



# LECTURE 1:

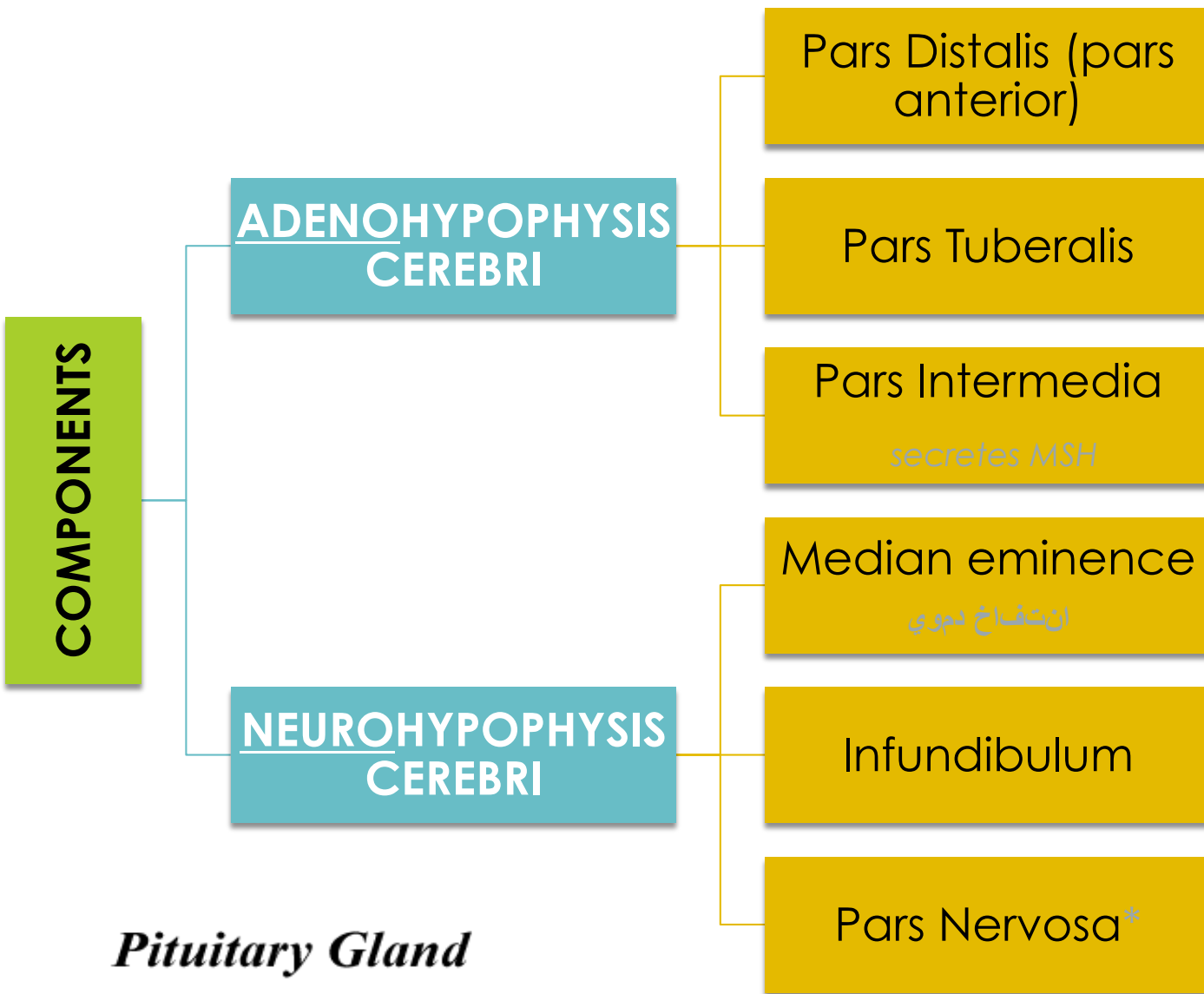
# PITUITARY GLAND

## ❑ Objectives:

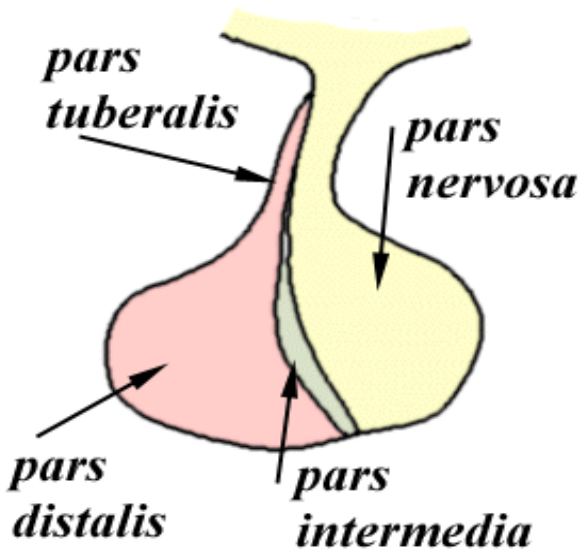
At the end of this lecture, you should describe:

- 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.

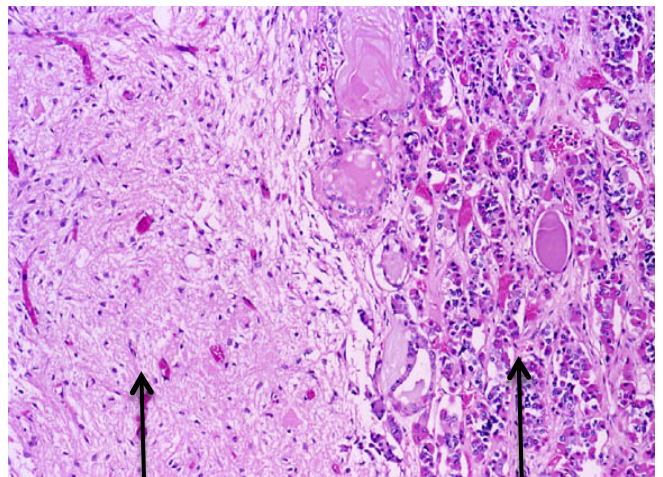
# COMPONENTS OF PITUITARY GLAND



*Pituitary Gland*



The cell bodies in hypothalamus and the axons only in pars nervosa



Pars nervosa

Pars distalis

# NEUROHYPOPHYSIS 'PARS NERVOSA'

## 1. UNMYELINATED AXONS\*

Pars nervosa doesn't have any nerve's cell body.

- of secretory neurons situated in supraoptic & paraventricular nuclei (i.e. Axons of hypothalamo-hypophyseal tract).
- **Function** : **Storage & release of**
  - **Vasopressin (ADH)** : ; **by supraoptic nuclei**
  - **Oxytocin** : **by paraventricular nuclei**

\* Cerebral cortex ->hypothalamus-> pituitary gland

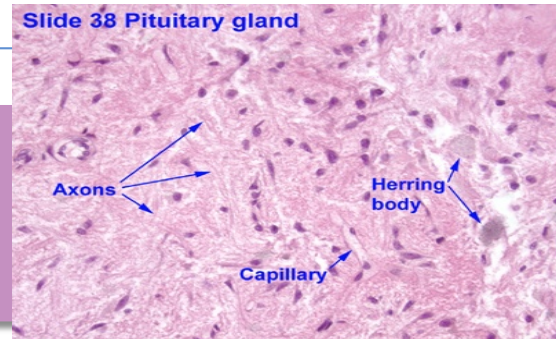
## 2. FENESTRATED BLOOD CAPILLARIES

## 3. HERRING BODIES

- **Are distentions of the axons in pars nervosa.**
- Representing accumulation of **neurosecretory granules** at axon terminals and along the length of the axons in pars nervosa (storage vesicles).

Neurosecretory granules formed in hypothalamus and released in pars nervosa

Slide 38 Pituitary gland



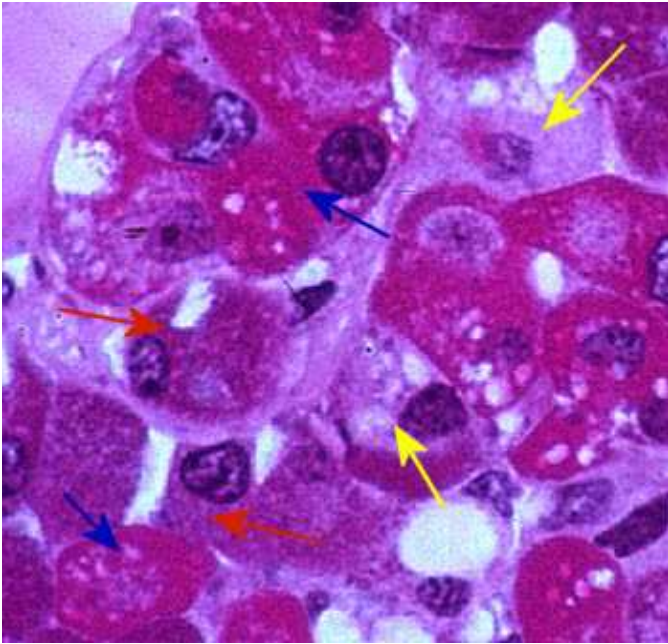
## 4. PITUCYTES\*

- **Are glial-like cells in pars nervosa.**
- Have numerous cytoplasmic Processes.
- **Functions:**
  - Support the axons of the pars nervosa

\*No secretory or neuronal cells in pars nervosa

# PARS DISTALIS

## Types of parenchymal cells



### Chromophobes

(Yellow arrow)

stem cells.

degranulated chromophils

degenerated cells.

Somatotrophs (GH cells)

Mammotrophs (Prolactin cells)

Increase during lactation

Thyrotrophs (TSH Cells)

Gonadotrophs (Gonadotropic cells)

Corticotrophs (ACTH cells)

Acidophils

Basophils

Chromophils

# BLOOD SUPPLY

## Sup. Hypoph. Arteries

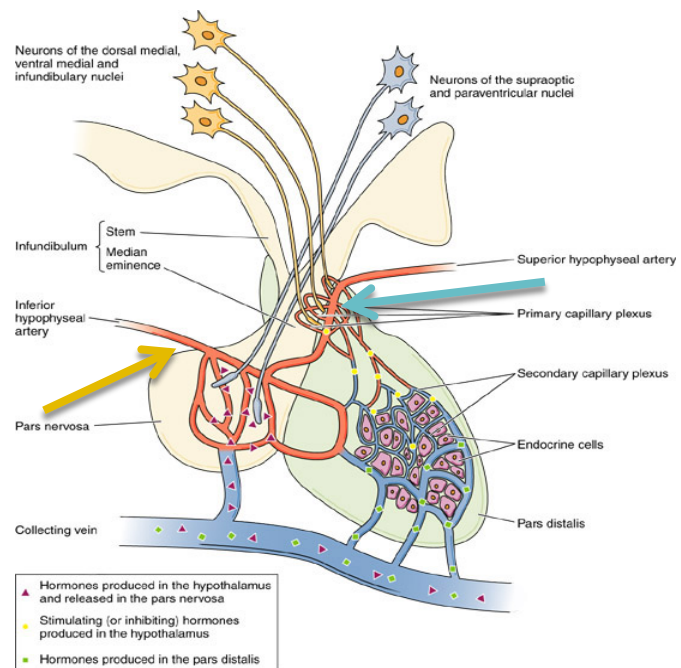
- To **median eminence & Neural stalk**
- **1ry capillary plexus** of fenestrated capillaries
  - **Hypophyseal portal Veins**
- **2ry capillary plexus** of capillaries
  - **adenohypophysis**

## Inf. Hypoph. Arteries

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

## What is Hypophyseal Portal System ?

- It carries neurohormones from median eminence to adenohypophysis.



*\*primary capillary : carry hormone to ant pituitary  
Secondary capillary : release hormone to all body tissues .*

**Q 1** : The component of **NEUROHYPOPHYSIS CEREBRI** is

- A. Median eminence - Infundibulum: - Pars Nervosa
  - B. Median eminence - Pars Intermedia - Pars Nervosa
  - C. Infundibulum - Pars Intermedia - Pars Nervosa
- 

**Q 2-** the superior hypophysis **Arteries (Rt & Lt) mainly to :**

- A. To median eminence
  - B. Neural stalk
  - C. both
- 

**Q 3-** the inferior hypophysis **Arteries (Rt & Lt) mainly to :**

- A. pars nervosa
  - B. To median eminence
  - C. Neural stalk
- 

**Q 4-** Types of parenchymal cells of **Chromophils Acidophils** are :

- A. Thyrotrophs - Gonadotrophs - Corticotrophs
  - B. Somatotrophs - Mammotrophs
  - C. Somatotrophs - Gonadotrophs - Corticotrophs
- 

**Q 5- HERRING BODIES** is

- A. Representing accumulation of neurosecretory granules at axon terminals
  - B. Have numerous cytoplasmic Processes
  - C. Support the axons of the pars. nervosa.
- 

**Q6:** The effect of **ACTH** is

- A. secret steroid
  - B. produce milk
  - C. produce sex hormone
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