Motivational Corner:

"If at first you don't succeed, try, try again.

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.

Please check out the editing file before starting the lecture.

1-

Pituitary gland.

Extra notes: Gray

Important notes: Red

Revised by
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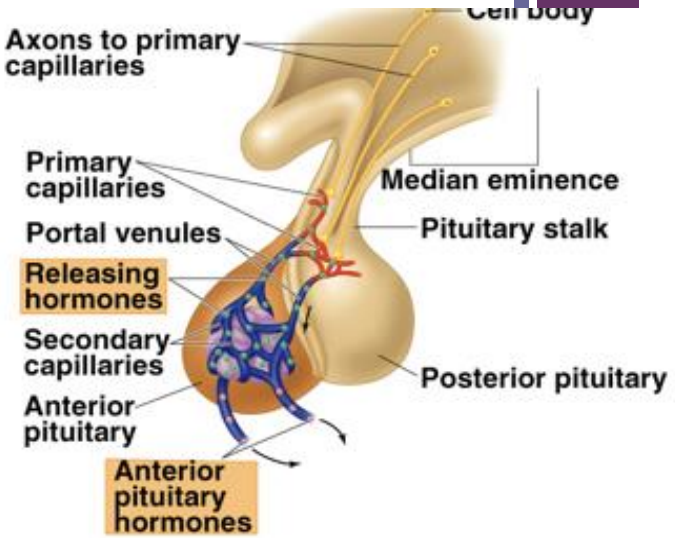
PITUITARY GLAND

The pituitary gland (Hypophysis Cerebri) is called the master gland because it controls several other hormone glands in your body, including the thyroid, adrenals, ovaries and testicles. It is about the size of a pea and is situated in a bony hollow, just behind the bridge of your nose (sphenoid bone). It is attached to the base of your brain (hypothalamus) by a thin neuronal stalk.
The hypothalamus, which controls the pituitary by sending messages, is situated immediately above the pituitary gland.

COMPONENTS

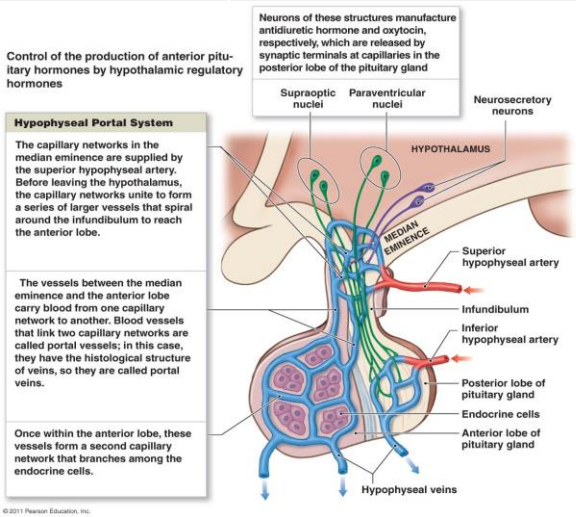
ADENOHYPOPHYSIS CEREBRI (anterior)	NEUROHYPOPHYSIS CEREBRI (posterior)
1- Pars Distalis (pars anterior). Pars = part	1- Infundibulum: Neural (Infundibular) Stalk (stem).
2- Pars Tuberalis.	2- Median eminence.
3- Pars Intermedia.	**3- Pars Nervosa.**



BLOOD SUPPLY

Superior Hypophyseal Arteries (Right & Left):	Inferior hypophyseal Arteries (Right & Leftt):
Supplies median eminence of hypothalamus & Neural stalk.	Supplies **pars nervosa.**
(**Hypophyseal Portal System**): It carries neurohormones from median eminence to adenohypophysis. (Portal mean the blood pass through two types of capillaries.) 1ry capillary plexus of **fenestrated capillaries** → **Hypophyseal portal Veins** (or venules) → 2ry capillary plexus of capillaries in **adenohypophysis**	They are **Not participating** in hypophyseal portal circulation.

This Picture is extra, to link physiology with Anatomy.



NEUROHYPOPHYSIS

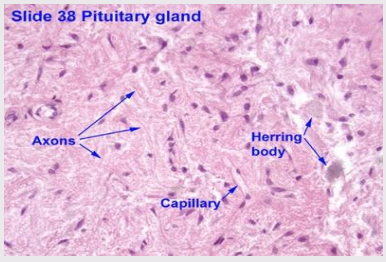
PARS NERVOSA

CONTENTS:

Unmyelinated axons of secretory neurons	Herring bodies	Pitucytes	Fenestrated blood capillaries
situated in supraoptic & paraventricular nuclei (i.e. Axons of hypothalamohypophyseal tract). **Function:** Storage & release of: 1- Vasopressin (ADH);by supraoptic nuclei 2- Oxytocin;by paraventricular nuclei (promotes milk secretion)	- Are distention of the axons in pars nervosa. (Although its name is NEUROhypophysis, but it doesn't have neurons, we can only find **axons**. Their neuronal cells are in the hypothalamus.) - Representing accumulation of neurosecretory granules at axon termini and along the length of the axons in pars nervosa.	- Are glial-like cells in pars nervosa. - Have numerous cytoplasmic Processes. **Functions:** Support the axons of the pars nervosa.	-

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

Its function is only storage that's why it doesn't have Secretory cells.

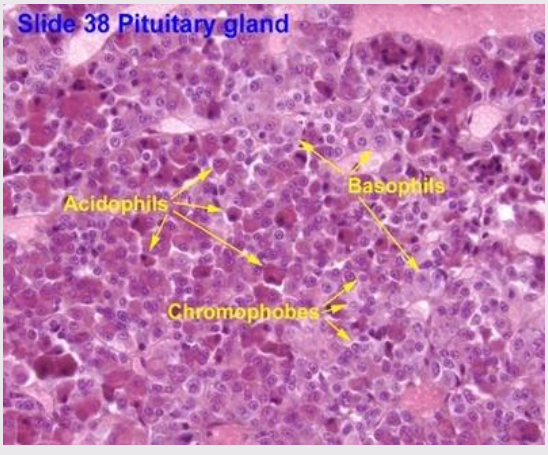


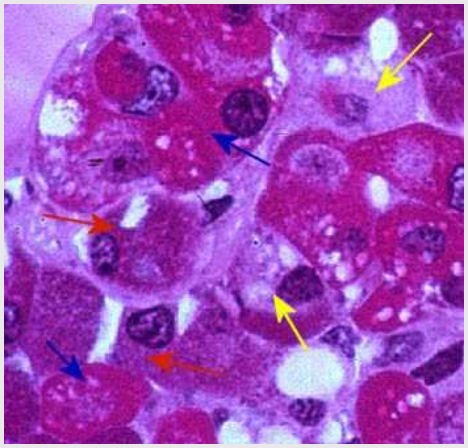
ADENOHYPOPHYSIS

Pars Distalis (Pars Anterior)

Types of parenchymal cells:-

Chromophils	Chromophobes Not Acidophilic, nor basophilic. It resists H&E stain.
a- Acidophils: 1- Somatotrophs (GH cells). 2- Mammotrophs (Prolactin cells): Increase during lactation. **b- Basophils:** 1- Thyrotrophs (TSH Cells) 2- Gonadotrophs (Gonadotropic cells) (FSH, LH) 3- Corticotrophs (ACTH cells)	**May represent:** 1- stem cells. 2- degranulated chromophils. 3- degenerated cells.





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

Extra Slide

Abbreviations used in this lecture	
Abbreviation	**Its meaning**
ADH	Antidiuretic hormone
GH	Growth hormone.
TSH	Thyroid stimulating hormone.
FSH	Follicular stimulating hormone.
LH	Luteinizing hormone.
ACTH	Adrenocorticotropic hormone.

Difference between Prolactin and Oxytocin hormone.	
Prolactin	**Oxytocin**
Stimulates the production of breast milk and is necessary for normal milk production during breastfeeding.	Responsible for stimulation of milk ejection (milk letdown) and for stimulation of uterine smooth muscle contraction at birth.

1 b
2 c
3 a
4 c
5 a
6 c
7 c
8 a

MCQs

1) What of the following organ is nicknamed the "master gland"?
a. Adrenal medulla
b. Pituitary
c. Heart

2) Which type of the following cells secretes ACTH?
a. Lactotropic cells
b. Gonadotropic cells
c. Corticotropic cells

3) What is the connection between the pituitary gland and the hypothalamus?
a. Infundibulum
b. Pars intermedia
c. Pars tuberalis

4) Which of the following is not part of the adenohypophysis?
a. Pars intermedia
b. Pars tuberalis
c. Pars nervosa

5) Which cell type of the following secretes prolactin?
a. Mammotrophs cells
b. Thyrotropic cells
c. Somatotropic cells

6) Which cell type of the following is considered acidophilic?
a. Gonadotropic cells
b. Corticotropic cells
c. Mammotrophs cells

7)Which cell type of the following secretes LH?
a. Lactotropic cells
b. Thyrotropic cells
c. Gonadotropic cells

8)Which cell type of the following is considered a basophil?
a. Thyrotropic cells
b. Lactotropic cells
c. Somatotropic cells

For any question or suggestion:
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Thanks you for checking our work, Good luck.
-Team histology.

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HISTOLOGY
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