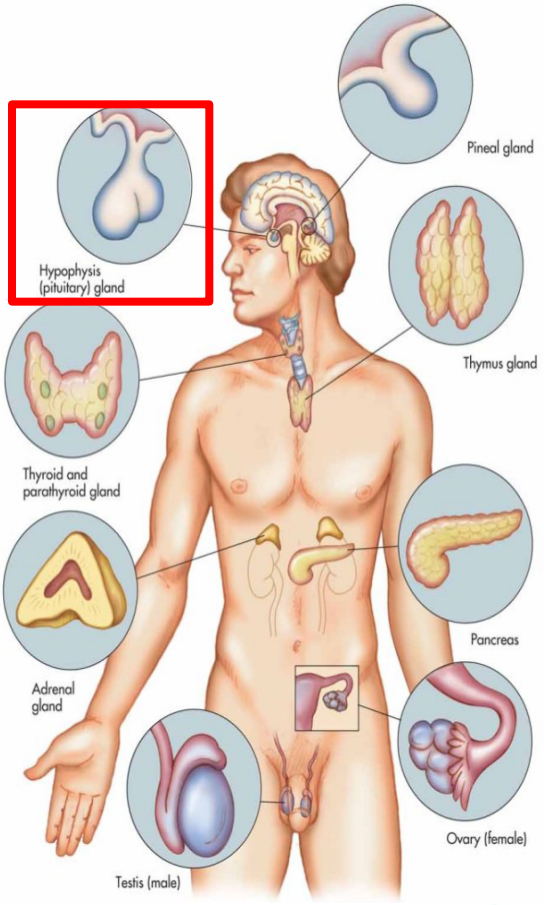
Histology of Pituitary Gland

Endocrine System

Objectives:

1. The microscopic structure of the different parts of the pituitary gland in correlation with their functions.

2. The hypophyseal portal circulation; components and significance.



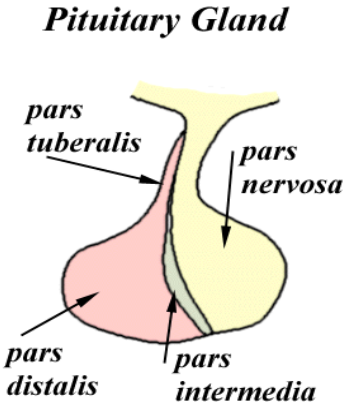
جامعة الملك سعود
King Saud University

MED 434 ICINE

HISTOLOGY 434

Components

ADENOHYPOPHYSIS CEREBRI	NEUROHYPOPHYSIS CEREBRI
1- Pars Distalis (pars anterior) 2- Pars Tuberalis 3- Pars Intermedia	1- Pars Nervosa 2- Infundibulum: Neural (Infundibular) Stalk 3- Median eminence



Blood Supply

Superior Hypophyseal Arteries (Rt & Lt):

To median eminence & Neural stalk

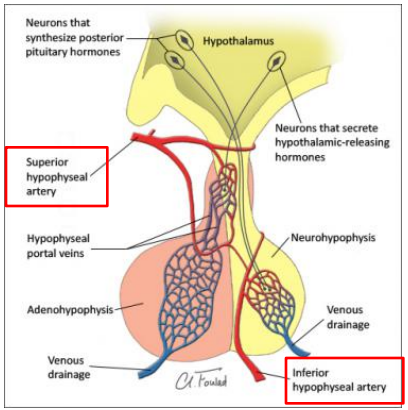
- **1ry capillary plexus** of fenestrated capillaries
- **Hypophyseal portal Veins (or venules)**
- **2ry capillary plexus** of capillaries in adenohypophysis

[Hypophyseal Portal System]

It carries neurohormones from median eminence to adenohypophysis.

Inferior Hypophyseal Arteries (Rt & Lt):

Mainly to pars nervosa,
They are **Not participating** in hypophyseal portal circulation.



Pars Nervosa

1-Unmyelinated axons of secretory neurons

- **Site:** supraoptic & paraventricular nuclei (i.e. Axons of hypothalamohypophyseal tract)
- **Function:** Storage & release of:
- a- Vasopressin (ADH); **by supraoptic nuclei**
- b- Oxytocin; **by paraventricular nuclei**

2-Fenestrated blood capillaries

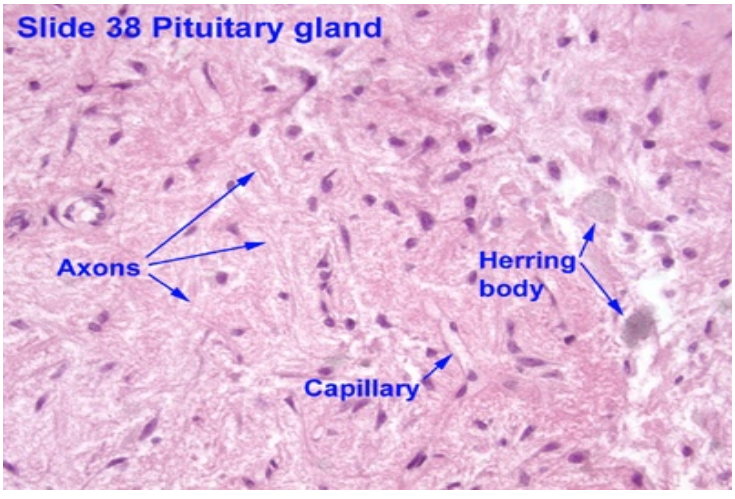
3-Herring bodies

- distentions of the axons in pars nervosa
- Representing accumulation of neurosecretory granules at axon termini and along the length of the axons in p. nervosa.

4-Pitucytes

- Are glial-like cells in p. nervosa
- **Structure:** Have numerous cytoplasmic processes
- **Function:** Support the axons of the p. nervosa

*N.B. **NO secretory or neuronal cells** in pars nervosa.



Pars Distalis

Types of parenchymal cells

Chromophils
ie. they get stained

Acidophils

- **Somatotrophs**
  (GH cells)
- **Mammotrophs**
  (Prolactin cells)

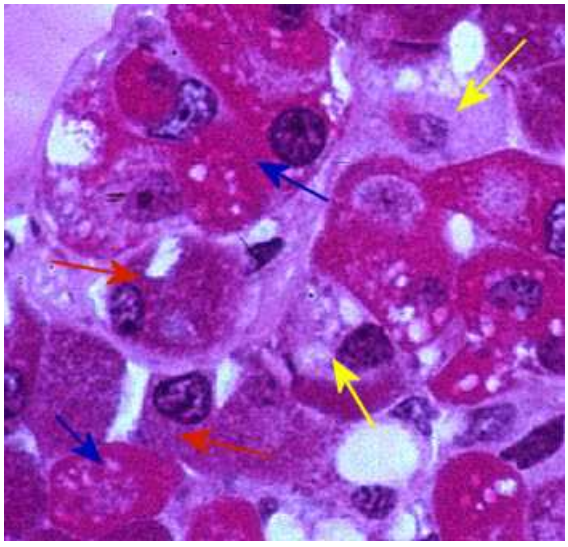
Increases during lactation

Basophils

- **Thyrotrophs**
  (TSH cells)
- **Gonadotrophs**
  (FSH, LH)
- **Corticotrophs**
  (ACTH cells)

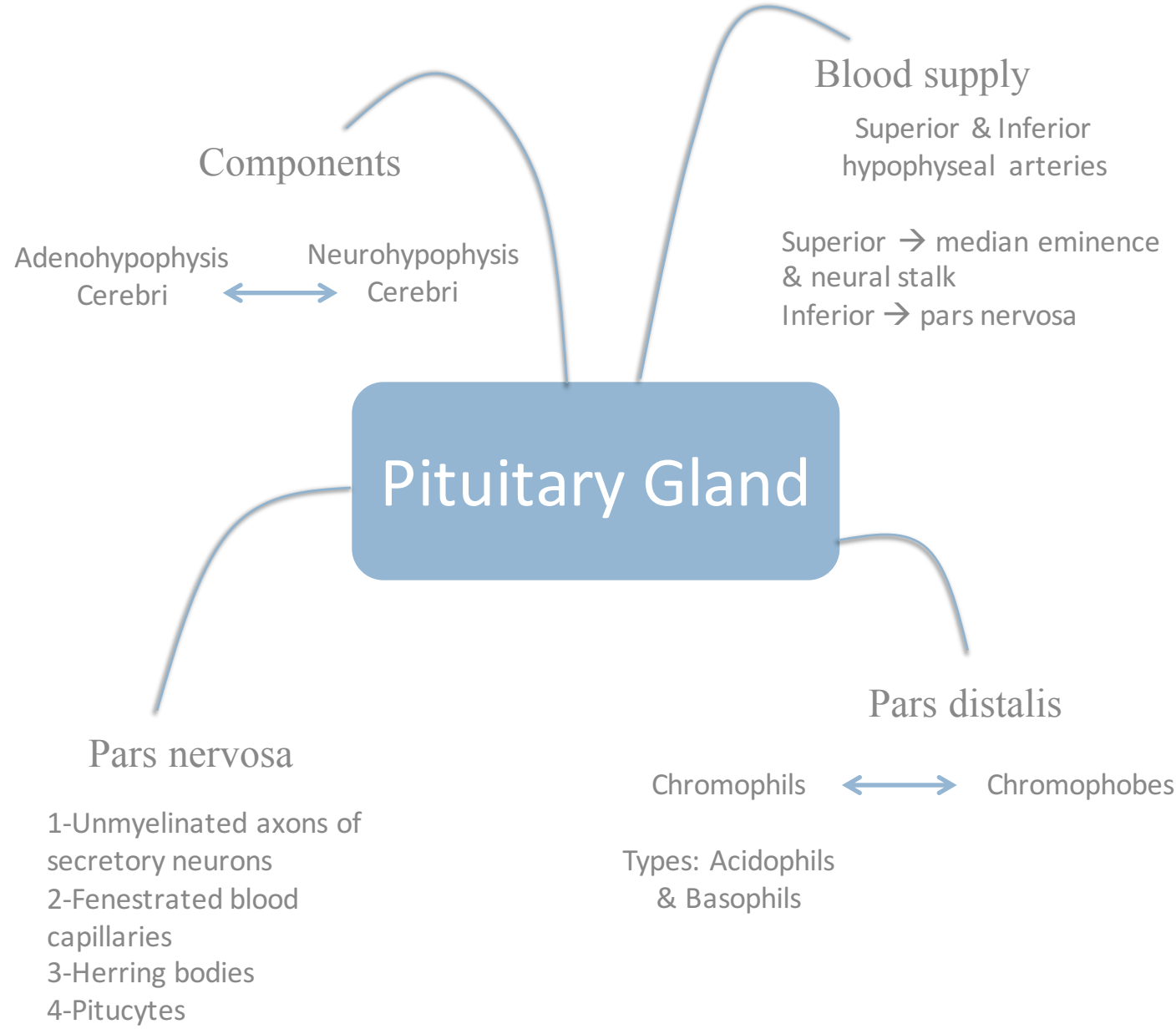
Chromophobes
ie. they do not get stained

1- stem cells.
2- degranulated chromophils.
3- degenerated cells.



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

Summary


Components
Adenohypophysis Cerebri
Neurohypophysis Cerebri
Blood supply
Superior & Inferior hypophyseal arteries
Superior → median eminence & neural stalk
Inferior → pars nervosa
Pituitary Gland
Pars nervosa
1-Unmyelinated axons of secretory neurons
2-Fenestrated blood capillaries
3-Herring bodies
4-Pitucytes
Pars distalis
Chromophils
Chromophobes
Types: Acidophils & Basophils

MCQs

- 1. Which of the following is not a part of neurohypophysis cerebri?
  - A. Pars nervosa
  - B. Pars tuberalis
  - C. Neural stalk
  - D. Median eminence
- 2. Hypophyseal portal system carries neurohormones from median eminence to?
  - A. Pars nervosa
  - B. 1ry capillary plexus
  - C. Neural stalk
  - D. Adenohypophysis
- 3. Oxytocin is stored and released by?
  - A. Paraventricular nuclei
  - B. Supraoptic nuclei
  - C. Herring bodies
  - D. Pitucytes
- 4. What type of parenchymal cells are corticotrophs?
  - A. Acidophils
  - B. Basophils
  - C. Chromophobes

Answer key:

1- B

2- D

3- A

4- B

Motivation Corner

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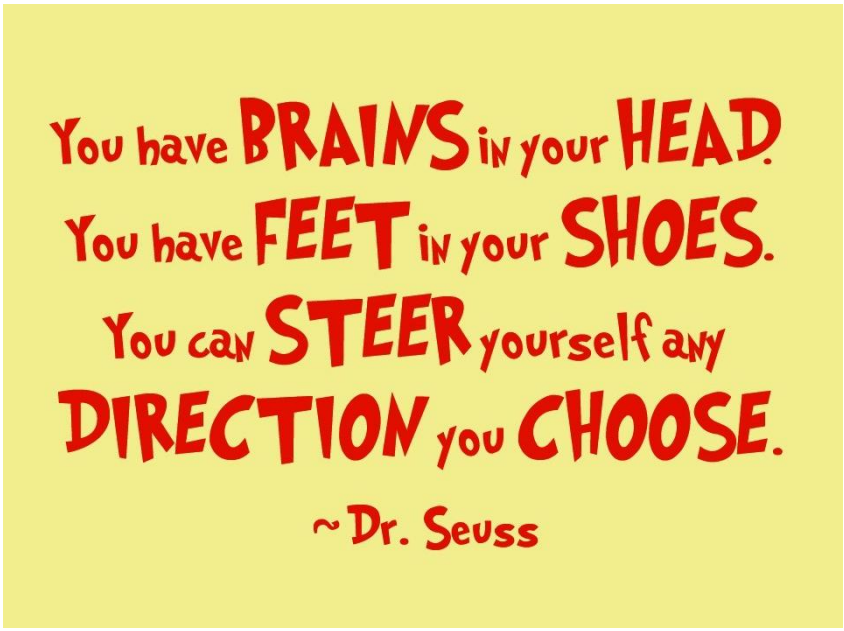

Thank you for checking our work

For any correction, suggestion or any useful information do not hesitate to contact us: **Histology434@gmail.com**