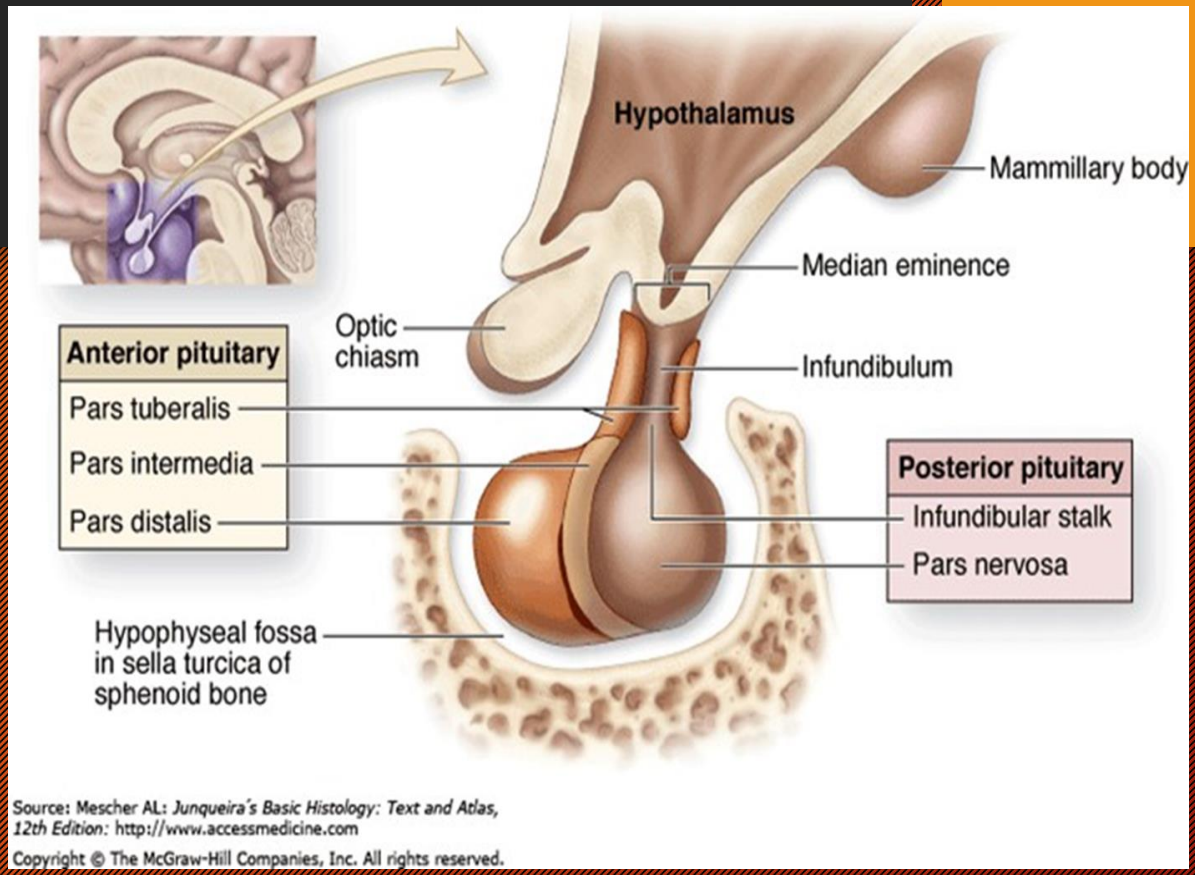
Histological Structure of the Pituitary gland



Source: Mescher AL: *Junqueira's Basic Histology: Text and Atlas, 12th Edition:* http://www.accessmedicine.com

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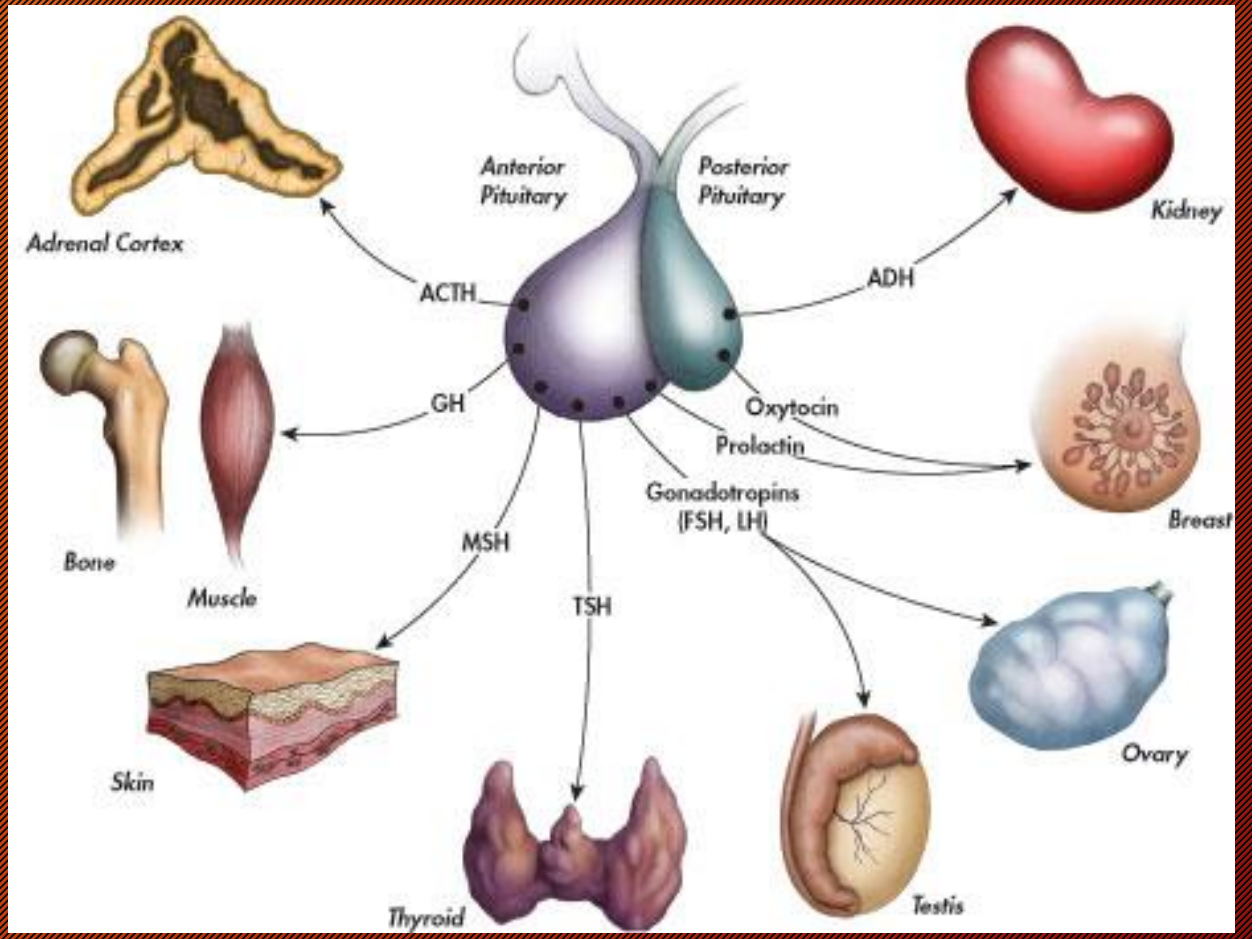
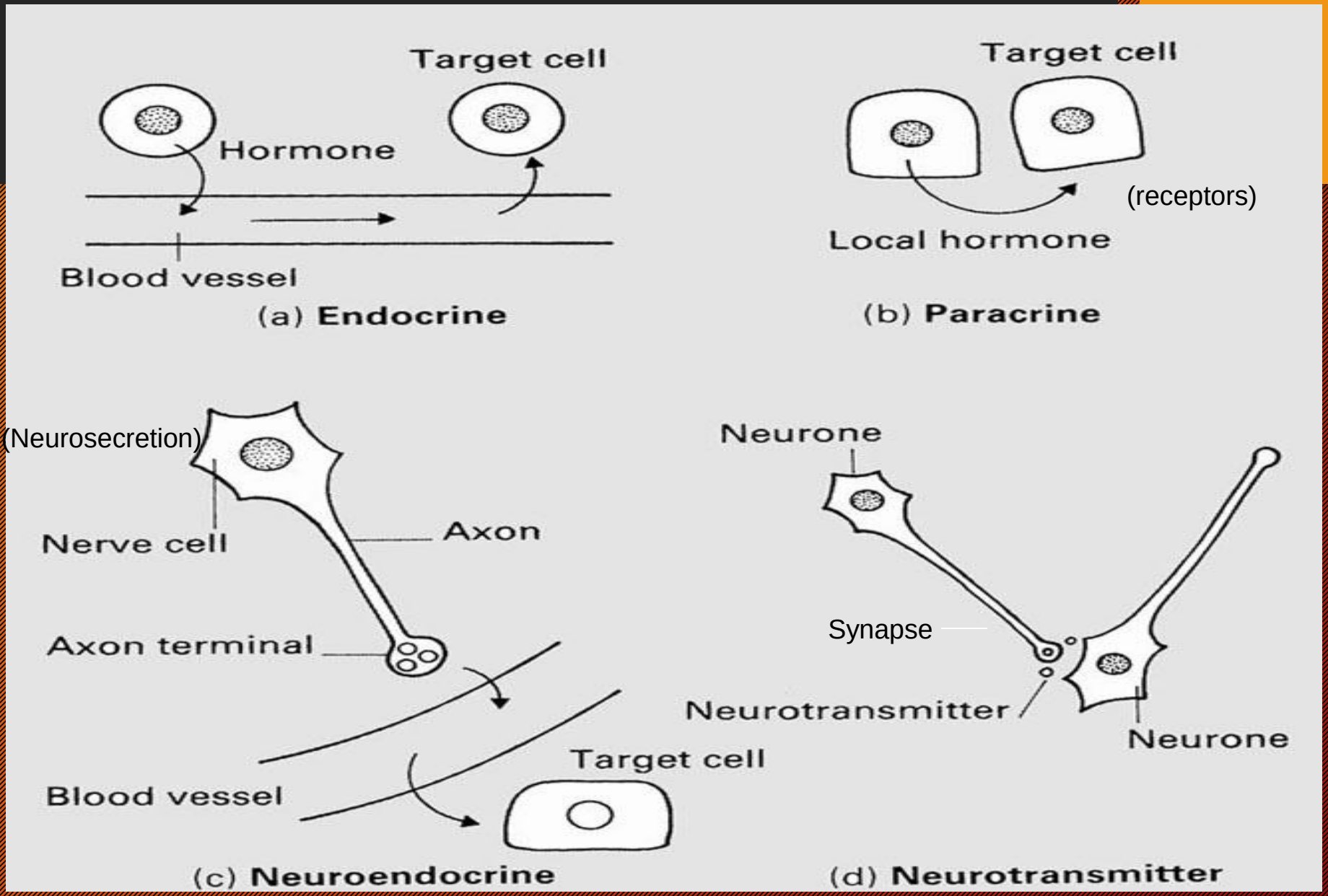
Hormones…

Hormones regulate growth, development, mood, tissue function, metabolism, and sexual function.

Hyposecretion or hypersecretion of any hormone can be harmful to the body. Controlling the production of hormones can treat many hormonal disorders in the body.



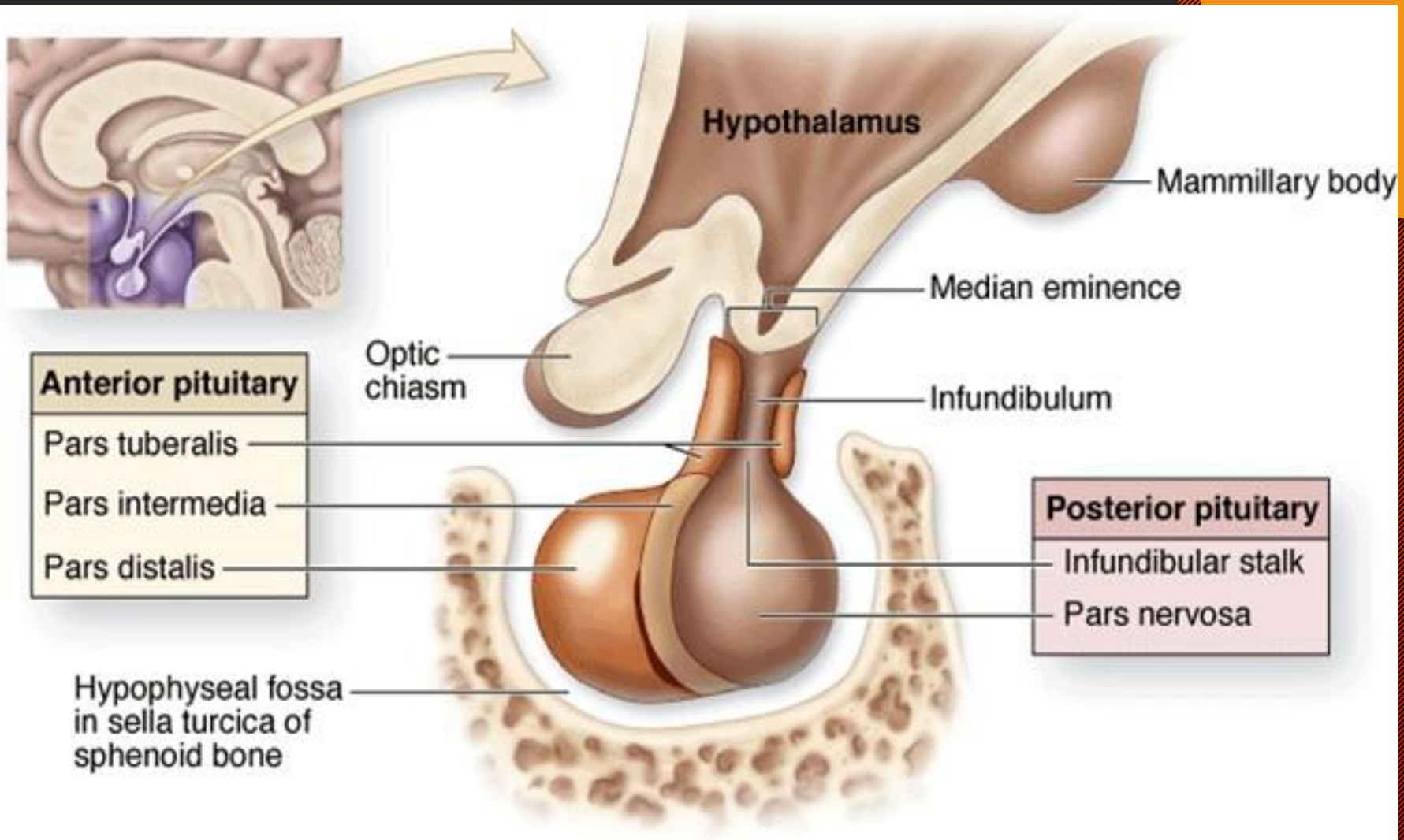
Comparison of endocrine, paracrine, neurosecretory and neurotransmission.



- Pituitary Gland (Hypophysis)
- The pituitary (also known as the hypophysis) is found at the base of the brain, about 1cm in diameter, lying beneath the third ventricle in a bony cavity .
- The pituitary gland produces hormones that regulate growth, metabolism, and reproduction. Composed 2 part:
- 1-The posterior part (Neurohypophysis) of the pituitary has its embryological origins in nervous tissue.
- 2-The anterior part (Adenohypophysis) is derived from an upgrowth from the oral ectoderm of the primitive oral cavity called Rathke's pouch.

- pars intermedia, which also has its embryological origin in Rathke's pouch.
- The pars intermedia is poorly developed in humans. The glandular epithelial part of the pituitary is also called the adenohypophysis - (anterior pituitary, pars intermedia and pars tuberalis).
- The neurohypophysis, the part of the hypophysis that develops from nerve tissue, consists of a large portion, the pars nervosa, and the smaller infundibulum or neural stalk.

- **Pituitary (hypophysis)**



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Pituitary, low power

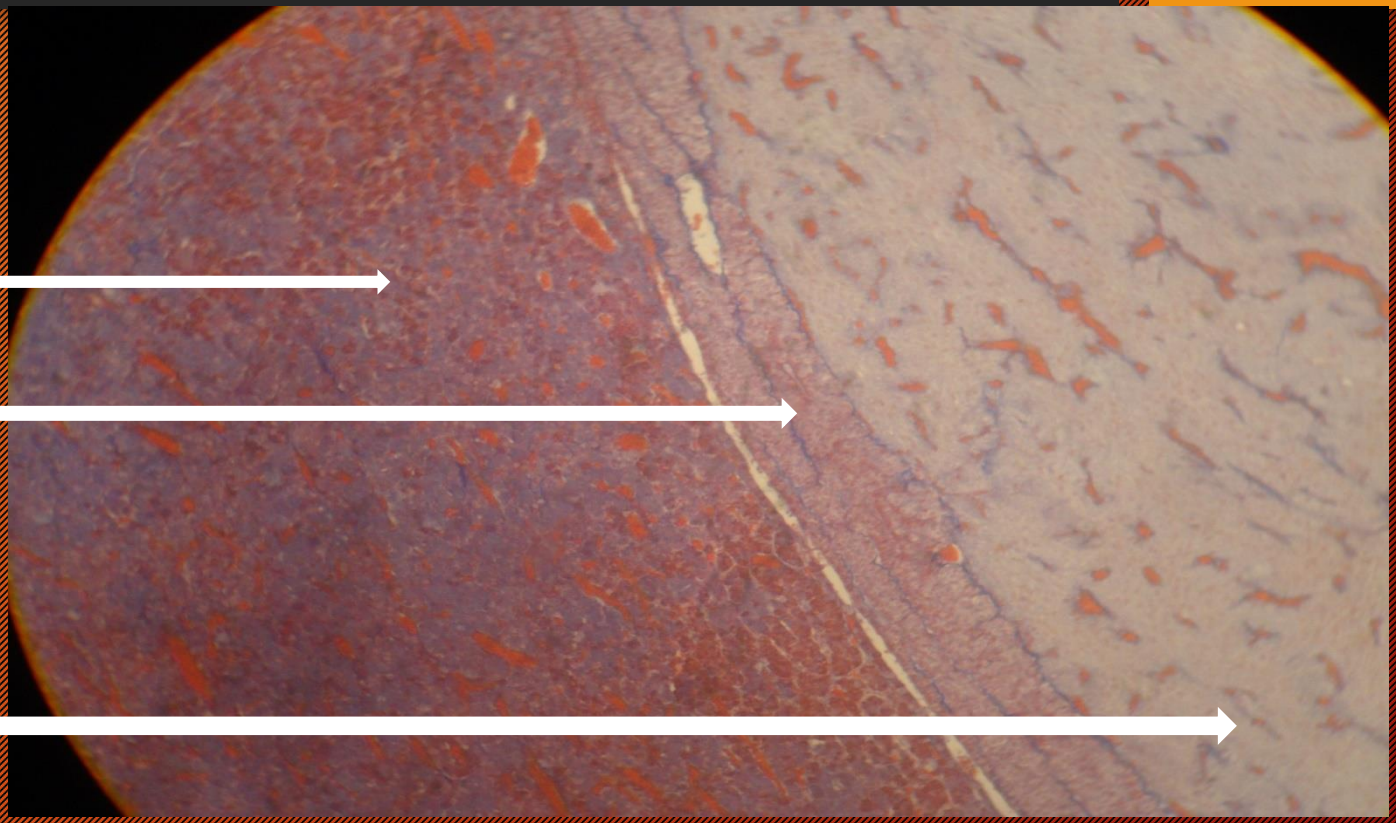
Hypophysis (Pituitary gland)

1- Pars distalis or pars anterior

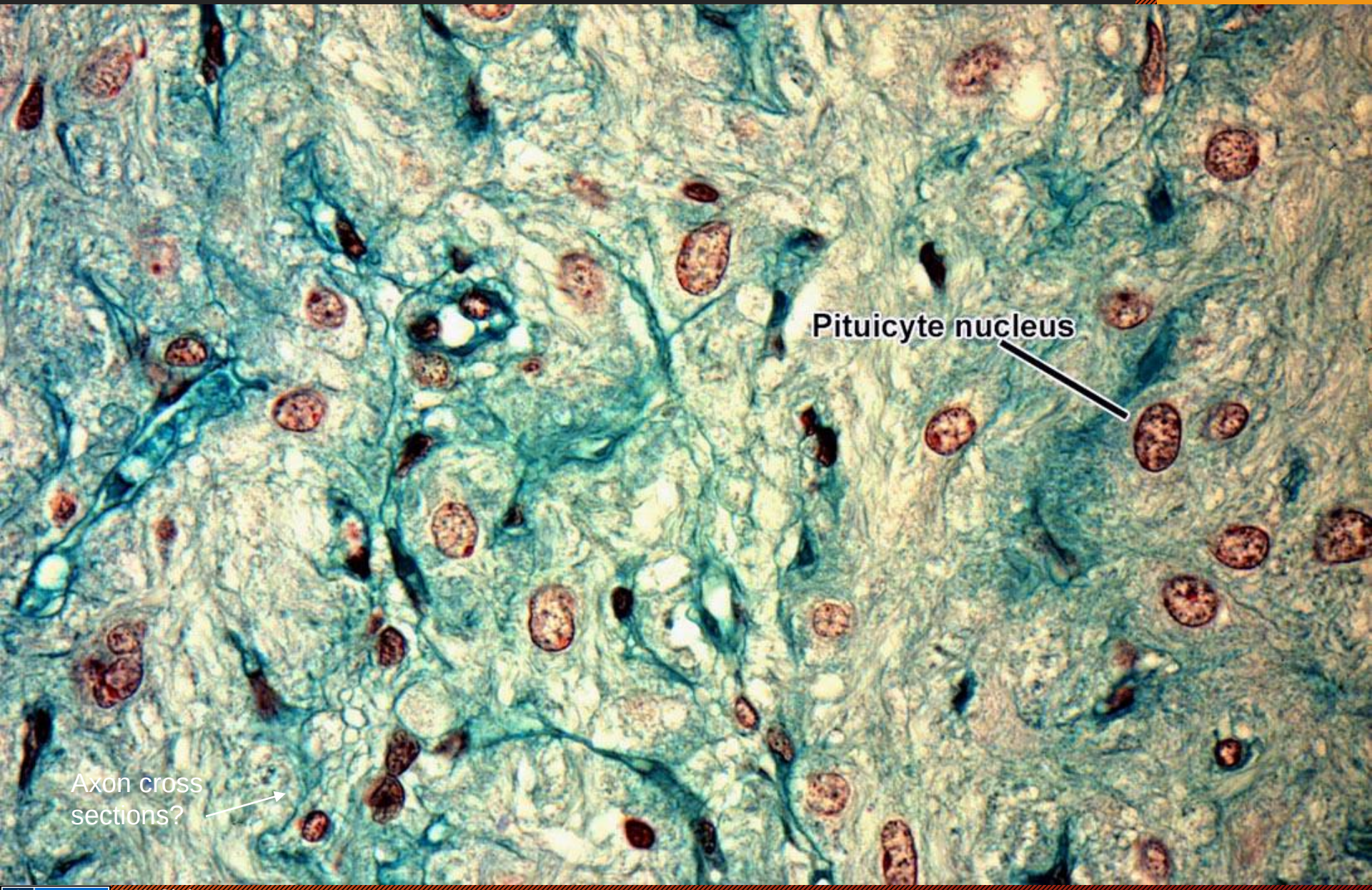
Pars intermedia lies between distalis and nervosa

it are vesicles filled with colloid

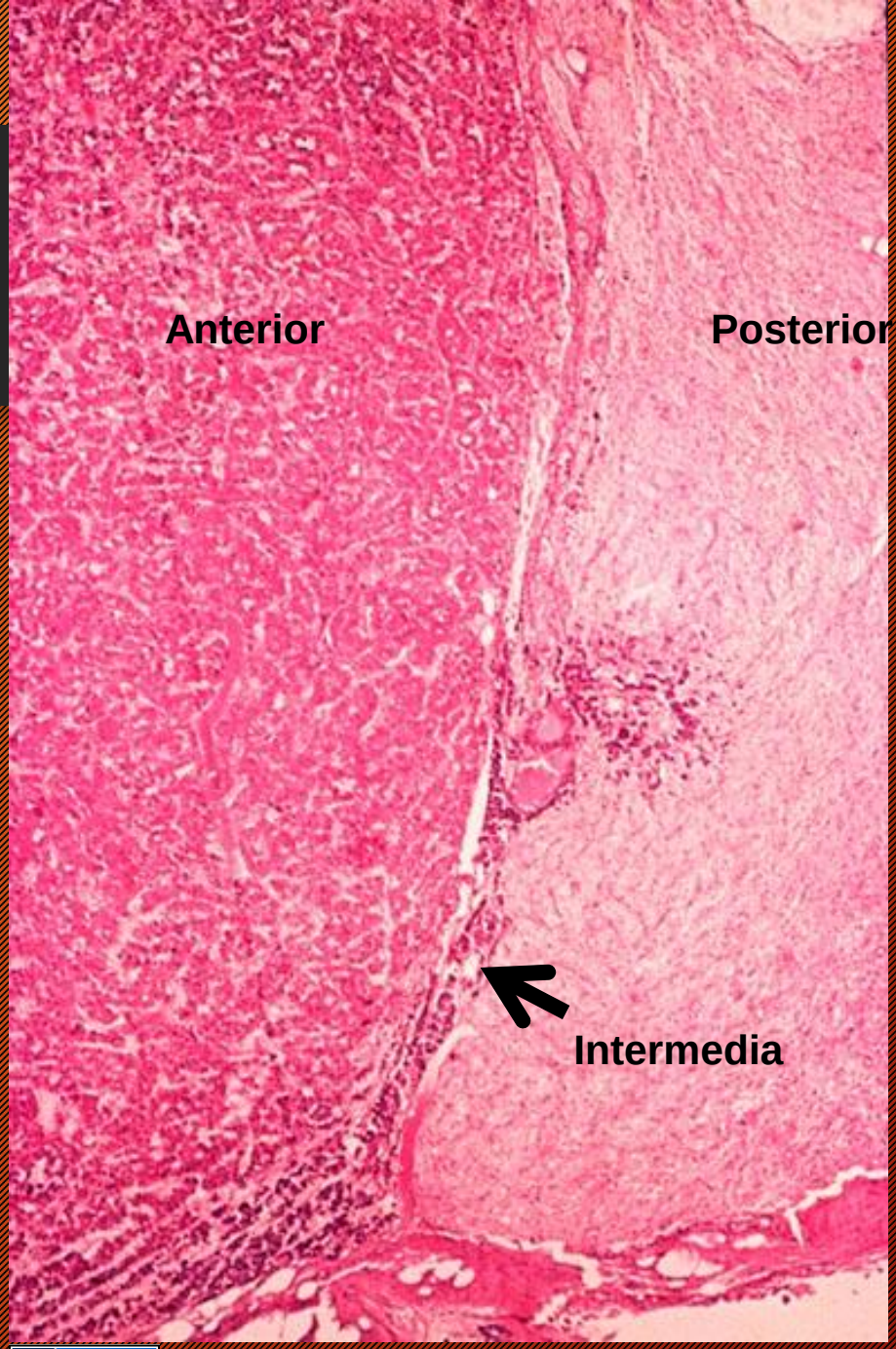
Pars nervosa



Posterior pituitary



Pars intermedia, between anterior and posterior pituitary
it are vesicles filled with colloid

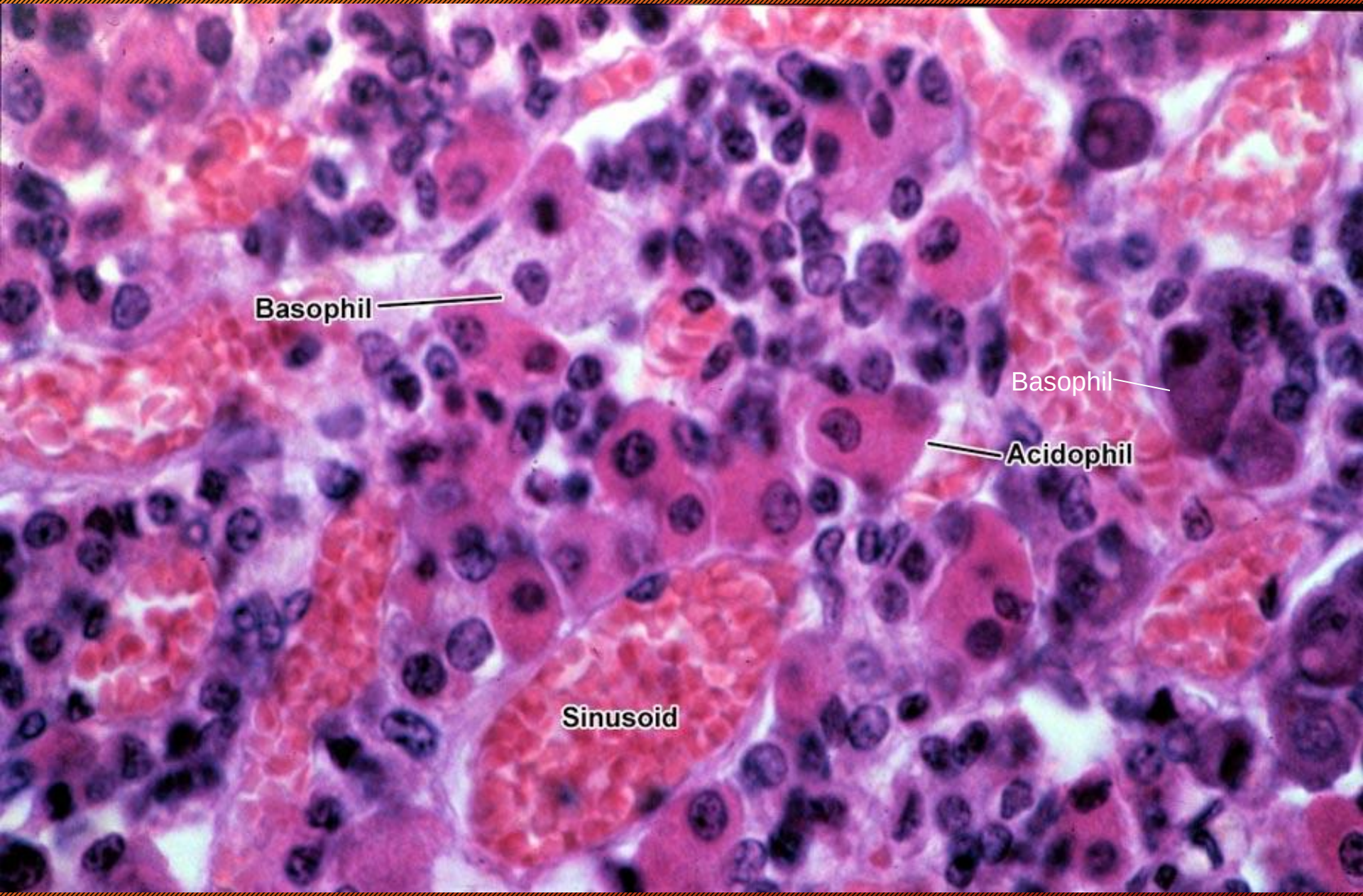


Humio Mizoguti, Kobe Univ Sch Med, slide 516

- A. Adenohypophysis – subdivided into:
  - Pars distalis (Anterior lobe)
  - Pars tuberalis (Cranial part)
  - Pars intermedia (Intermediate lobe)
- B. Neurohypophysis – subdivided into:
  - Pars nervosa (Posterior lobe)
  - Stalk (Infundibulum)

- Pars distalis (Ant. Lobe): composed of two types of cells:
- a) Chromophobes (50%) Their function is unknown,
- b) Chromophils – subdivided into basophils and acidophils called according to their affinity for basic and acid dyes,
- i. Acidophils (40%)
- ii. Basophils (10%)

Anterior pituitary, LM, H&E stain



- Acidophils are subdivided into :

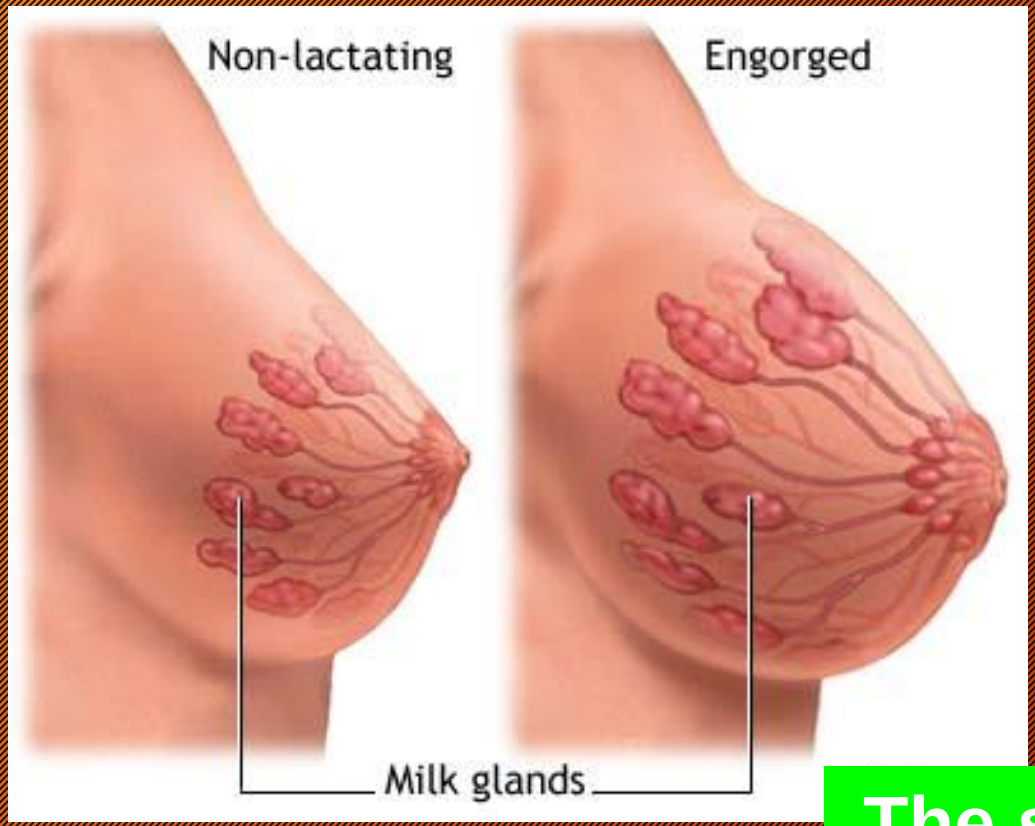
- 1. Somatotrophic cell: - secretion Growth hormone (GH) .
- (childhood and adolescent leads to gigantism,
- in adults, leads to acromegaly.
- The reduction in GH in childhood leads to dwarfism.


GIANTS AND GIRLS

Secretions from the anterior pituitary gland…

Acidophils

2. Mammotrophic cell: for prolactin secretion.



Prolactin (PRL): stimulates the development and growth of the mammary glands and milk production during pregnancy.

The sucking motion of the baby stimulates prolactin secretion.

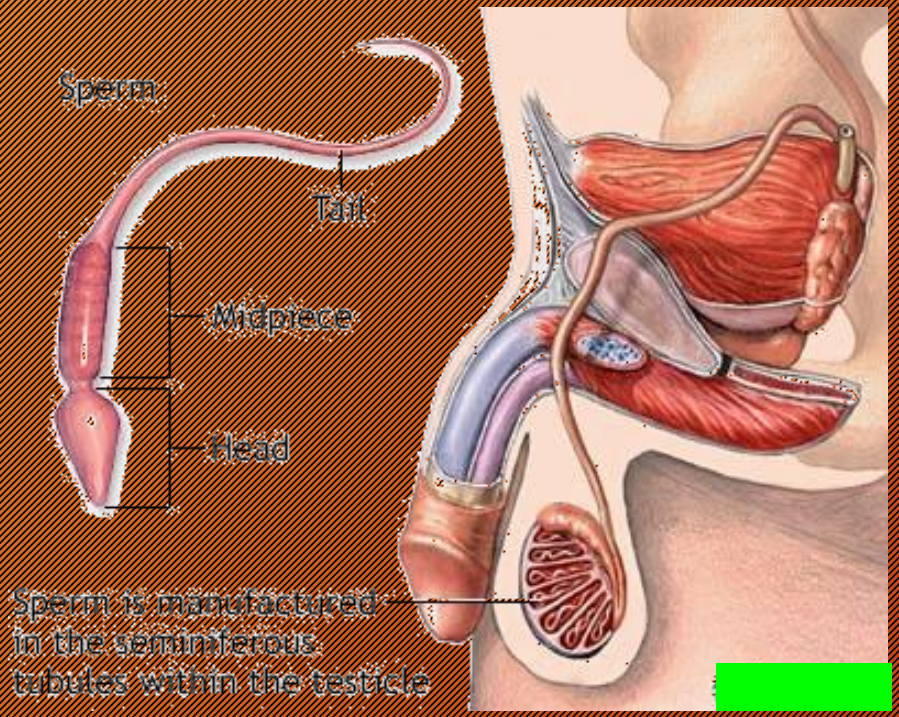
- Basophils – are subdivided into:

- 1) Gonadotrophic cell: -▫ Follicular – stimulating hormone (FSH) -▫ Leuteinizing hormone (LH)

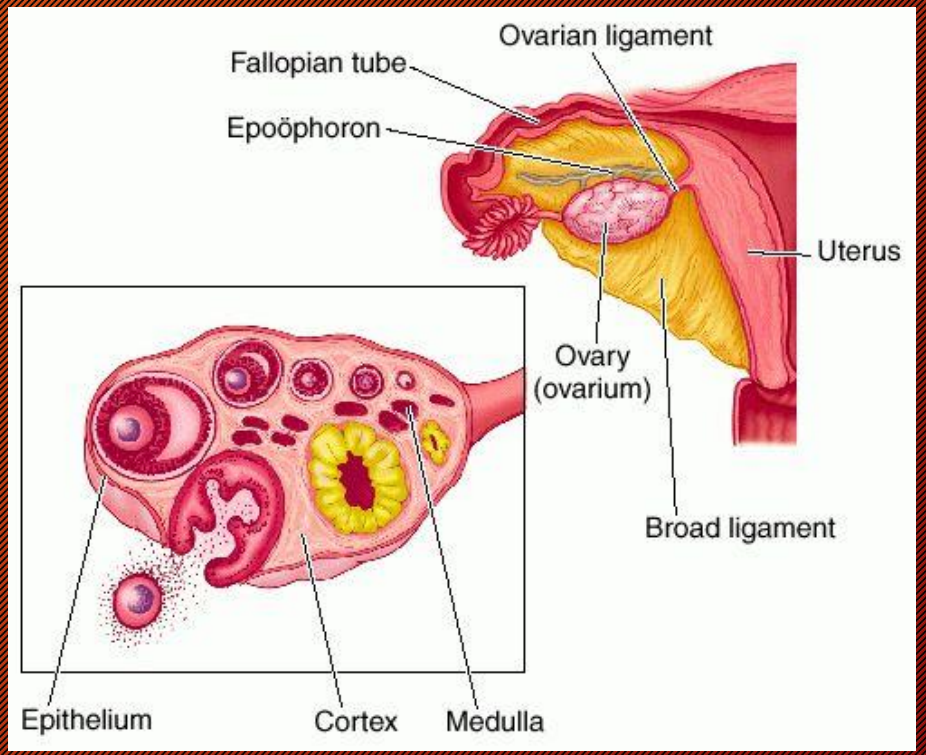
- 2) Thyrotrophic cell: (TSH) hormone

- 3) Corticotrophic cell: - (ACTH) hormone

Secretions from the anterior pituitary gland…

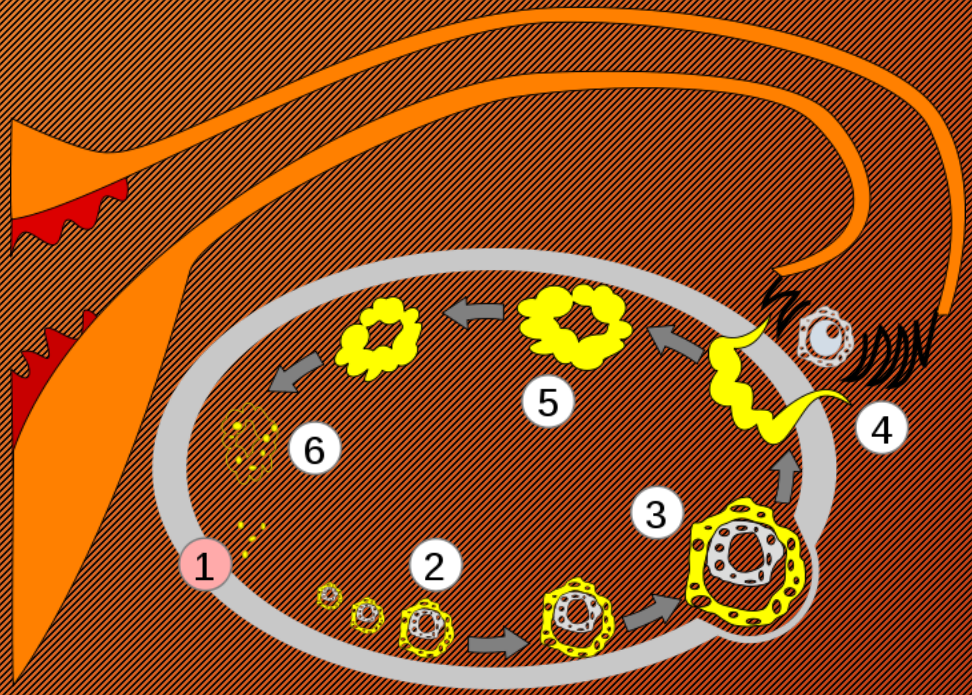


Follicle-Stimulating Hormone (FSH): is a gonadotropic hormone.



It stimulates the growth ovarian follicles in the female and the production of sperm in the male.

Secretions from the anterior pituitary gland...



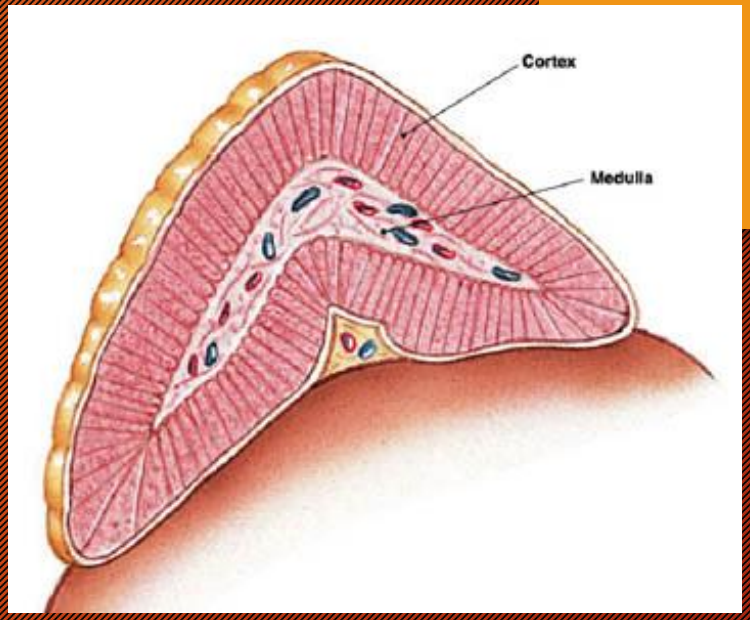
Luteinizing Hormone (LH): is a gonadotropic hormone stimulating the development of corpus luteum in the female ovarian follicles and the production of testosterone in the male.

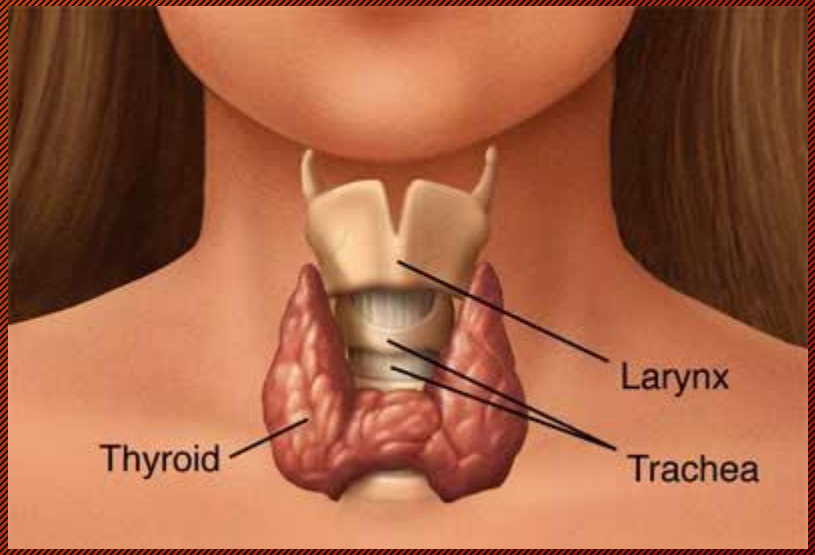
The yellow corpus luteum remains after ovulation; it produces estrogen and progesterone.

Secretions from the anterior pituitary gland…

Thyroid-Stimulating Hormone (TSH): essential for the growth and development of the thyroid gland.

Adrenocorticotropin (ACTH): essential for the growth of the adrenal cortex.





Secretions from the pituitary gland…

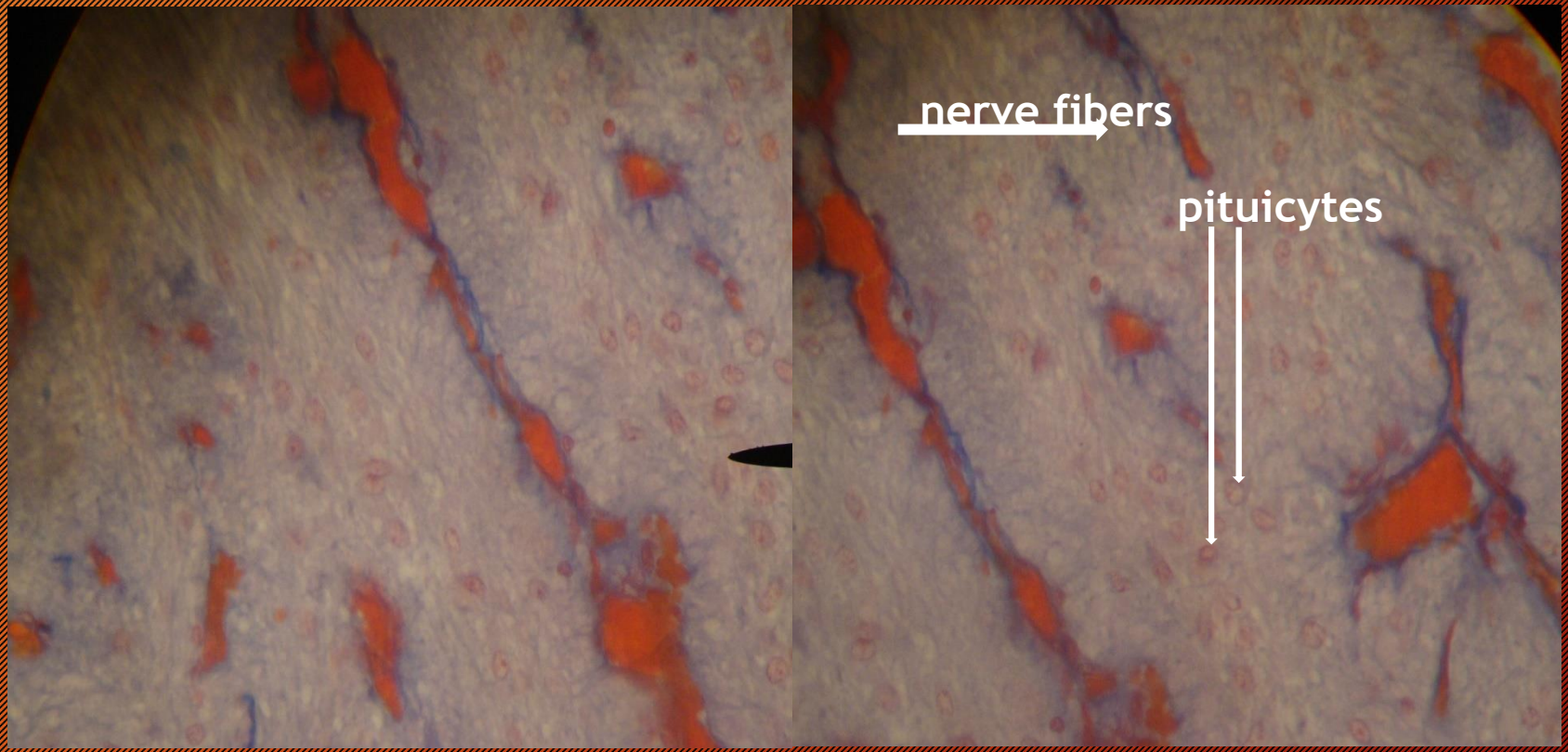
Melanocyte-stimulating hormone (MSH): regulates skin pigmentation and promotes the deposit of melanine in the skin after exposure to sunlight

Pars nervosa

The pars nervosa is the second largest of the four divisions, together with the pars intermedia it forms the posterior lobe of the hypophysis.

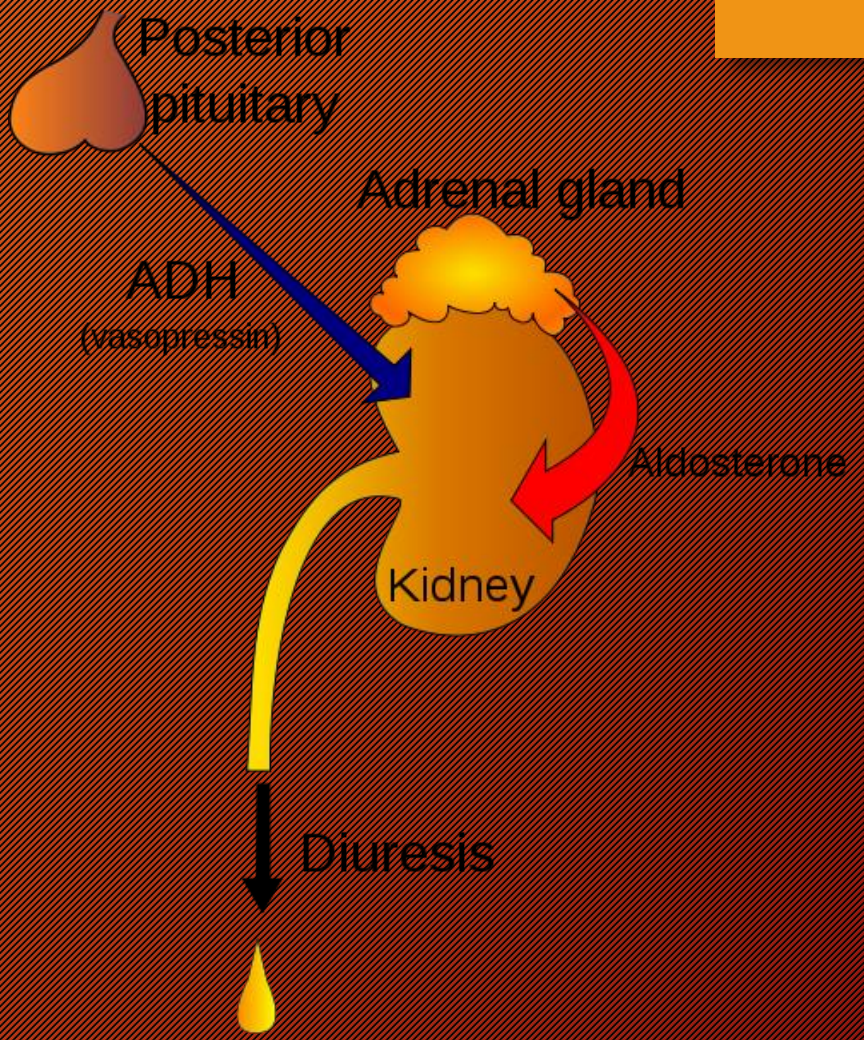
Contains pituicytes and nerve fibers.

pituicytes



Secretions from the posterior lobe of the pituitary gland…

Antidiuretic Hormone (ADH): stimulates the reabsorption of water by the renal tubules.



Secretions from the posterior lobe Pars nervosa of the pituitary gland…

Oxytocin: stimulates the uterus to contract during labor, delivery, and parturition. A synthetic version of this hormone, used to induce labor, is called Pitocin. It also stimulates the mammary glands to release milk.

Thank you

Reference:

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