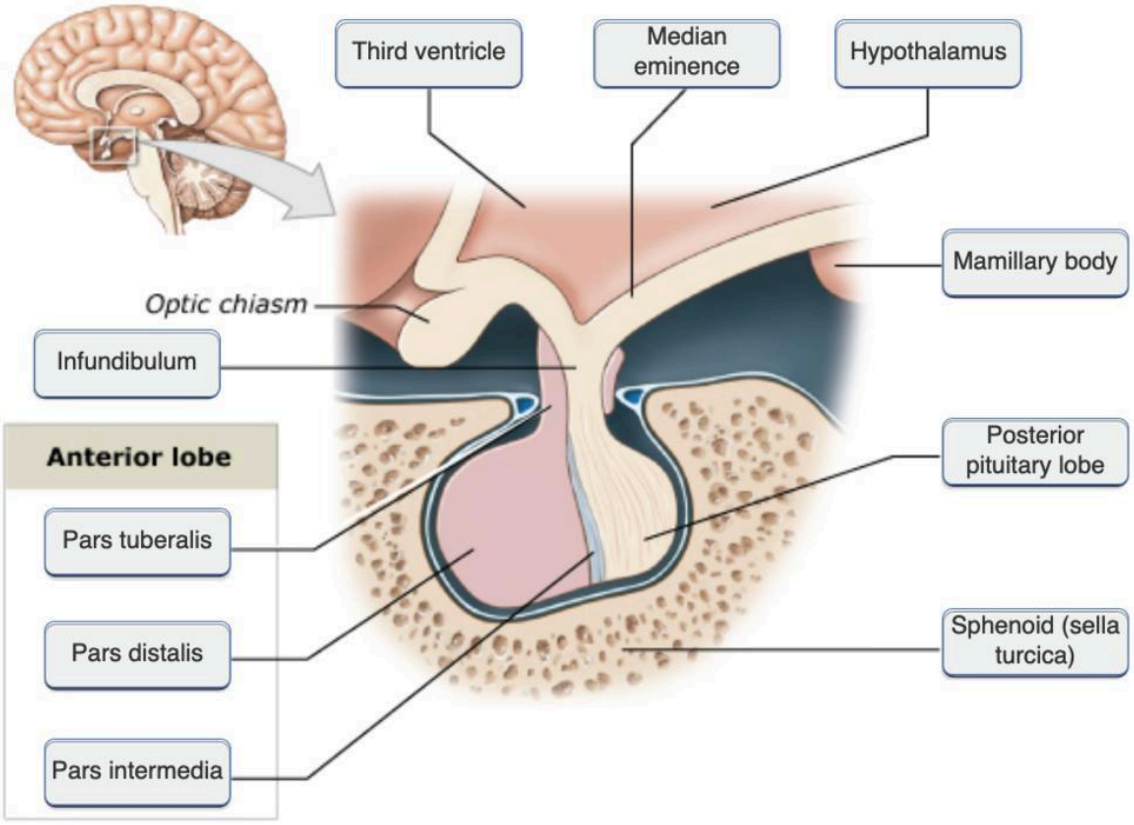
Pituitary Gland — NEET UG Biology Notes



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1. Location and structure

- The pituitary gland (hypophysis) is a small, pea-sized endocrine gland located at the base of the brain.
- It lies in the sella turcica of the sphenoid bone.
- It is connected to the hypothalamus by the infundibulum (pituitary stalk).
- The hypothalamus controls pituitary activity through releasing and inhibiting hormones and neural connections.

The pituitary is traditionally divided into two main parts:

1. Anterior pituitary (adenohypophysis)
2. Posterior pituitary (neurohypophysis)

The intermediate lobe is small in humans.

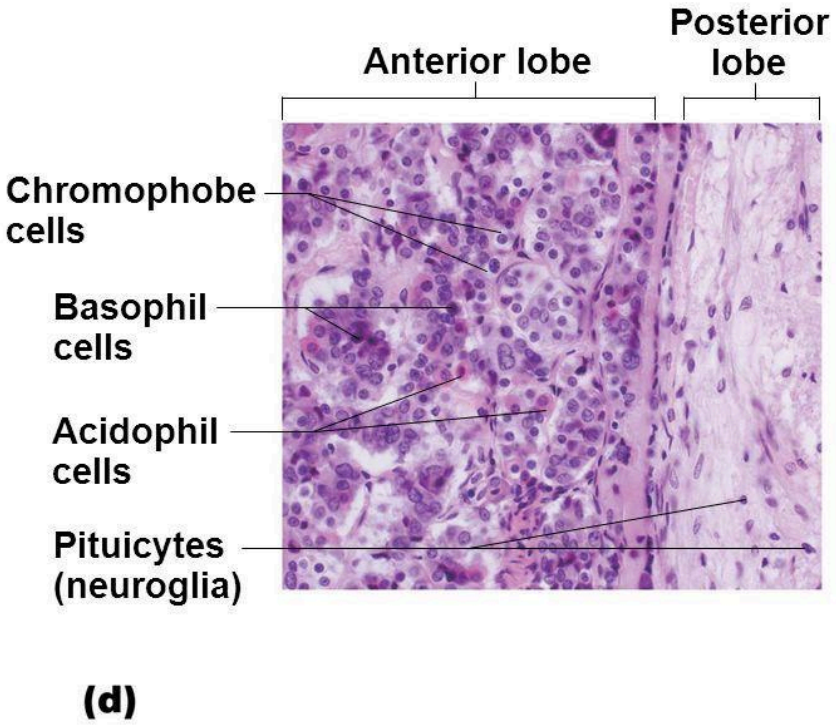
2. Hormones of the pituitary gland

Hormone	Main function
Growth hormone (GH)	Promotes body growth, especially bones and muscles
Thyroid-stimulating hormone (TSH)	Stimulates thyroid hormone secretion
Adrenocorticotropic hormone (ACTH)	Stimulates the adrenal cortex
Follicle-stimulating hormone (FSH)	Promotes ovarian follicle development and spermatogenesis
Luteinising hormone (LH)	Triggers ovulation and supports testosterone secretion
Prolactin (PRL)	Stimulates milk production
Antidiuretic hormone (ADH)	Increases water reabsorption by the kidneys
Oxytocin	Causes uterine contractions and milk ejection

Important: ADH and oxytocin are synthesised in the hypothalamus and stored and released by the posterior pituitary.

3. Anterior versus posterior pituitary

Figure 17.3d The pituitary gland (hypophysis).

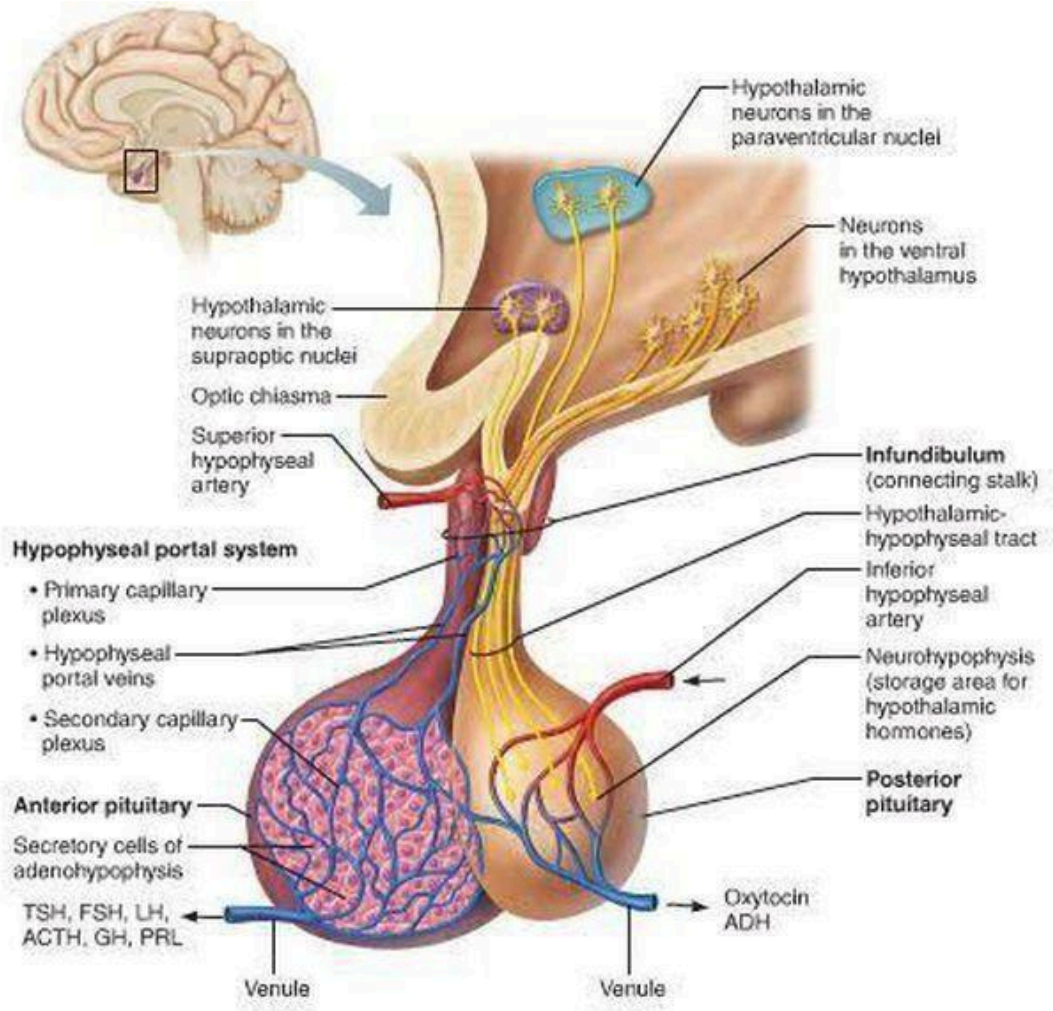


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Anterior pituitary

Glandular tissue

Secretes GH, TSH, ACTH, FSH, LH and prolactin. Its secretion is regulated mainly by hypothalamic hormones delivered through the hypophyseal portal circulation.



Posterior pituitary

Neural tissue

Stores and releases ADH and oxytocin made by hypothalamic neurons.

4. Disorders associated with pituitary hormones

Disorder	Cause or effect
Pituitary dwarfism	GH deficiency during childhood
Gigantism	Excess GH during childhood, before closure of growth plates

Acromegaly	Excess GH in adults, after growth plates have closed
Diabetes insipidus	ADH deficiency or renal resistance to ADH, causing excessive dilute urine
Hyperprolactinaemia	Excess prolactin, potentially causing milk secretion and reproductive disturbances

5. Regulation of pituitary secretion

The hypothalamus regulates pituitary function. Hormones produced by target glands also provide negative feedback.

Example:

Hypothalamus → TRH → Anterior pituitary → TSH → Thyroid gland → T_3 and T_4

When thyroid hormone levels rise, they inhibit TRH and TSH secretion, helping maintain hormonal balance.

6. NEET UG — High-yield facts

- Master gland: Pituitary gland, although it is controlled by the hypothalamus.
- GH: Growth of bones and muscles.
- TSH: Acts on the thyroid gland.
- ACTH: Acts on the adrenal cortex.
- FSH and LH: Gonadotropins.
- Prolactin: Milk production.
- Oxytocin: Milk ejection and uterine contraction.
- ADH: Water conservation by kidneys.
- Gigantism vs acromegaly: Both are associated with GH excess; the key difference is whether growth plates are open or closed.

NEET memory aid: Anterior pituitary — FLAT PiG: FSH, LH, ACTH, TSH, Prolactin, Growth hormone. Posterior pituitary — ADH and Oxytocin.