MED437
KING SAUD UNIVERSITY

ANATOMY
Team 437

# Pituitary Gland

Lecture (1)

- Important
- Doctors Notes
- Notes/Extra explanation

Please check our Editing File

هذا العمل مبني بشكل أساسي على عمل دفعة 436 مع المراجعة والتدقيق
وإضافة الملاحظات ولا يغني عن المصدر الأساسي للمذاكرة

{وَمَنْ يَتَوَكَّلْ عَلَى اللَّهِ فَهُوَ حَسْبُهُ}

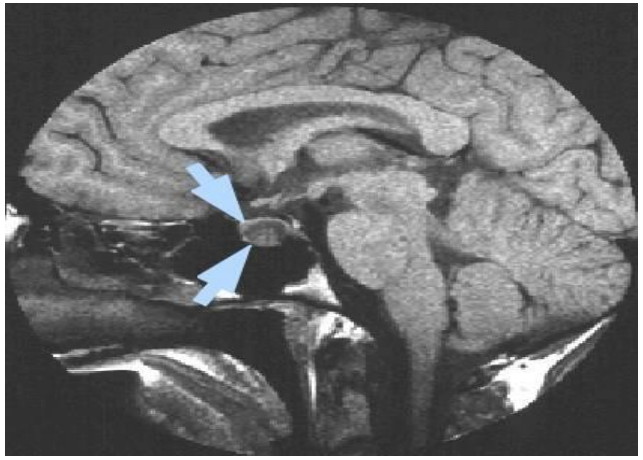
# Objectives

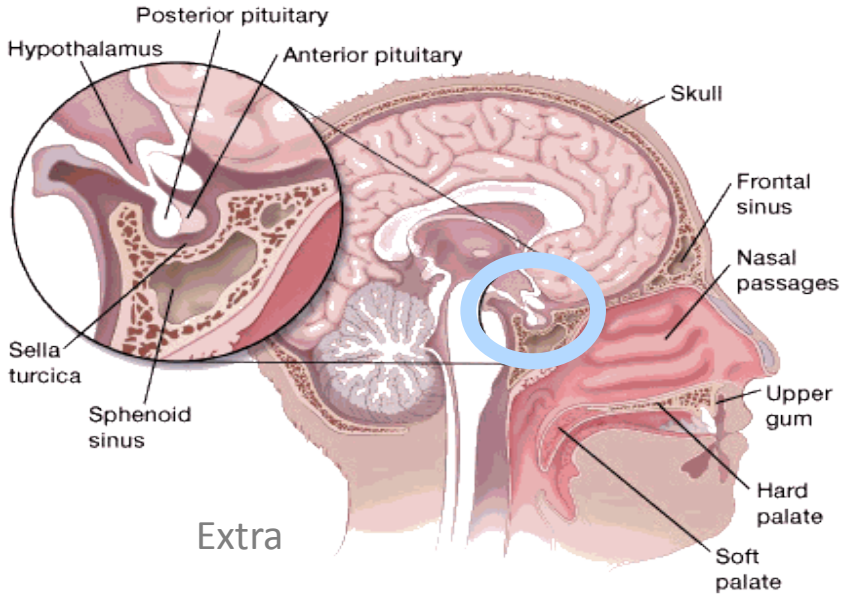
**At the end of the lecture, students should be able to:**

- ✓ Describe the **position** of the **pituitary gland**.
- ✓ List the **structures** related to the **pituitary gland**.
- ✓ Differentiate between the **lobes** of the **gland**.
- ✓ Describe the **blood supply** of **pituitary gland** & the **hypophyseal portal system**.

# Pituitary Gland=Hypophysis Cerebri "الغدة النخامية"

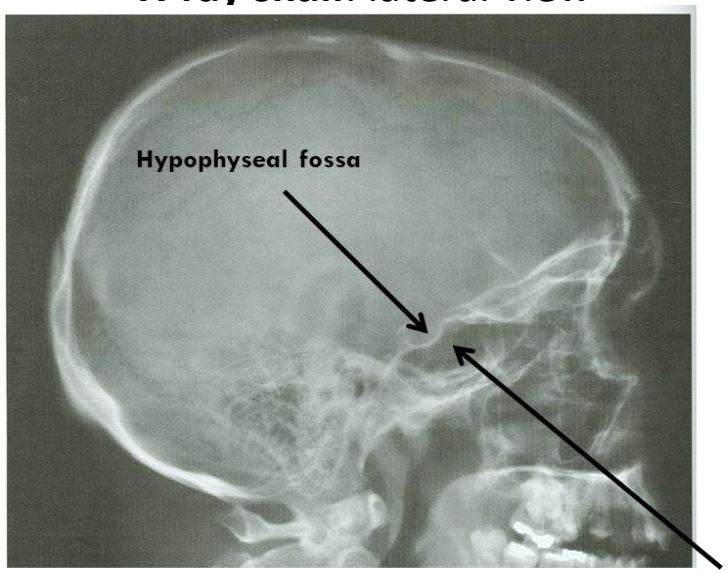
- It is referred to as the **master** of endocrine glands (CONTROL secretion of other glands)
- It is a **small oval** structure **1 cm in diameter**
- It (**doubles its size = STIMULATE**) in women **during pregnancy**
- In pituitary disorders the proportion between the trunk & appendicular system is not affected (unlike hypothyroidism)



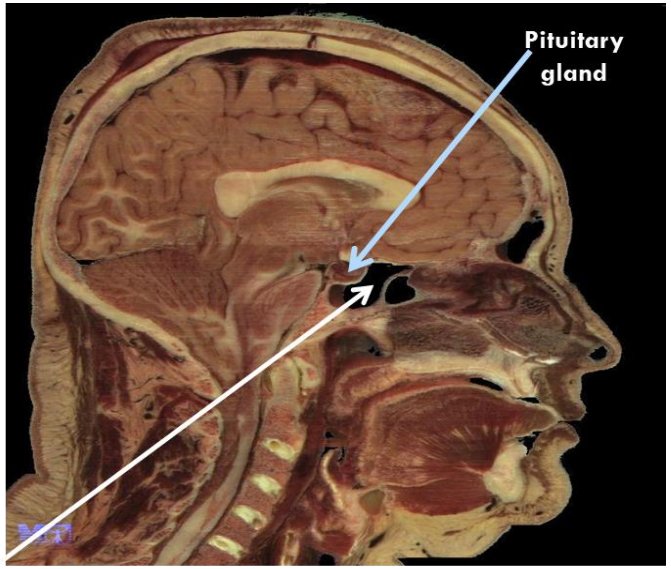



Extra

**X-ray skull**: lateral view

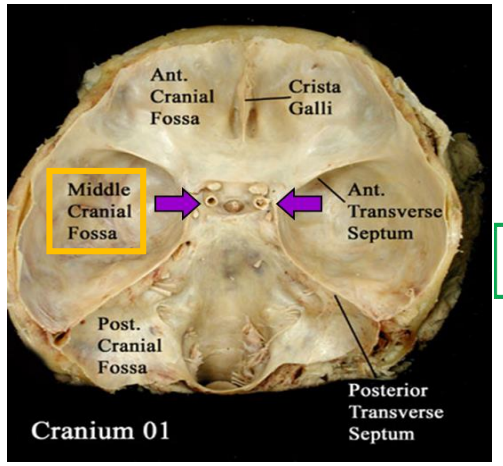


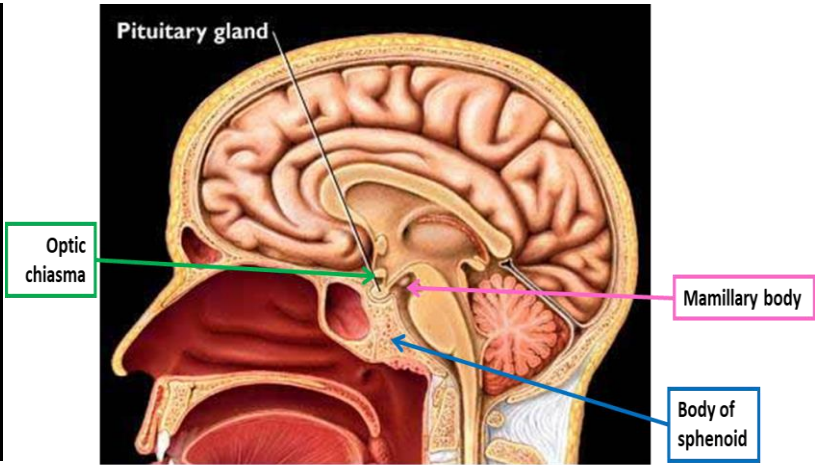

**Sagittal section** of head & neck



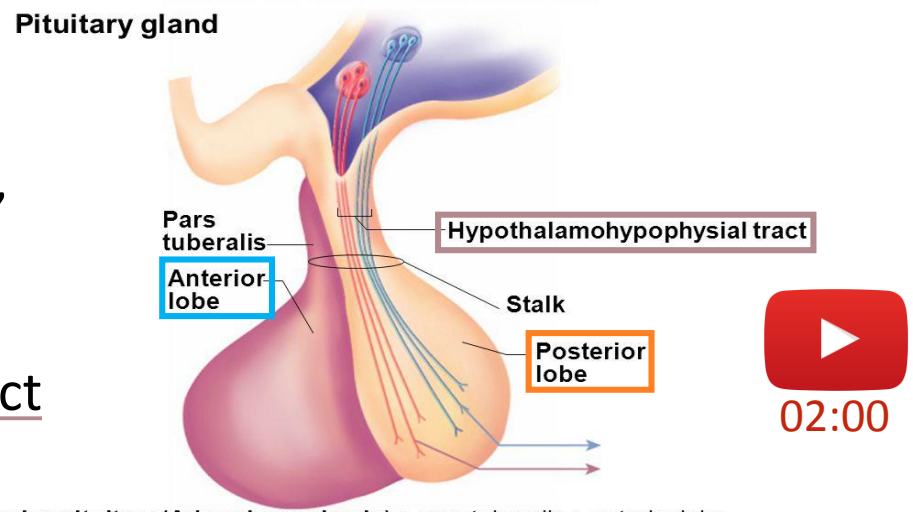
# Pituitary Gland
## Position & Subdivisions

- It lies in the **middle cranial fossa**.
- It is well **protected** in sella turcica (سرج الحصان) **(hypophyseal fossa** just below the hypothalamus**)** of the body of **sphenoid**
- It lies between optic chiasma (anteriorly) & mamillary bodies* (posteriorly)
  *Part of hypothalamus




- The gland is subdivided into:
  - Anterior Lobe (Adenohypophysis): it is the **true gland**, **secretes hormones**
  - Posterior Lobe (Neurohypophysis): connected to hypothalamus through hypothalamo-hypophyseal tract (which passes through the stalk or infundibulum), **stores hormones** secreted by **hypothalamic nuclei**



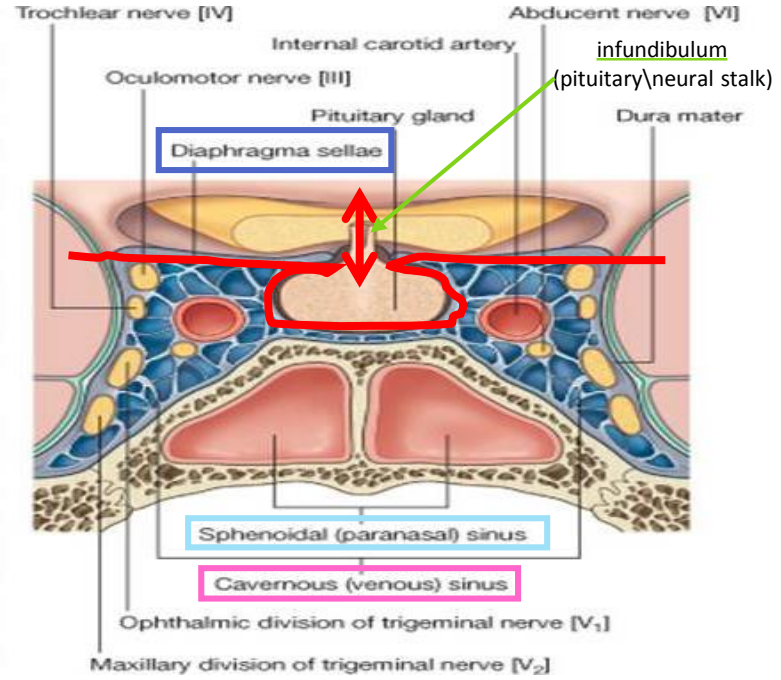

**Anterior pituitary (Adenohypophysis) =** pars tuberalis + anterior lobe
**Posterior pituitary (Neurohypophysis)** = stalk + hypothalamohypophysial tract + posterior lobe

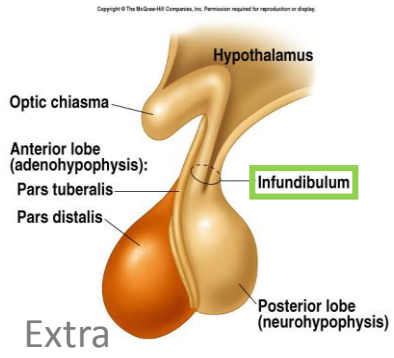
IMPORTANT

# Pituitary Gland Relations

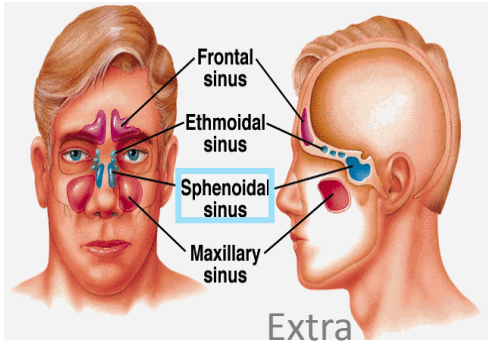
| | |
|---|---|
| **Superior** | • Diaphragma sellae: A **fold of dura mater** covers the pituitary gland<br>• Has an opening for passage of infundibulum (pituitary stalk) connecting the **posterior lobe of gland** to **hypothalamus** |
| **Inferior** | • Sphenoidal air sinuses |
| **Lateral** | • Cavernous sinuses* |

*2 structures are present in the floor of cavernous sinus:
1) Abducens nerve 2) Internal carotid artery
Other cranial nerves are present in the lateral wall of cavernous sinus



Extra

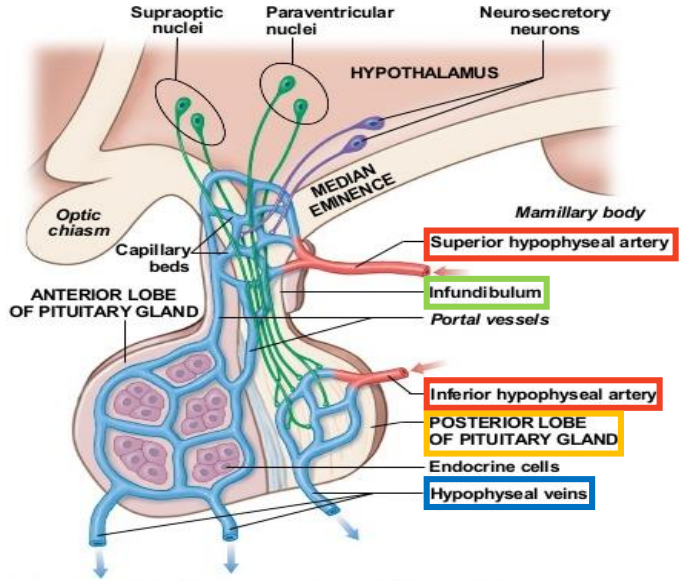


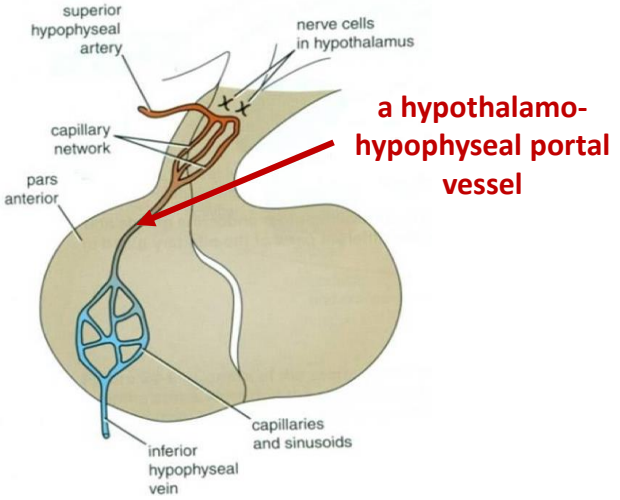
Extra

# Pituitary Gland
## Blood supply & Distribution of Arteries

| Blood supply | |
|---|---|
| **Arteries** | Branches from **internal carotid artery**:<br>• Superior hypophyseal arteries<br>• Inferior hypophyseal arteries |
| **Veins** | • hypophyseal veins drain into **cavernous sinuses** |
| **Distribution of Arteries** | |
| **Superior Hypophyseal** | • Supplies **infundibulum** and **anterior lobe**<br>• Form a **capillary** network from vessels pass downward<br>• Form **sinusoids*** into the anterior lobe of pituitary gland<br>"hypophyseal portal system" |
| **Inferior Hypophyseal** | • Supplies **posterior lobe** of pituitary gland |

***Sinusoid** related to **portal circulation**



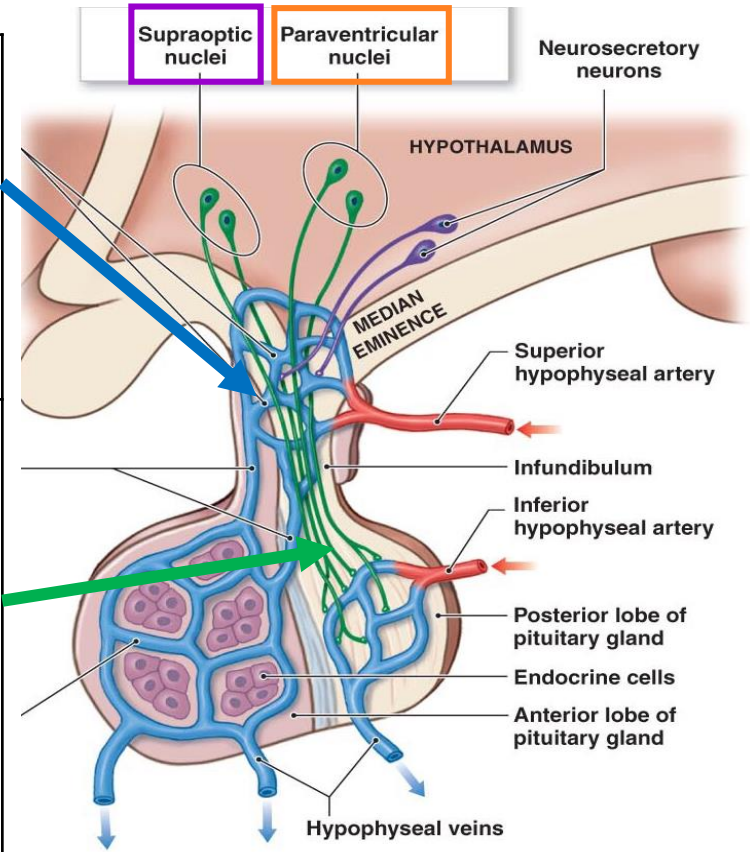



IMPORTANT

# Pituitary Gland

## Lobes (Explained further in physiology)

| | |
|---|---|
| **Anterior Lobe** (adenohypophysis) | • **Hormone releasing & inhibiting factors** produced by hypothalamus use **Hypophyseal Portal System** of vessels to reach **anterior lobe** of pituitary gland<br>• Example: TCH (secreted from anterior lobe)<br>If it **increase** in the body, it will **stimulate** the **inhibiting factor** (produced by hypothalamus) then TCH secretion **decrease** |
| **Posterior Lobe** (neurohypophysis) | • The Neurohypophysis receives a nerve supply from some of the hypothalamic nuclei (**supraoptic** & **paraventricular**)<br>• The axons of these nuclei convey their neuro-secretion (vasopressin and oxytocin) to the **Posterior lobe** of pituitary gland through **Hypothalamo-Hypophyseal tract** from where it passes into the blood stream. |




**REMEMBER!**

**Hypophyseal Portal System:** Vascular connection between hypothalamus & anterior lobe of pituitary

**Hypothalamo-Hypophyseal tract:** Neural connection between hypothalamus & posterior lobe of pituitary

# SUMMARY

## PITUITARY GLAND (HYPOPHYSIS CEREBRI)

- master of endocrine glands.
- a small oval structure 1 cm in diameter.
- doubles its size during pregnancy.
- It lies in the middle cranial fossa.
- It is well protected in sella turcica (hypophyseal fossa) of body of sphenoid.

| | | | |
|---|---|---|---|
| **Important relations** | • **ANTERIOR :** Optic chiasma<br>• **POSTERIOR :** Mamillary bodies<br>• **SUPERIOR:** Diaphragma sellae<br>• **INFERIOR:** Sphenoidal air sinuses<br>• **LATERAL:** Cavernous sinuses | **Blood supply** | ARTERIES: Superior & Inferior hypophyseal arteries - Internal Carotid artery branches<br>**Superior hypophyseal:** supplies infundibulum and the anterior lobe of pituitary gland (hypophyseal portal system).<br>**Inferior hypophyseal:** supplies posterior lobe of pituitary gland<br>VEINS: Hypophyseal veins drain into Cavernous Sinuses. |
| **Subdivisions of pituitary gland** | Anterior Lobe (Adenohypophysis): it is the True gland, Secretes hormones<br>Hormone-releasing & inhibiting factors produced by hypothalamus use Hypophyseal Portal System of vessels to reach the Anterior lobe of pituitary gland.<br><br>Posterior Lobe (Neurohypophysis): connected to hypothalamus through hypothalamo-hypophyseal tract, Stores hormones secreted. It receives a nerve supply from some of the hypothalamic nuclei (supraoptic & paraventricular)<br>-The axons of these nuclei convey their neurosecretion to the Posterior lobe of pituitary gland through Hypothalamo-Hypophyseal tract from where it passes into the blood stream. | | |

# MCQs

**1. Which part of the pituitary gland secret hormones?**
A- The posterior part
B- Neurohypophysis part
C- Adenohypophysis part

**2. Inferior hypophyseal artery branch from which of the following?**
A- Internal carotid artery
B- External carotid artery
C- Posterior cerebral artery

**3. Which of artery forms the hypophyseal portal system?**
A- Inferior hypophyseal
B- Superior hypophyseal
C- Internal carotid

**4. Which of the following nuclei supply the neurohypophysis?**
A- Paraventricular
B- Mammillary body
C- Dentate

**5. Which one of the following structures is superior to the pituitary gland?**
A- Optic chiasma
B- Diaphragma sellae
C- Mammillary bodies

**6. Which one of the following venous sinuses drains hypophyseal veins?**
A- Superior sagittal
B- Cavernous
C- Transverse

**7. Which of the following is posterior to the pituitary gland?**
A- Optic chiasma
B- Diaphragma sellae
C- Mammillary bodies

**8. Which part of the pituitary gland store hormones?**
A- Neurohypophysis part
B- Adenohypophysis part
C- The anterior part

1. C  2. A  3.B  4.A  5.B  6.B  7.C  8.A

# Good luck
# Special thank for team436 ❤

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- References:
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  2. Earthslab.com
  3. TeachMeAnatomy.com



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