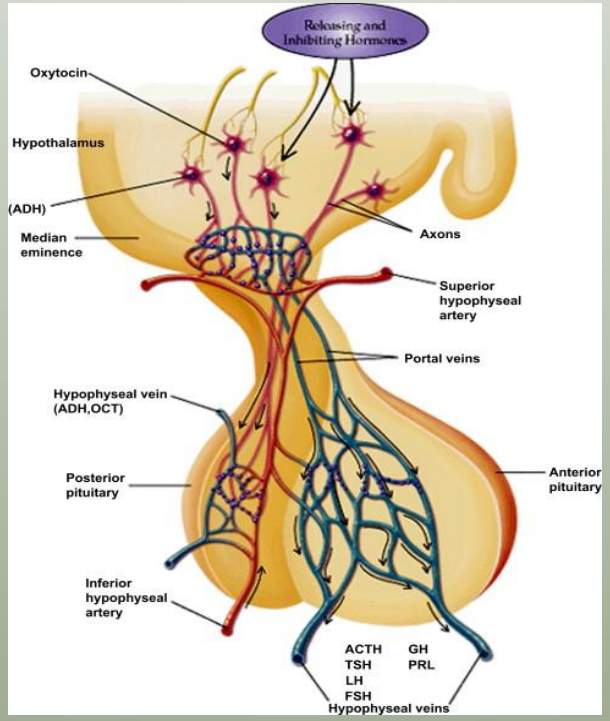
1. HYPOTHALAMIC PITUITARY RELATIONSHIP.



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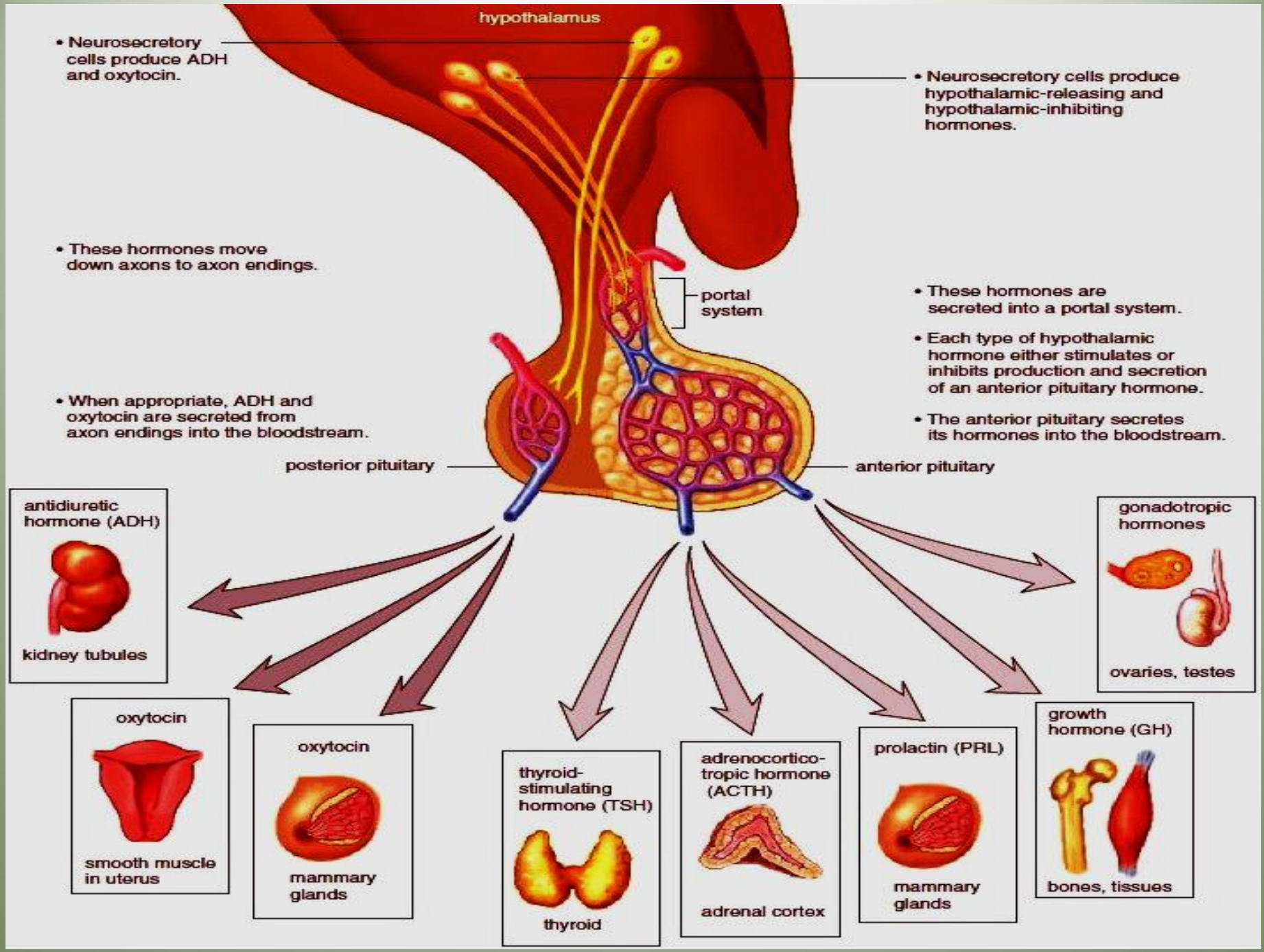
2023

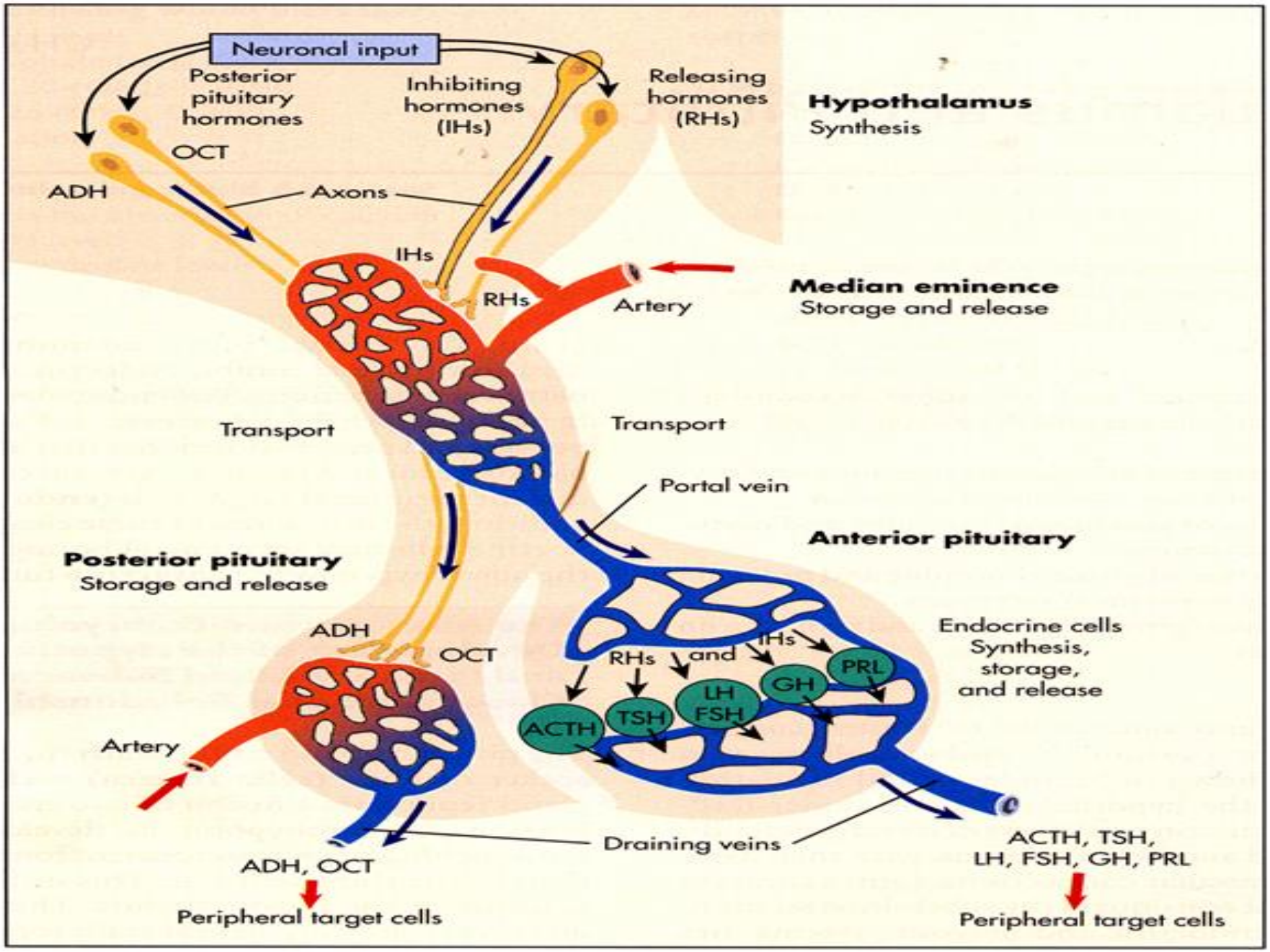

hypothalamus
• Neurosecretory cells produce ADH and oxytocin.
• Neurosecretory cells produce hypothalamic-releasing and hypothalamic-inhibiting hormones.
• These hormones move down axons to axon endings.
portal system
• These hormones are secreted into a portal system.
• Each type of hypothalamic hormone either stimulates or inhibits production and secretion of an anterior pituitary hormone.
• The anterior pituitary secretes its hormones into the bloodstream.
• When appropriate, ADH and oxytocin are secreted from axon endings into the bloodstream.
posterior pituitary
anterior pituitary
antidiuretic hormone (ADH)
kidney tubules
gonadotropic hormones
ovaries, testes
oxytocin
smooth muscle in uterus
oxytocin
mammary glands
thyroid-stimulating hormone (TSH)
thyroid
adrenocortico-tropic hormone (ACTH)
adrenal cortex
prolactin (PRL)
mammary glands
growth hormone (GH)
bones, tissues

Hypothalamo - Hypophyseal Portal System

The arteries which supply the median eminence (lower most portion of the hypothalamus) are divided in its substance to form like primary capillary plexus and then coalescing to form the hypothalamic- hypophyseal portal vessels which pass downward along the hypophyseal stalk to supply the anterior pituitary sinuses.

Secretion of Hypothalamic neurosecretory substances in the median Eminence :
The neurons originating in various parts of the hypo¬thalamus send fibres into the median eminence and tuber cinereum which secretes a small polypeptide hormones (hypothalamic hormones or neurosecretory substances) that are absorbed into the hypothalamic-hypophyseal portal capillaries to be carried to the adenohypophysis . They control the release of adenohypophyseal hormones . They are called releasing or inhibitory factors according to their function :

- Thyrotropin Releasing Factor (TRF) .
- Corticotropin Releasing Factor (CRF) .
- Somatotropin Releasing Factor (SBF) .
- Somatostatin (Growth hormone inhibiting factor) .
- Gonadotropin Releasing Factor (GRF) .
- Luteotropin (Prolactin) Inhibitory Factor (LIF) .
- Melanostatin (Melanocyte Stimulating hormone release Inhibitory Factor).


Neuronal input
Posterior pituitary hormones
Inhibiting hormones (IHs)
Releasing hormones (RHs)
Hypothalamus
Synthesis
OCT
ADH
Axons
IHs
RHs
Artery
Median eminence
Storage and release
Transport
Transport
Portal vein
Anterior pituitary
Posterior pituitary
Storage and release
ADH
OCT
Endocrine cells
Synthesis, storage, and release
IHs
RHs
and
PRL
GH
LH
FSH
TSH
ACTH
Artery
Draining veins
ADH, OCT
ACTH, TSH, LH, FSH, GH, PRL
Peripheral target cells
Peripheral target cells

Somatostatin hormone

- It is a growth hormone release inhibiting factor.

It has been located in tissues other than the hypothalamus e.g. the pancreatic islets.

-When given parenterally it blocks the effect of TRH (thyrotropin releasing hormone) and suppresses the release of Growth hormone , prolactin , insulin and glucagon hormones .

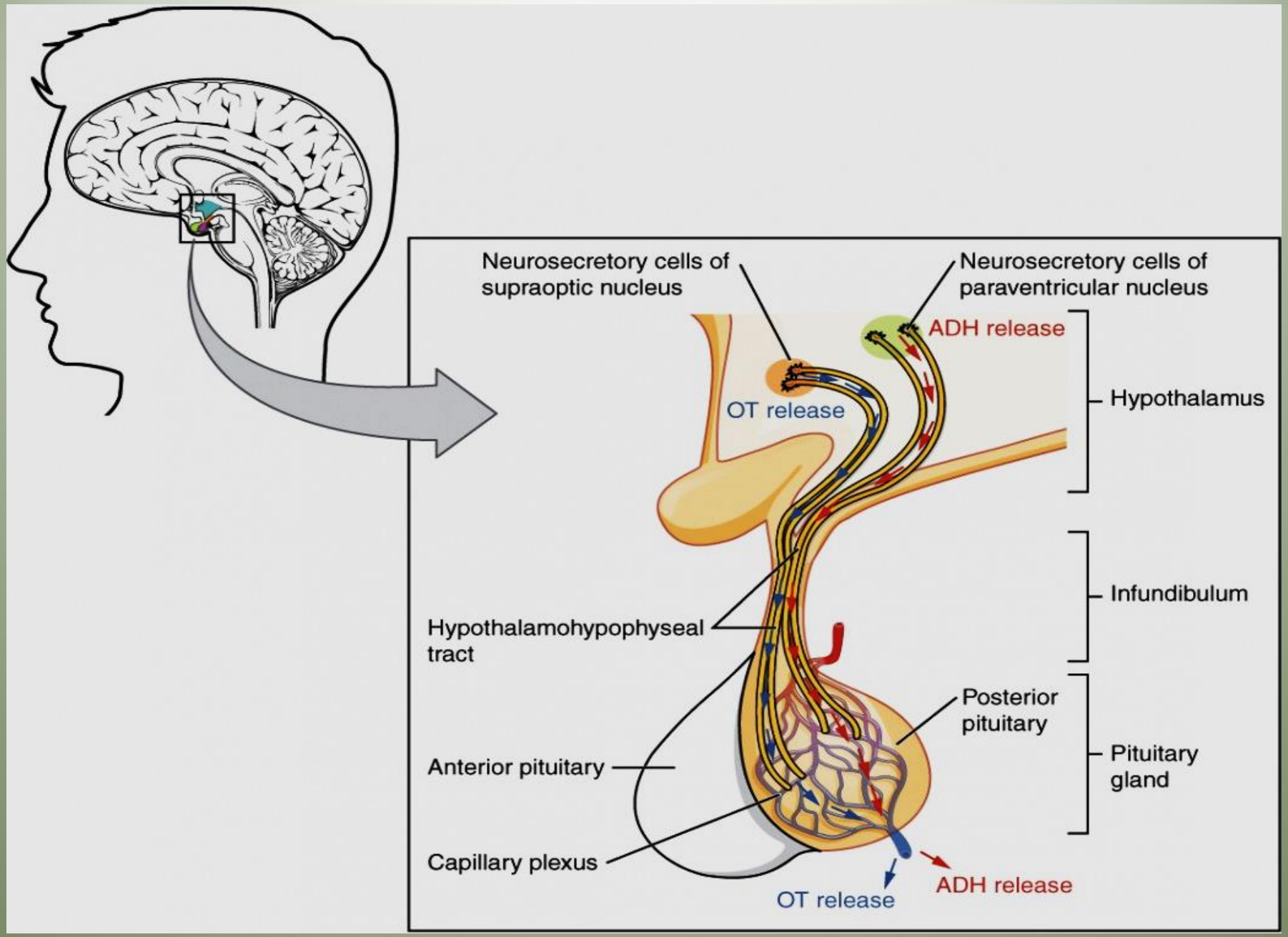
-**The posterior pituitary** is actually an extension of the neurons of the para-ventricular and supra-optic nuclei of the hypothalamus.

The cell bodies of these regions rest in the hypothalamus, but their axons descend as the **hypothalamic–hypophyseal tract** within the infundibulum, and end in axon terminals that comprise the posterior pituitary .

The posterior pituitary is highlighted. Two nuclei in the hypothalamus contain neurosecretory cells that release different hormones. The neurosecretory cells of the **para-ventricular** nucleus release **oxytocin** (OT) while the neurosecretory cells of the **supra-optic** nucleus release **anti-diuretic hormone** (ADH). The neurosecretory cells stretch down the infundibulum into the posterior pituitary. The tube-like extensions of the neurosecretory cells within the infundibulum are labeled the hypothalamo-hypophyseal tracts. These tracts connect with a web-like network of blood vessels in the posterior pituitary called the **capillary plexus**. From the capillary plexus, the posterior pituitary secretes the OT or ADH into a single vein that exits the pituitary.

Neurosecretory cells in the **hypothalamus** release oxytocin (OT) or ADH into the posterior lobe of the pituitary gland. These hormones are stored or released into the blood via the capillary plexus.

The posterior pituitary gland does not produce hormones, but rather **stores** and **secretes** hormones produced by the hypothalamus. The paraventricular nuclei produce the hormone oxytocin, whereas the supra-optic nuclei produce ADH. These hormones travel along the axons into storage sites in the axon terminals of the posterior pituitary. In response to signals from the same hypothalamic neurons, the hormones are released from the axon terminals into the bloodstream.


Neurosecretory cells of supraoptic nucleus
Neurosecretory cells of paraventricular nucleus
ADH release
OT release
Hypothalamus
Infundibulum
Hypothalamohypophyseal tract
Posterior pituitary
Anterior pituitary
Pituitary gland
Capillary plexus
ADH release
OT release

Thank You