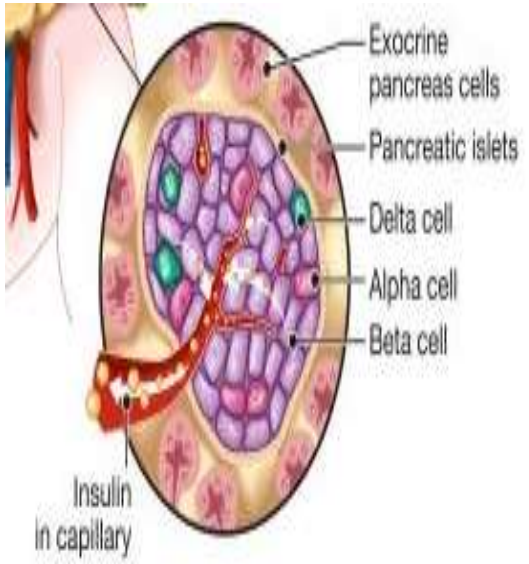
- **Catecholamines.**
- When the medulla is stimulated by sympathetic nervous system neurons, its cells release two similar hormones,
- **Epinephrine (adrenaline)**, and **Norepinephrine** (**noradrenaline**)
- These hormones are referred to as catecholamines.

PANCREATIC ISLETS

- **Islets of Langerhans.**The islets of Langerhans also called pancreatic islets,
- **Hormones.** - Insulin and Glucagon
- **Islet cells.** Islet cells act as fuel sensors
- **Beta cells.** High levels of glucose in the blood stimulate the **release of insulin** from the beta cells of the islets.
- **Alpha cells. Glucagon's release by the alpha cells** of the islets is stimulated by low blood glucose levels.

PANCREATIC ISLETS

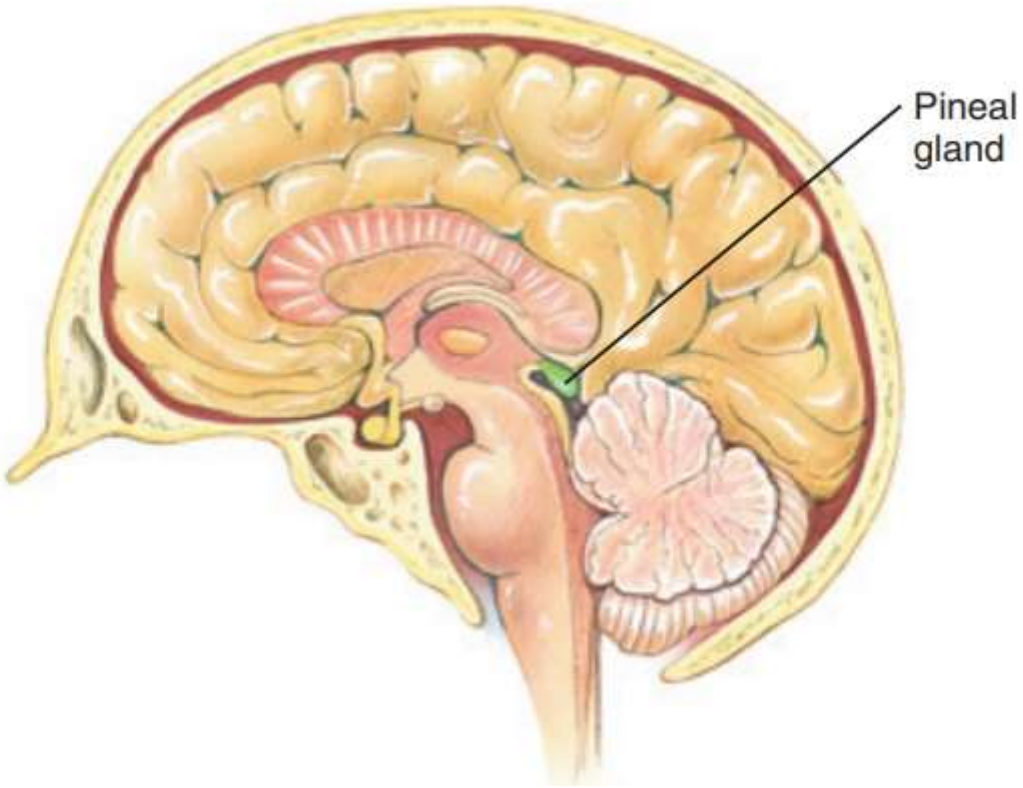




PANCREATIC SECRETIONS

- **Insulin.**
- Insulin acts on just about all the body cells and increases their ability to transport glucose across their plasma membranes;
- Insulin sweeps glucose out of the blood, its effect is said to be **hypoglycemic**.
- **Glucagon.**
- Glucagon acts as an antagonist of insulin
- It helps to regulate blood glucose levels but in a way opposite that of insulin; **hyperglycemic**

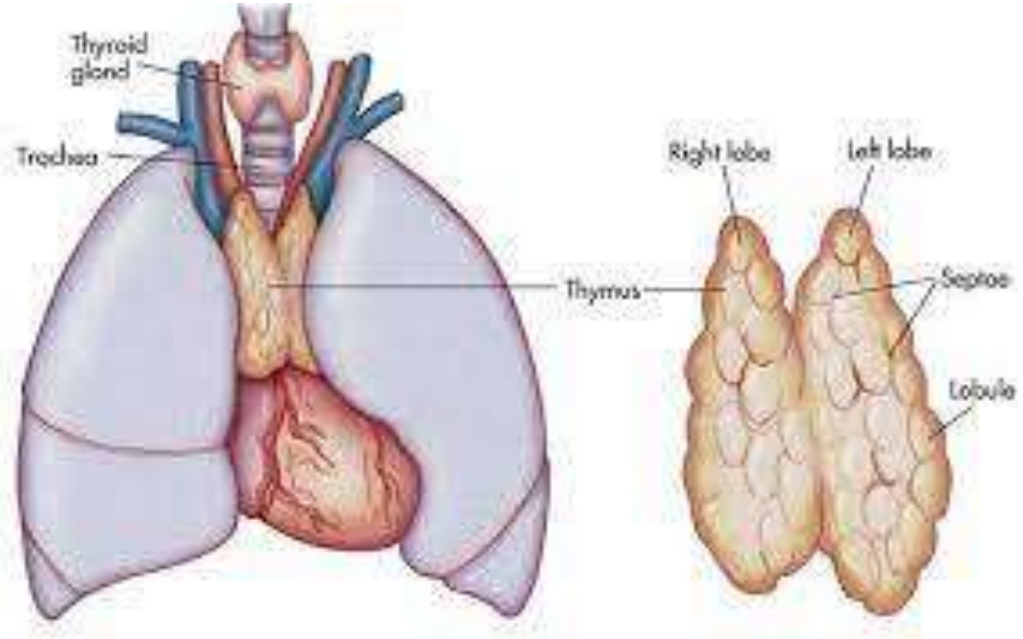
PINEAL GLAND

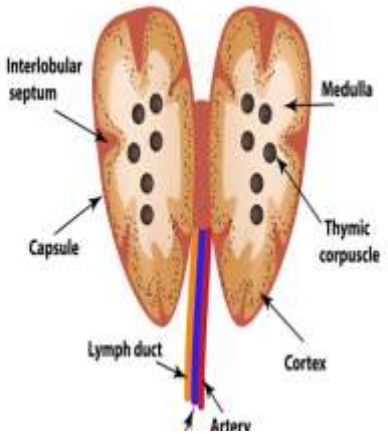


PINEAL GLAND

- **Location.** hangs from the roof of the third ventricle of the brain.
- **Melatonin.**
- Melatonin is the only hormone the levels of melatonin rise and fall during the course of the day and night
- Peak levels occur at night and make us drowsy
- The **“sleep trigger”** that establishes the body’s day-night cycle.

THYMUS GLAND





THYMUS GLAND

- **Thymosin.**
- The thymus produces a hormone called thymosin
- It is essential for normal development of a special group of white blood cells (T-lymphocytes, or T cells) and the immune response.

GONADS- OVARY

- **Location.** - pelvic cavity.
- **Steroid hormones. - estrogen** and **progesterone**.
- **Estrogen-** Development of sex characteristics in women at puberty , promote breast development and cyclic changes in the uterine lining (Menstrual cycle).
- **Progesterone -** menstrual cycle ,during pregnancy helps prepare breast tissue for lactation.

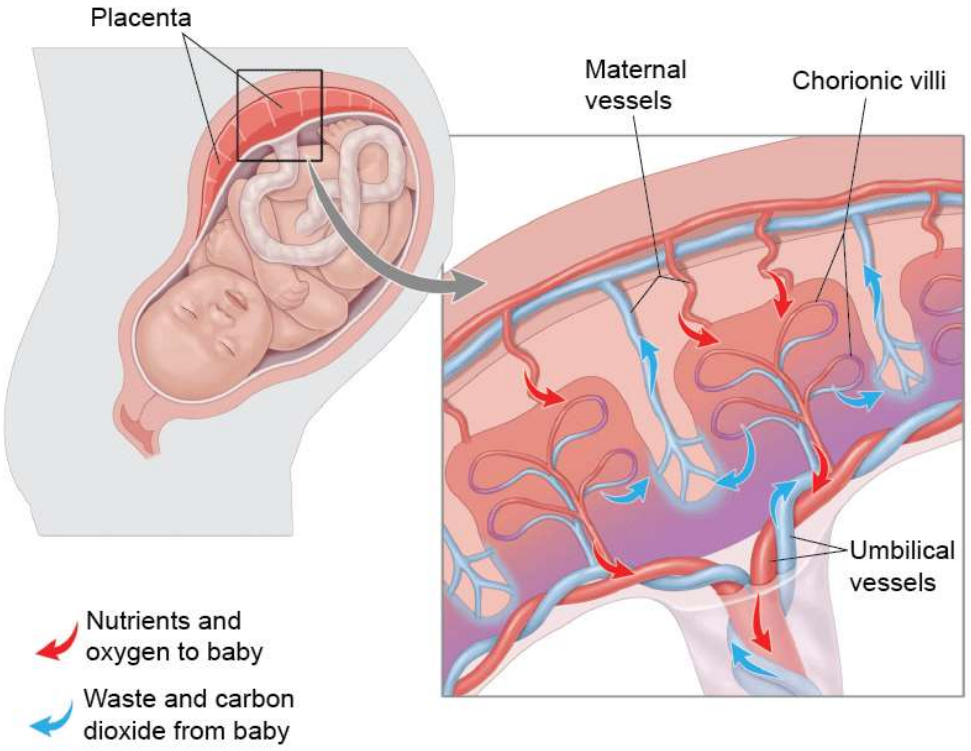
GONADS- TESTIS

- The testes of the male are paired oval organs in a sac.
- **Location.** The testes are suspended in a sac, the scrotum, outside the pelvic cavity.
- **Male sex hormones.** -- **Testosterone**
- Testosterone promotes the growth and maturation of the reproductive system organs to prepare the young man for reproduction .

PLACENTA

- **Function.** - Roles as the respiratory, excretory, and nutrition delivery systems for the fetus, maintain the pregnancy and pave the way for delivery of the baby.
- **Human chorionic gonadotropin (hCG)** - Produced by the developing embryo and then by the fetal part of the placenta

PLACENTA


Placenta
Maternal vessels
Chorionic villi
Umbilical vessels
Nutrients and oxygen to baby
Waste and carbon dioxide from baby

PLACENTA

- **Human placental lactogen (hPL) -** works cooperatively with estrogen and progesterone in preparing the breasts for lactation.
- **Relaxin.** Relaxin, to relax and become more flexible, which eases birth passage.

CONCLUSION

- An organ that makes hormones that are released directly into the blood
- They travel to tissues and organs all over the body.
- Endocrine glands help control many body functions, including growth and development, metabolism, and fertility.


Thank
you!