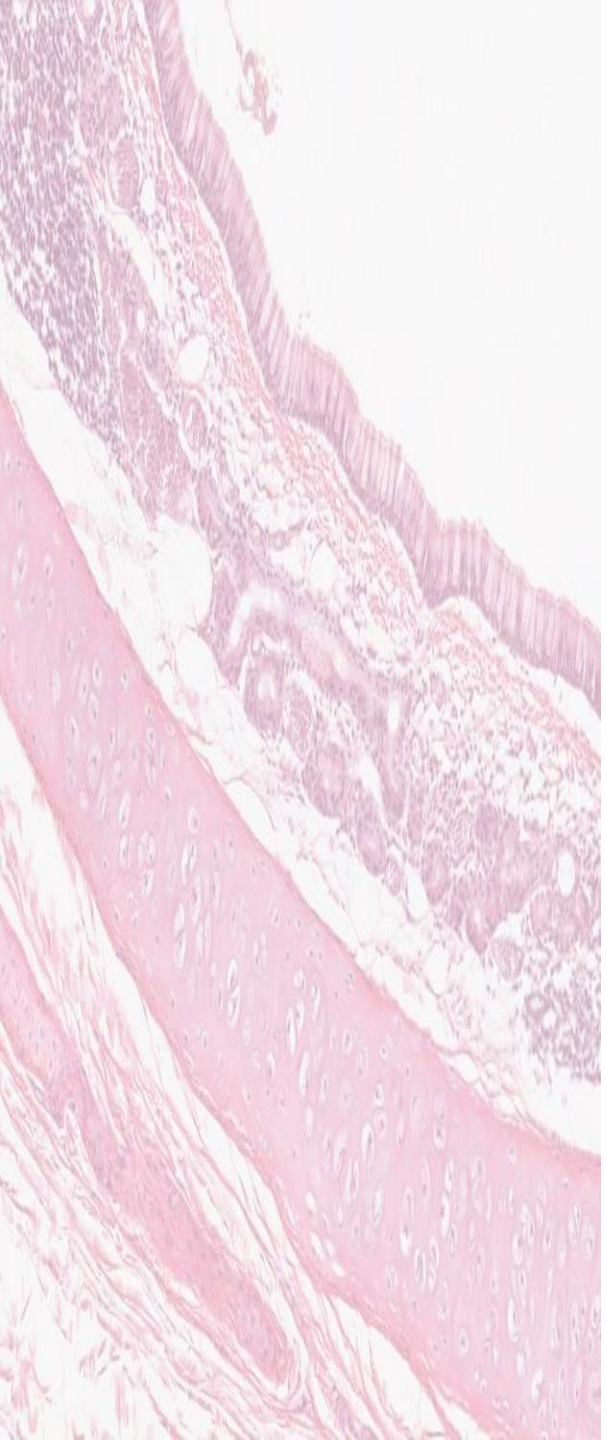

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# Pituitary Gland

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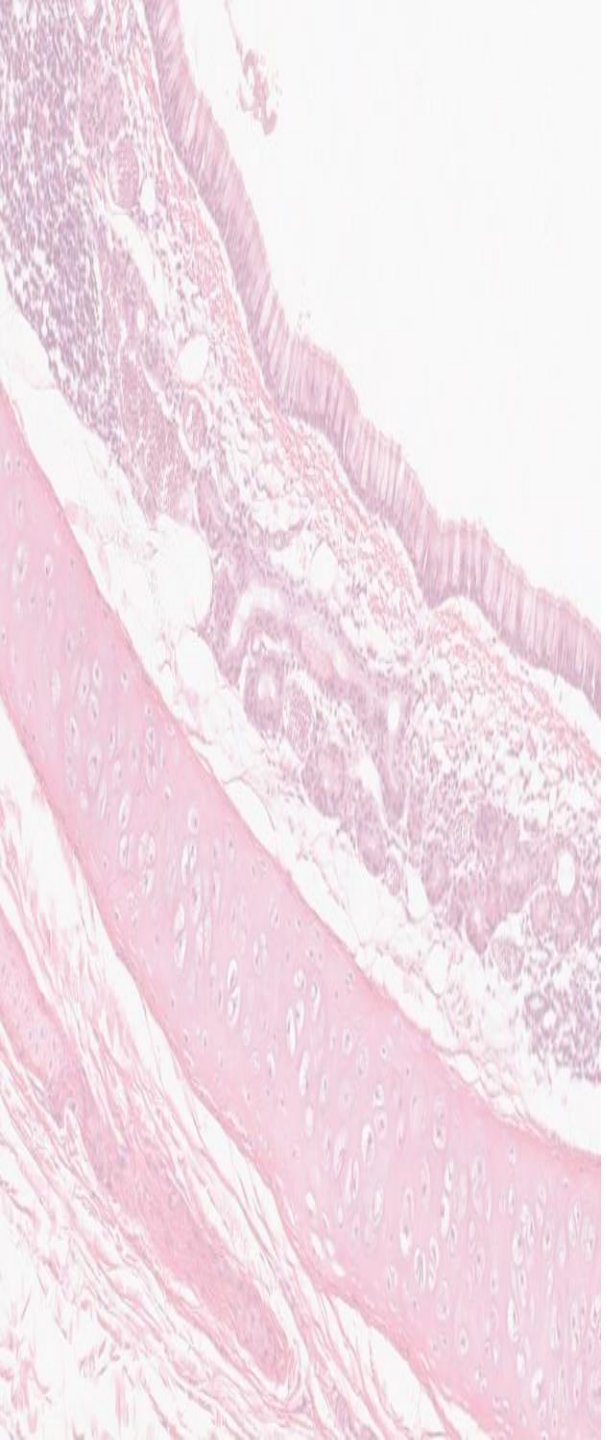


وَمَن يَتَوَكَّلْ عَلَى ٱللَّهِ فَهُوَ حَسْبُهُۥٓ

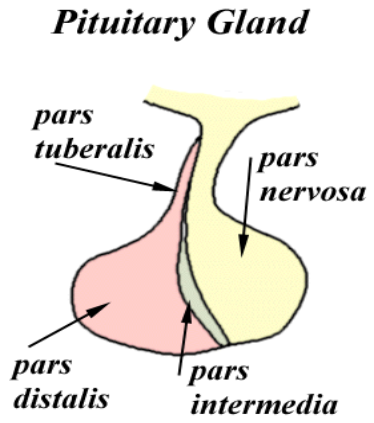
# Objectives:

By the end of this lecture, the student should be able to describe:

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.

# Pituitary Gland Components

| (A) ADENOHYPOPHYSIS CEREBRI: "Adeno" from adenohypophysis refers to an endocrine gland derived from epithelial cells | (B) NEUROHYPOPHYSIS CEREBRI: Neurohypophysis is developed embryologically from the nervous tissue of the brain, but IT DOESN'T CONTAIN NEURONS (VERY IMPORTANT) |
|---|---|
| 1- Pars Distalis (pars anterior)<br>2- Pars Tuberalis<br>3- Pars Intermedia | 1- Median eminence<br>2- Infundibulum: Neural (Infundibular) Stalk (stem)<br>3- Pars Nervosa |




**Only in Boys slide and in ME objectives**

**Blood supply:**

1- R & L Superior hypophoseal arteries:

To median eminence and neural stalk

Hypophoseal portal system: Carries neurohormones from median eminence to adenohypophysis.

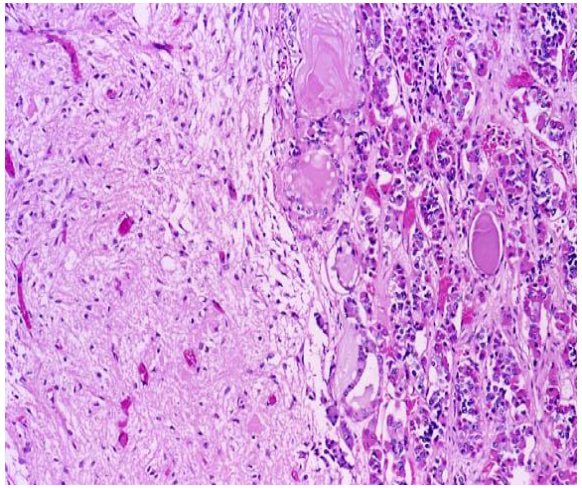
Primary capillary plexus of fenestrated capillaries →

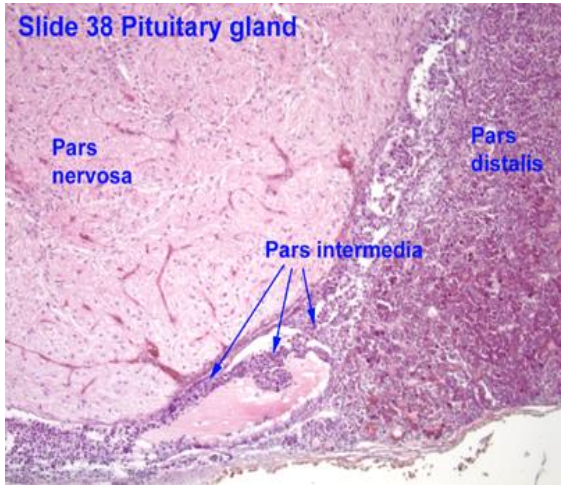
To hypophoseal portal veins (or venules) →

To 2ry capillary plexus of capillaries in adenohypophysis.

2- R & L Inferior hypophoseal arteries:

To pars nervosa, they don't participate in the hypophoseal portal circulation.






The pituitary gland is supplied by **fenestrated** blood capillaries, and they are rich here because they carry hormones to the circulation

# Posterior Lobe: PARS NERVOSA

## Contents:

1. Unmyelinated axons of secretory neurons situated in supraoptic & paraventricular nuclei (i.e. Axons of hypothalamo-hypophyseal tract). -*cell bodies are in the hypothalamus and their axons form tract

➢ **Function**: Storage & release of:

A. Vasopressin (ADH) → by supraoptic nuclei

B. Oxytocin → by paraventricular nuclei Oxytocin hormone is responsible for contraction during labor and lactation (pushing of the milk from mamillary glands)

2. Fenestrated blood capillaries

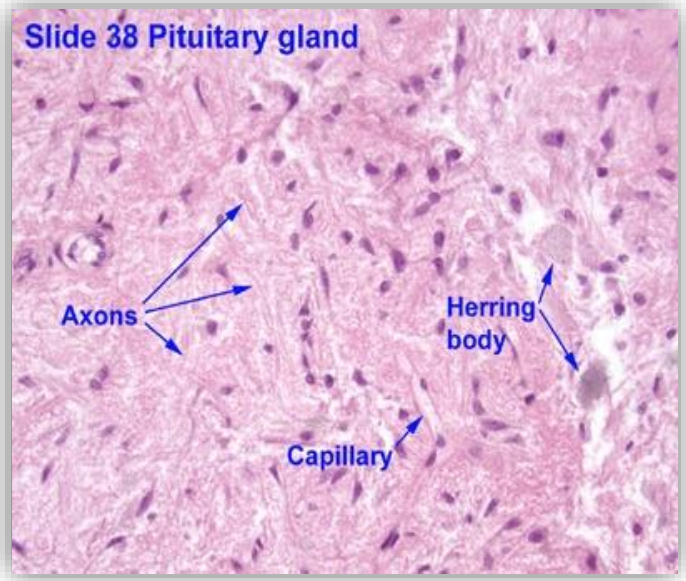
3. HERRING BODIES: Are distentions of the axons in pars nervosa.

➢ Representing accumulation of neurosecretory granules at axon termini and along the length of the axons in pars nervosa. Herring bodies = dilated terminal end of the axons

4. Pitucytes: glial-like cells in pars nervosa.

➢ **Structure**: Have numerous cytoplasmic processes.

➢ **Functions**: Support the axons of the pars nervosa.




N.B. No secretory or neuronal cells in pars nervosa.

IT IS EXTREMELY IMPORTANT to know that pars nervosa DOES NOT contain neuronal cells

# Anterior Lobe: PARS DISTALIS

نشبه البارس ديستاليس بكيس مليان كور واحنا نبي نفرق بين هذي الكور، الكور هي السيلز والتفرقة تكون بالصبغة

## Contents:

**Parenchymal cells - Types**

### (1) Chromophils:

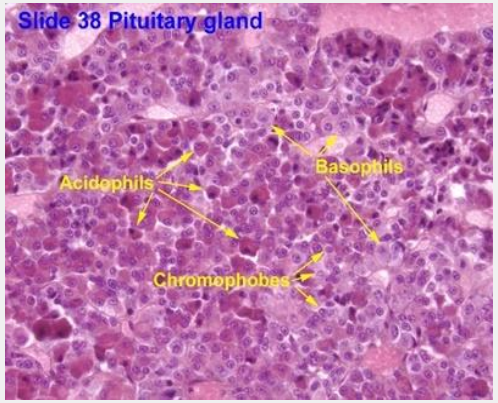
a- Acidophils:

We differentiate between the cells of acidophils by immunohistochemistry and electron microscope

1- Somatotrophs (GH cells)

2- Mammotrophs (Prolactin cells):

Increase during lactation. formation of milk)




b- Basophils:

1- Thyrotrophs (TSH Cells)

TSH stands for thyroid stimulating hormone

2- Gonadotrophs (Gonadotropic cells) (FSH, LH)

LH stands for luteinizing hormone

3- Corticotrophs (ACTH cells)

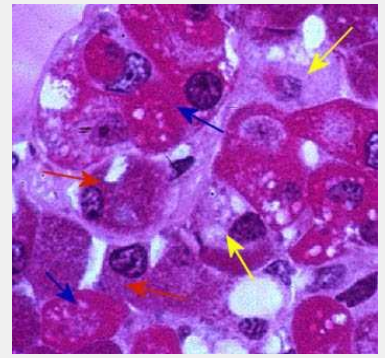
Corticotrophs are responsible for the production of cortisol but not directly, it stimulates glands in the adrenal cortex to produce it

### (2) Chromophobes:

may represent :

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

Chromophobes are cells that dislike staining, they represent 52% of the cells in Pars distalis



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

# MCQs

1\Pars Distalis is one of the components of:
A-Neurohypophysis cerebri.
B-Adenohypophysis cerebri.
C-Both A&B.

2\Inferior hypophyseal Arteries supplies:
A-pars nervosa.
B-Neural stalk.
C-Median eminence of hypothalamus.

3\The Storage & release of Vasopressin is one of the functions of:
A-Unmyelinated axons of secretory neurons.
B-Herring bodies.
C-Pitucytes.

4\which cell type of the following is considered Acidophils:
A- Corticotrophs.
B-Mammotrophs.
c-Thyrotrophs.

5\Which cell type of the following secretes growth hormone:
A-Gonadotrophs.
B-Corticotrophs.
C-Somatotrophs.

1-b
2-a
3-a
4-b
5-c

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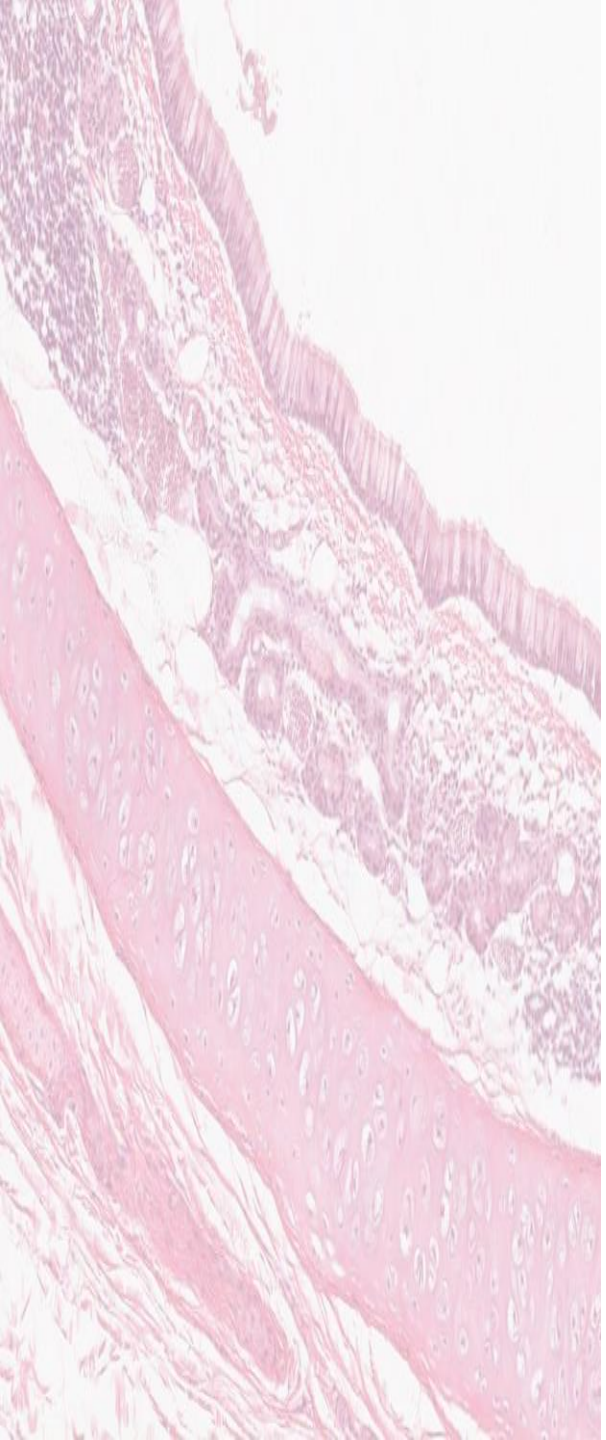

# *Thank you & good luck*

***- Histology team***

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**References:**

- ✓ Females' and Males' slides.
- ✓ Doctors' notes