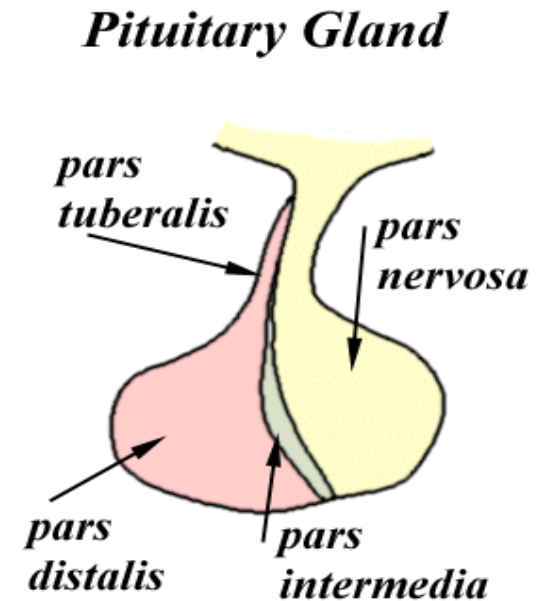


PAP – histology of pituitary

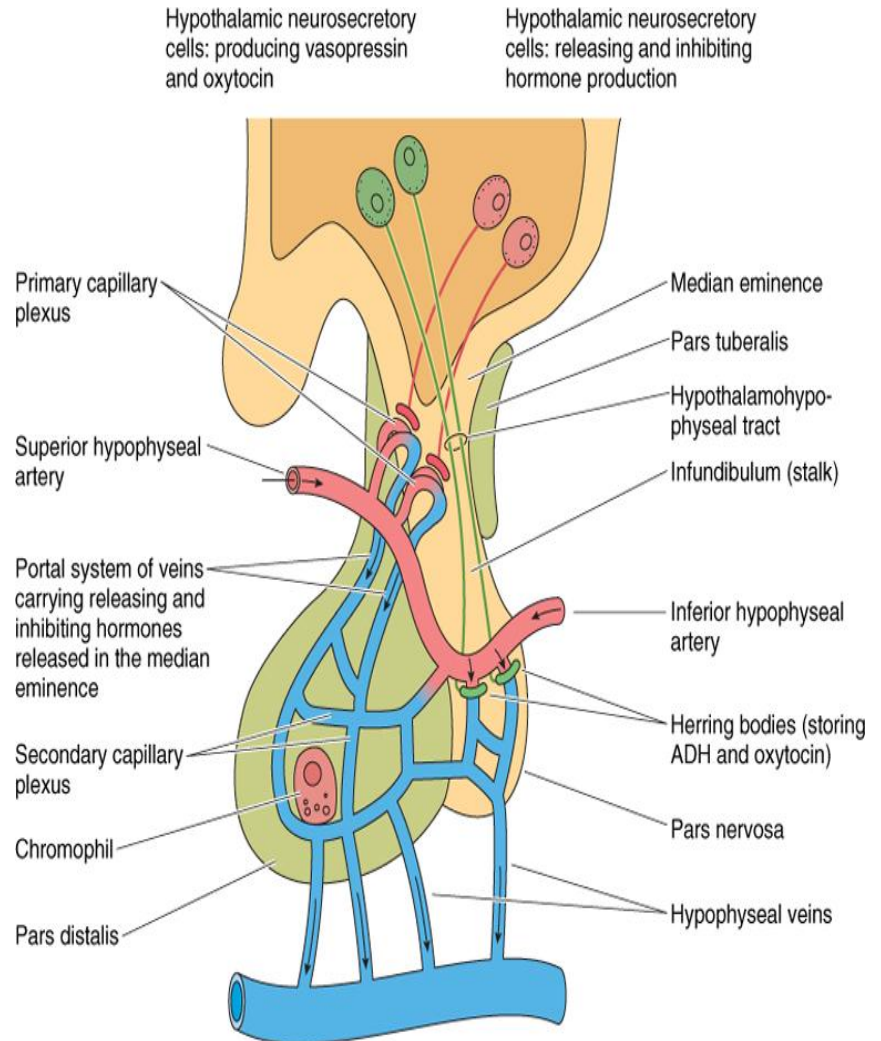
Ismail A. Raslan

- Adenohypophysis (anterior pituitary)
 - Pars distalis (pars anterior)
 - Pars intermedia
 - Pars tuberalis
- Neurohypophysis (posterior pituitary)
 - Median eminence
 - Infundibulum
 - Pars nervosa



Blood supply

- From internal carotid artery arises
 - Superior hypophyseal artery
 - Inferior hypophyseal artery



Blood supply

- Superior hypophyseal artery
 - The **superior hypophyseal arteries** supply the pars tuberalis and the infundibulum. (book info)
 - median eminence and neural stalk (slides)
 - They also form an extensive capillary network, the **primary capillary plexus**, in the median eminence
- Inferior hypophyseal artery
 - Mainly to pars nervosa (posterior lobe)
 - They do not participate in hypophyseal portal circulation

Portal system

Function : carries neurohormones from median eminence to adenohypophysis

- Superior hypophyseal artery gives the extensive primary capillary plexus.
 - locations : median eminence
- The plexus then is drained by pituitary portal veins.
- These veins form the secondary capillary plexus.
 - Location : adenohypophysis or (Pars distalis)
 - Note : The capillaries of both plexuses are fenestrated.

Extra reading material for understanding

- **Hypothalamic neurosecretory hormones**, manufactured in the hypothalamus and stored in the median eminence, enter the primary capillary plexus and are drained by the hypophyseal portal veins, which course through the infundibulum and connect to the secondary capillary plexus in the anterior lobe. Here the neurosecretory hormones leave the blood to stimulate or inhibit the parenchymal cells. Thus, the hypophyseal portal system is the vascular supply system that is used for hormonal regulation of the pars distalis by the hypothalamus.

First : Neurohypophysis (posterior lobe)

- Note : develops from a downgrowth of the hypothalamus (neural tissue)
- Median eminence
- Infundibulum
- Pars nervosa
 - Unmyelinated axons
 - Fenestrated blood capillaries
 - HERRING BODIES
 - Pitucytes

Contents of Pars nervosa

1. Unmyelinated axons

- I. hypothalamohypophyseal tract end in the pars nervosa and store the neurosecretions that are produced by their cell bodies, which are located in the hypothalamus.
- II. Cell bodies situated in supraoptic & paraventricular nuclei in the hypothalamus.
- III. Function of these axons :

Storage & release of:

Vasopressin (ADH) (supraoptic nucleus)

Oxytocin (paraventricular nucleus)

2. Fenestrated capillaries

3. **Pitucytes** :Are glial-like cells in p. nervosa.

Structure:Have numerous cytoplasmic Processes.

Functions: **Support the axons of the p. nervosa.**

4. **HERRING BODIES** :Are distentions of the axons in p. nervosa.

- Representing accumulation of neurosecretory granules at axon termini and along the length of the axons in p. nervosa
- Note : **No secretory or neuronal cells (cell bodies)** in pars nervosa.
- MCQ : is there any schwan cells ? Answer no.

Second : adenohypophysis (anterior pituitary)

- Adenohypophysis (anterior pituitary)
 - Pars distalis (pars anterior)
 - Pars intermedia
 - Pars tuberalis
- *The parenchymal cells of the pars distalis consist of the chromophils and chromophobes.*

Cells of pars
distalis

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graph TD; A[Cells of pars distalis] --> B[Chromophils]; A --> C[Chormophobes]; B --> D[Acidophils]; B --> E[Basophils];
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Chromophils

Chormophobes

Acidophils

Basophils

- Note: these latter designations refer to the affinity of the secretory granules within the cells to the dyes, not to the parenchymal cell cytoplasm. Why is this important?
- Because cells that have just secreted their contents or are clear of granules will appear as chromophobes , even though they might be secretory cells.

Chromophils

- Acidophils
 - *somatotrophs*
 - *Secretes growth hormone*
 - *Mammotrophs*
 - *Prolactin cells*
- Basophils:
 - Thyrotrophs
 - (TSH Cells)
 - Gonadotrophs
 - (Gonadotropic cells) (FSH, LH)
 - Corticotrophs
 - (ACTH cells)

Chromophobes

1- stem cells.

2- degranulated chromophils.

3- degenerated cells.

Blue arrow: acidophils
Red arrow: basophils
Yellow arrow: chromophobes

