Synapse through the CNS → Gland / Nerve / Muscle

endocrine system's effects are more diffuse ⟶ distributed throughout the body

→ longer distance than the CNS, example: GH from anterior pituitary goes to all cells that are capable to proliferate

- Hypothalamus, 2 Pituitary glands (anterior + posterior), Thyroid, Parathyroid, suprarenal (adrenal), Pancreas, Liver, Testes + ovaries

(anterior + posterior) → completely independent

Pancreas, Liver, Testes + ovaries → not excusively endocrine

- Hormones are → Endocrine (to blood) circulating / Paracrine (adjacent cell) / Autocrine (same cell)

TSH released from A. pituitary then stimulates Thyroid gland that produces Thyroid Hormones

(Gets to the veins, then toward the heart to be pumped by arteries)

Thyroid gland → has receptors

- Regulation of the endocrine system is through → Concentration of receptors / Concentration of hormone

Type 1 DM ⟶ no insulin

Type 2 DM ⟶ receptors can't bind

* Blood is 55 % plasma, plasma is 90 % water

Water soluble hormones can move in blood without a carrier + binds to a cell surface receptor

Lipid soluble hormones move in blood by binding to a carrier (albumin) + binds to an intracellular receptor ⟶ delayed onset of action

- Tropic hormones (nourishing), control the secretion of other endocrine glands, like: TSH, ACTH

TSH: increasing causes enlargement of thyroid gland

ACTH: absence causes atrophy to adrenal gland that produces cortisol

- Negative feedback ⟶ final results are inhibitory "most of the regulation in the body"

- Positive feedback ⟶ " " " stimulatory

internal homeostasis (temperature, metabolism, nutrients, osmolarity, thirst, hunger, emotions)

- Hypothalamus (neural tissue) ⟶ connection between CNS + endocrine

→ controls anterior pituitary through neurons in the medial eminence [axon terminals]

above pituitary, hormones are released, reach through blood

5 types of cells + 6 Hormones are released from Anterior Pituitary

GHRH ← stimulated by
(somatostatin) GHIH ← inhibited by
Somatotrophs [GH]

TRH ← stimulated by
Thyrotrophes [TSH]

CRH ← stimulated by
Corticotrophes [ACTH]

GnRH ← stimulated by
Gonadotrophes [FSH, LH]

(dopamine) PIH ← inhibited by
Lactotrophes [Prolactin]

Tropic

-Hypothalamus Hypopheseal portal system

→ to preserve secretion + concentration, prevent degradation of hypothalamic hormones طريقه تنقل

TRH
ما يوصل الـ heart وبعدين يرجع،
فيش ألف كل ايكم