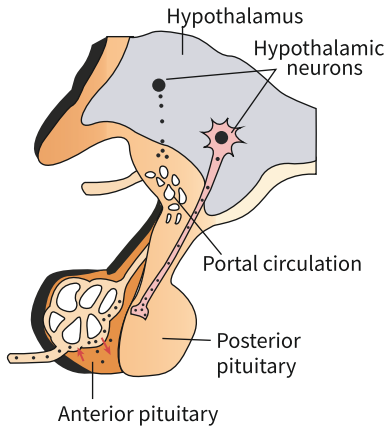


TYPE OF GLANDS

- ✦ **Exocrine**:- are ducted.
 - ✦ **Endocrine**:- Ductless glands
 - ✦ **Heterocrine**:- Partly exocrine and partly endocrine
- Endocrine-Secrete **Hormones** (Chemical messengers of the body)

19. CHEMICAL CONTROL AND COORDINATION



HYPOTHALAMUS

Releasing hormones

- ✦ Stimulates secretion of pituitary hormones.
- ✦ Eg., Gonadotrophin Releasing Hormone (GnRH) Stimulates release of gonadotrophins.

Inhibiting hormones

- ✦ Inhibit secretion of pituitary hormones.
- ✦ Eg., Somatostatin inhibits release of growth hormone from pituitary.

Oxytocin/ Vasopressin

- ✦ Transported axonally and stored in pituitary.

PITUITARY GLANDS

- ✦ Master glands, located in a bony cavity – sella tursica.
- ✦ Attached to the hypothalamus by a stalk.

HORMONE

TARGET

FSH and LH

Testes or ovaries

TSH

Thyroid

ACTH

Adrenal cortex

Prolactin

Mammary glands

MSH

Melanocytes

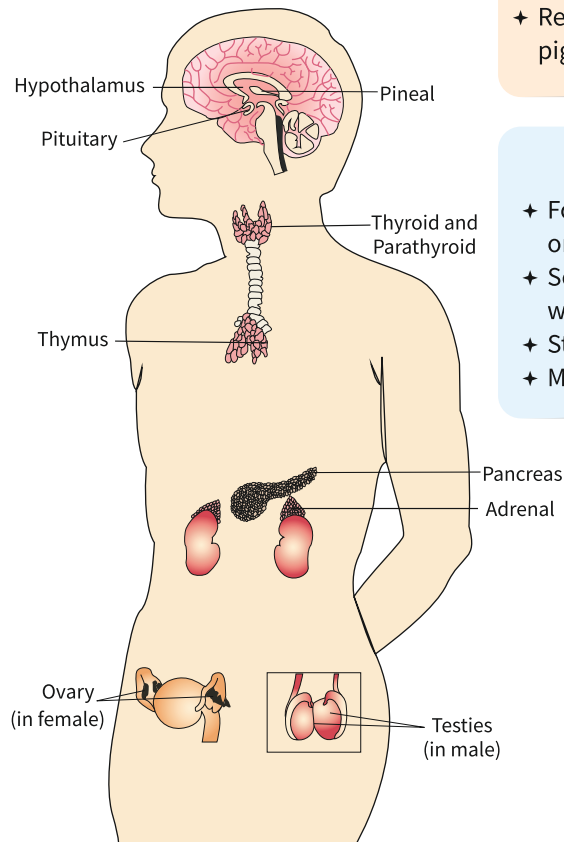
GH

Liver, bones, other tissues

THYMUS

- ✦ Located behind sternum
- ✦ Secretes thymosins (peptide hormone).
- ✦ Help in differentiation of T – lymphocytes that provides cell – mediated immunity.
- ✦ Promote antibody production for humoral immunity.

Endocrine Glands



PINEAL GLAND

- ✦ Located on dorsal side of brain.
- ✦ Secretes melatonin or sleep hormone.
- ✦ Regulates sleep and wake cycle, pigmentation, body temperature, etc.

PARATHYROID GLANDS

- ✦ Four parathyroid glands are present on back side of the thyroid glands.
- ✦ Secretes parathyroid hormone, which is Hypercalcemic hormone
- ✦ Stimulates bone resorption
- ✦ Maintains Calcium balance.

THYROID GLAND

Largest endocrine gland.

- ✦ Regulates BMR.
- ✦ Support RBC formation.
- ✦ Control metabolism of carbohydrate, protein & fats.

Hormones secreted

- ✦ Thyroxine (T_4)
- ✦ Triiodothyronine (T_3)
- ✦ Thyrocalcitonin (TCT)

Alpha - cells

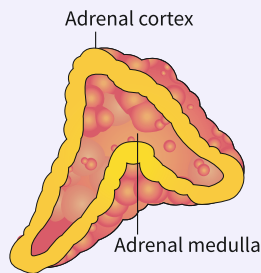
Beta - cells

PANCREAS

Glucagon

Insulin

- | | |
|-----------------------------------|------------------------------|
| ✦ Hyperglycemic factor. | ✦ Hypoglycemic factor. |
| ✦ Stimulate gluconeogenesis. | ✦ Stimulate glycogenesis. |
| ✦ Reduce Cellular glucose uptake. | ✦ Stimulates glucose uptake. |



ADRENAL GLAND

Adrenal Cortex

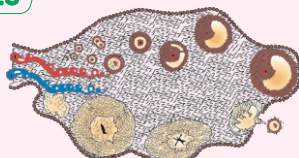
- ✦ The corticoids, involved in carbohydrate metabolism- glucocorticoids- Cortisol
- ✦ Corticoids- balance of water and electrolytes- mineralocorticoids- Aldosterone.
- ✦ Androgenic steroids - growth of axial hair, pubic hair and facial hair during puberty.

Adrenal Medulla

- ✦ Adrenaline
 - ✦ Noradrenaline
 - ✦ Catecholamines
- Emergency hormones or hormones of Fight or Flight.

OVARIES

- ✦ Female primary sex organs.
- ✦ Located in abdomen in pair.



HORMONES

Estrogen

- ✦ Regulates growth of female sex organ.
- ✦ Control female secondary sexual characters and behaviors.

Progesterone

- ✦ Pregnancy hormone.
- ✦ Acts on mammary glands for milk secretion.

TESTIS



- ✦ Male primary sex organ.
- ✦ Present in the scrotal Sac.

Hormones By Leydig Cells

Androgens (mainly testosterone)

- ✦ Regulate function of male accessory sex organs.
- ✦ Stimulates formation of spermatozoa.
- ✦ Stimulates male sexual behaviour.

MECHANISM OF HORMONE ACTION

Hormone binds to its specific receptor to form hormone – receptor Complex. On the basis of their chemical nature, hormones can be divided into groups :

- Peptide, polypeptide, protein hormones (e.g., insulin, glucagon, pituitary hormones, hypothalamic hormones, etc)
- Steroids (e.g., cortisol, testosterone, estradiol and progesterone)
- Iodothyronines (thyroid hormones)
- Amino-acid derivatives (e.g., epinephrine).

HORMONES SECRETED BY OTHER ORGANS OR TISSUE

Gastro intestinal tract

- ✦ Cholecystokinin
- ✦ Gastric Inhibitory Peptide
- ✦ Secretin
- ✦ Gastrin

Atrial Wall of heart

- ✦ Atrial Natriuretic factor (ANF)

Juxtaglomerular cells of Kidney

- ✦ Erythropoietin

Membrane – bound

Hormone – Receptors

Intracellular

