

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
(وَفَوْقَ كُلِّ ذِي عِلْمٍ عَلِيمٌ)



Endocrine Anatomy, Histology & Embryology | MID 5

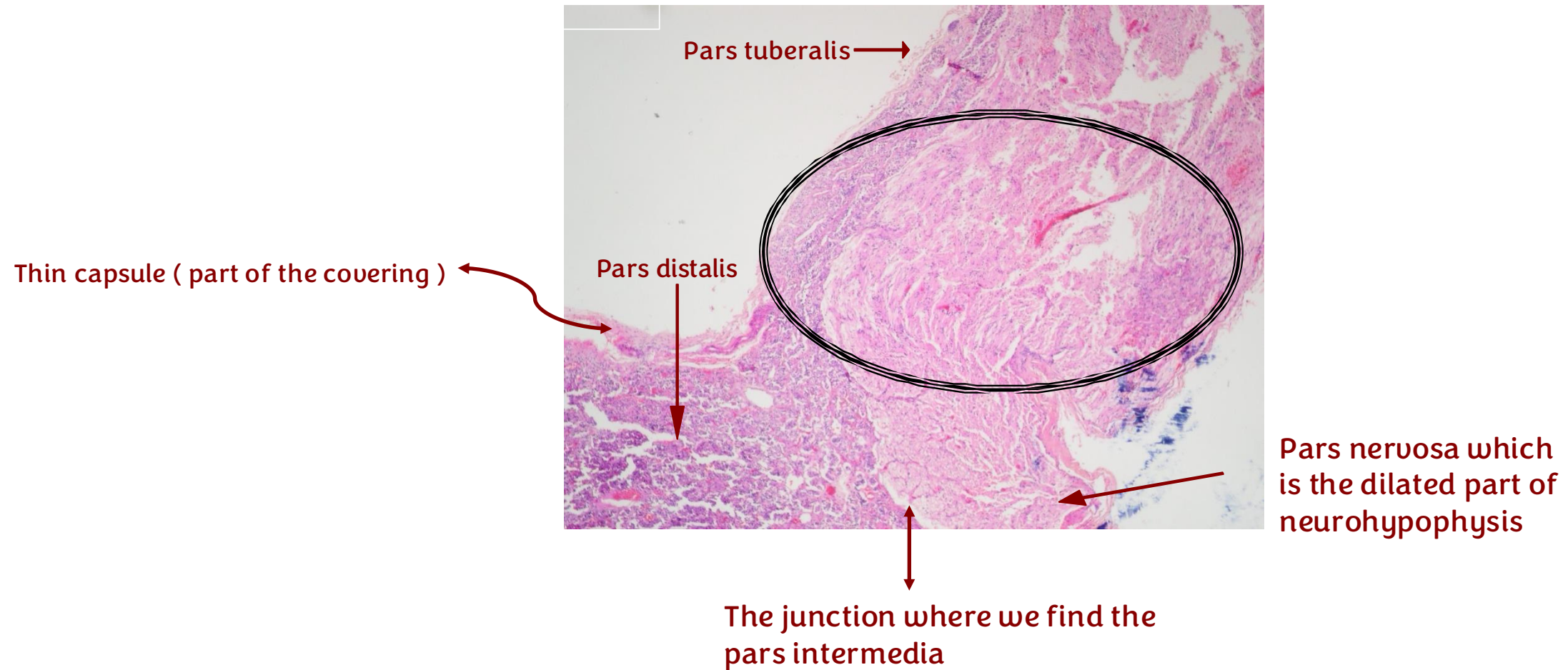
Histology Lab

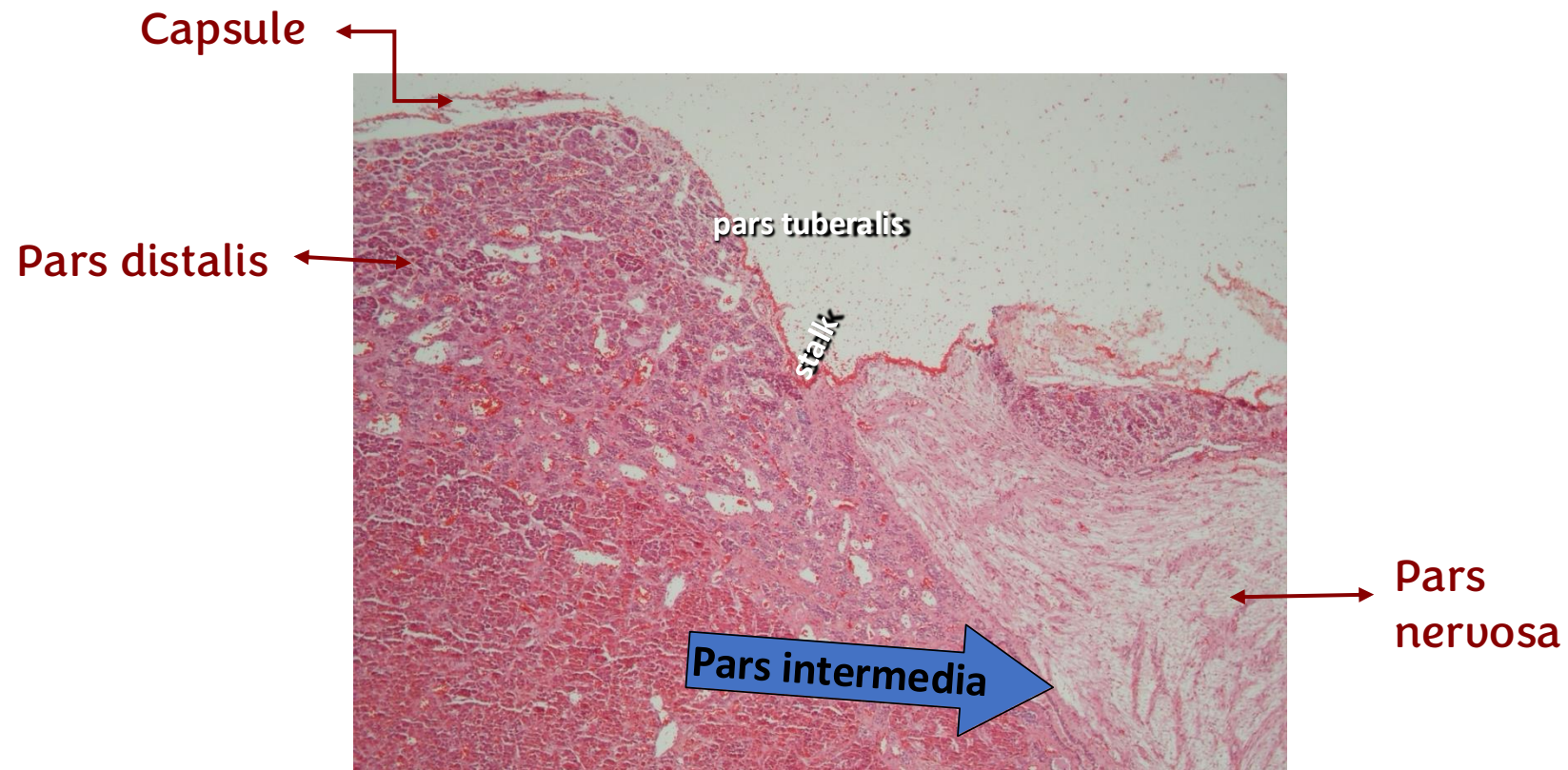


Written by : Batool Zayed
Reem Alfageh

Reviewed by : Rawan Okour

Hypophyseal stalk (infundibulum)





Rathke's pouch

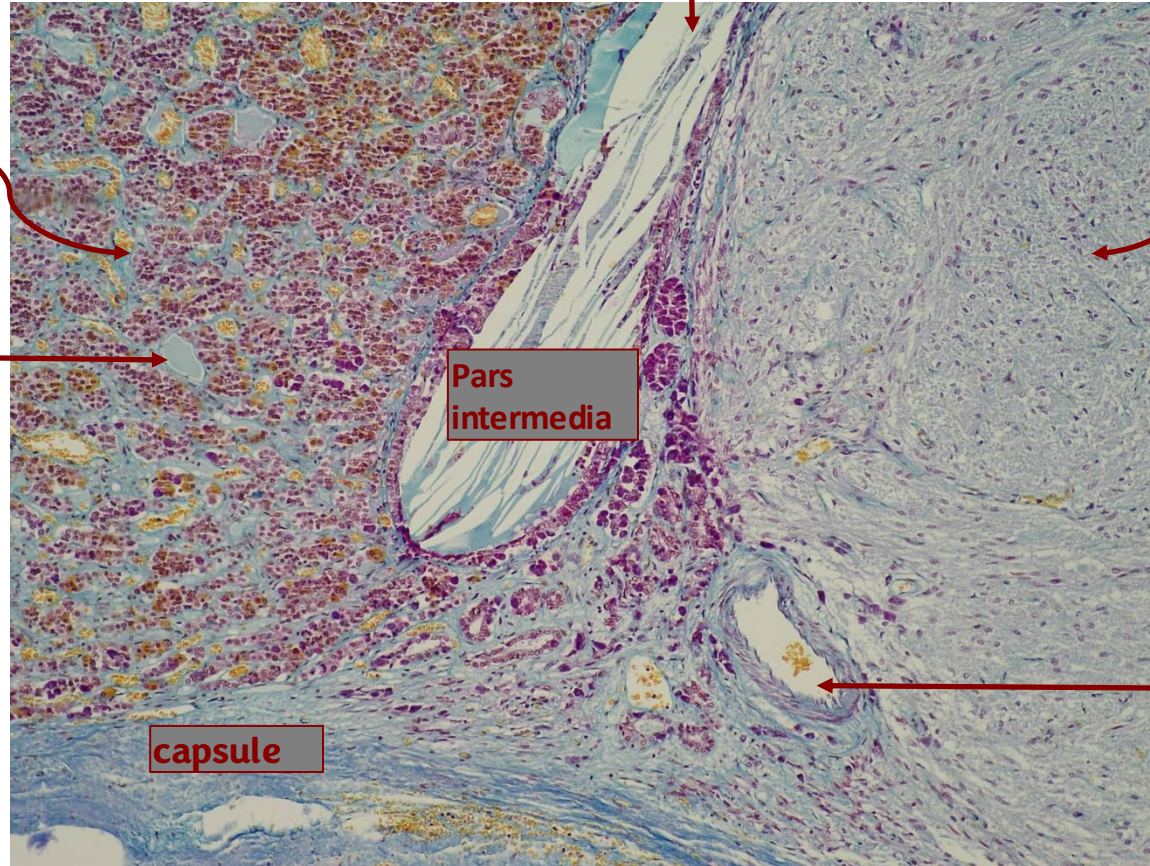
- Special stain of trichrome

A remanent from the interior of rathke's pouch filled with colloid

adenohypophysis

It is obvious we have secretory cells all over the area

These blueish areas filling between the cells are reticular fibers (collagen type 3) supporting the cells, however the yellowish areas are sinusoids filled with blood



However here, we have scattered cells and things that look like waves which are the unmyelinated axons extending from the hypothalamus

An artery not a vein due to the thickness of the wall

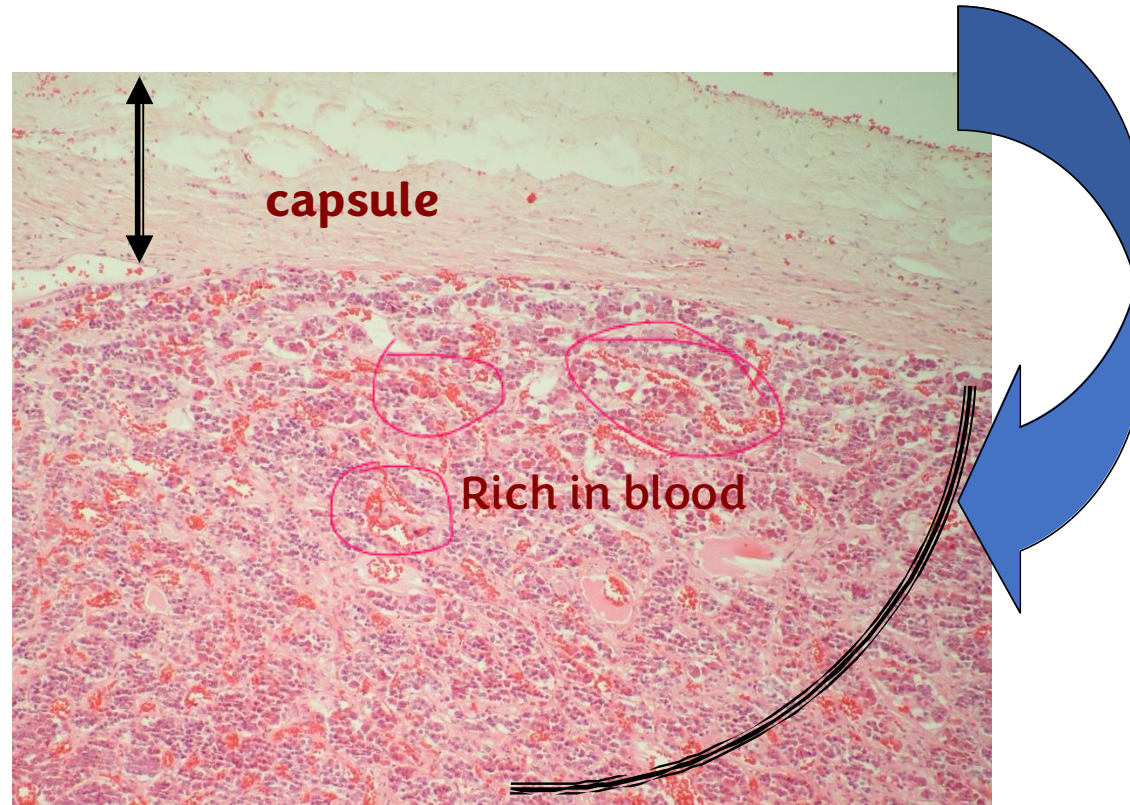
P.distalis P.intermedia P.nervosa
(Pearse trichrome stain)

SAME BUT LOWER
MAGNIFICATION

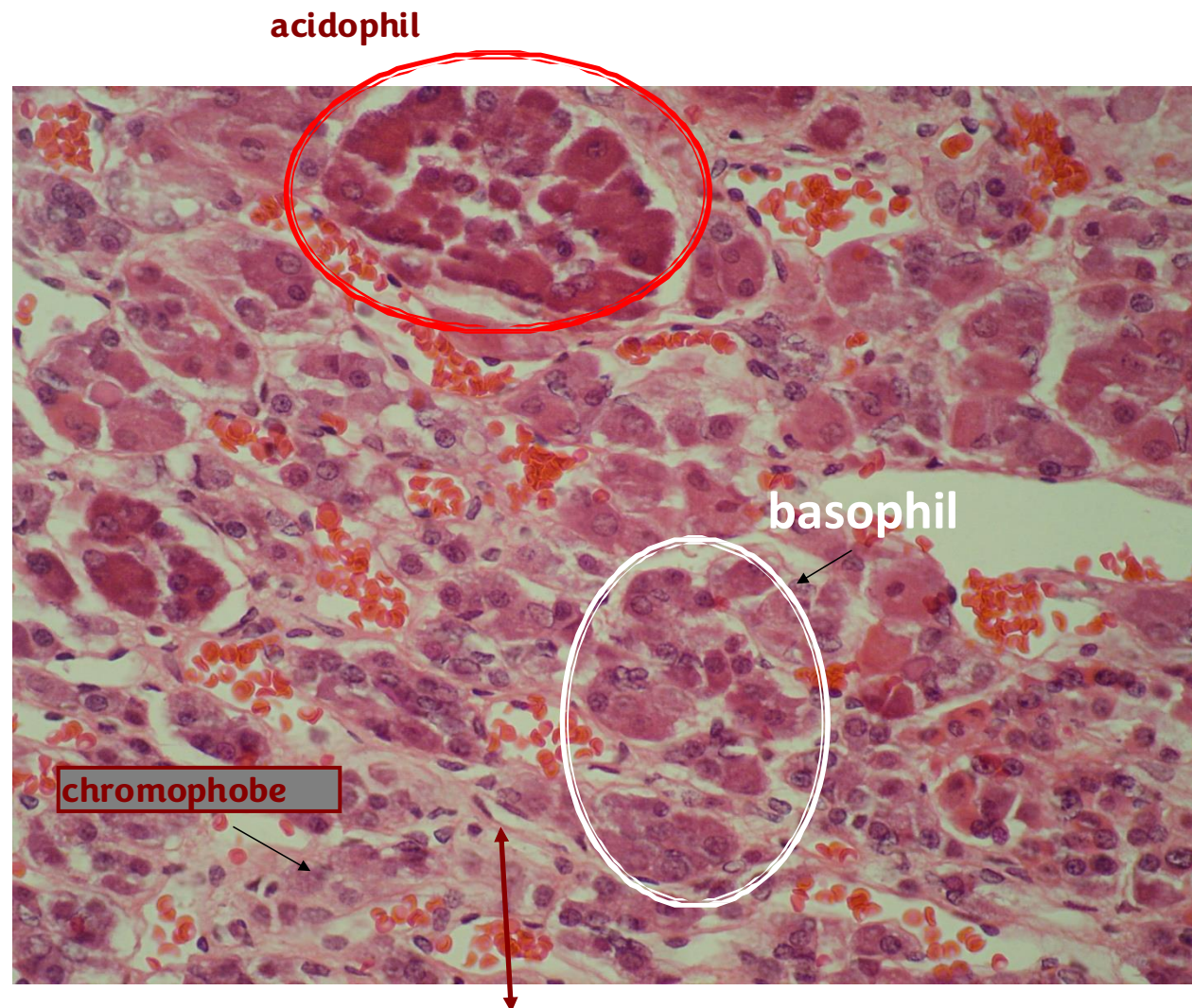


Capsule — adenohypophysis H&E stain

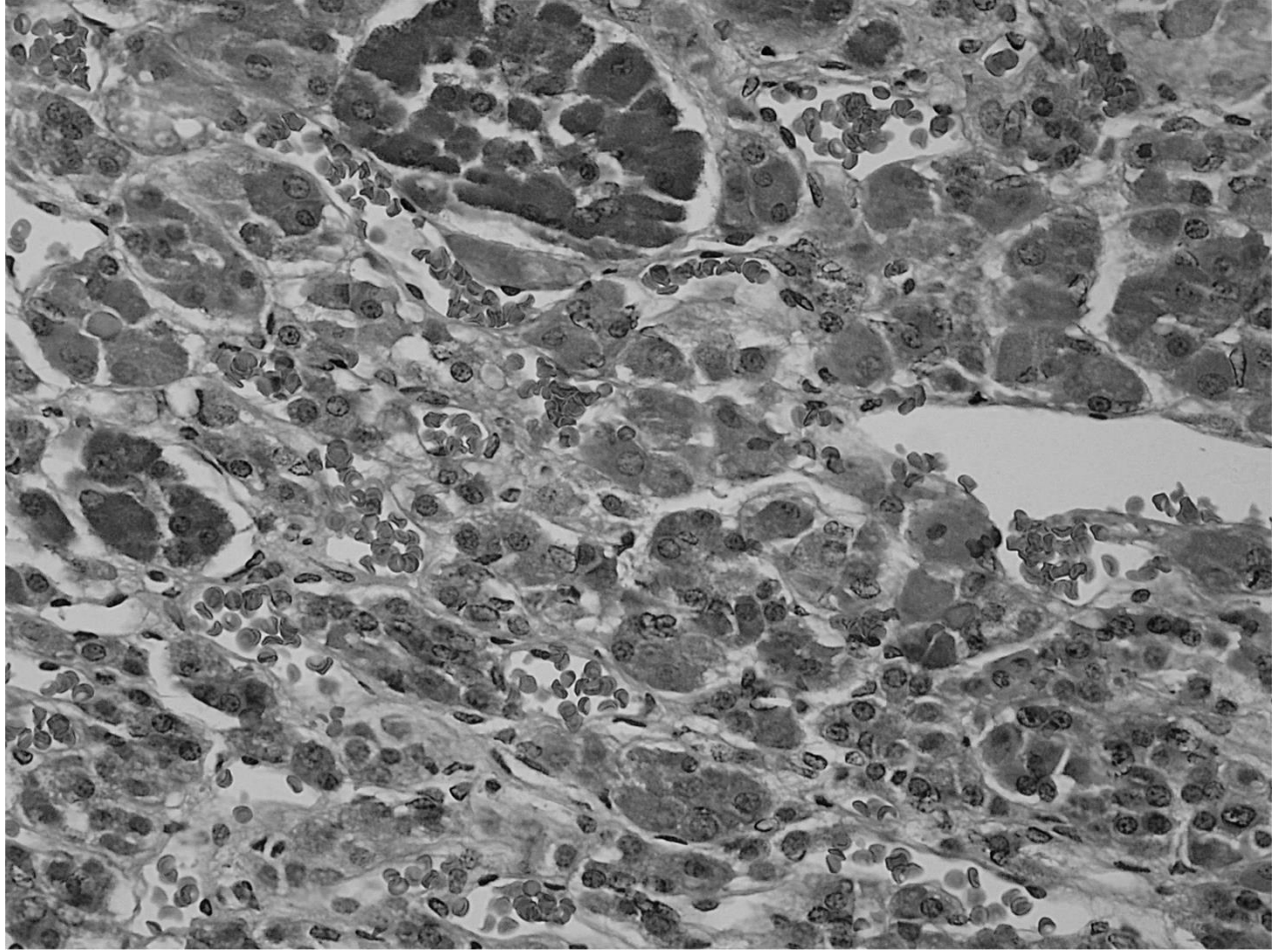
To be more specific this is the
pars distalis and the court
evidence for that is the totally
obvious heterogeneity between
cells unlike the pars tuberalis that
contains roughly one type of
cells or a small amount of other
types



- By using H&E stain we differentiate between subtypes of cells



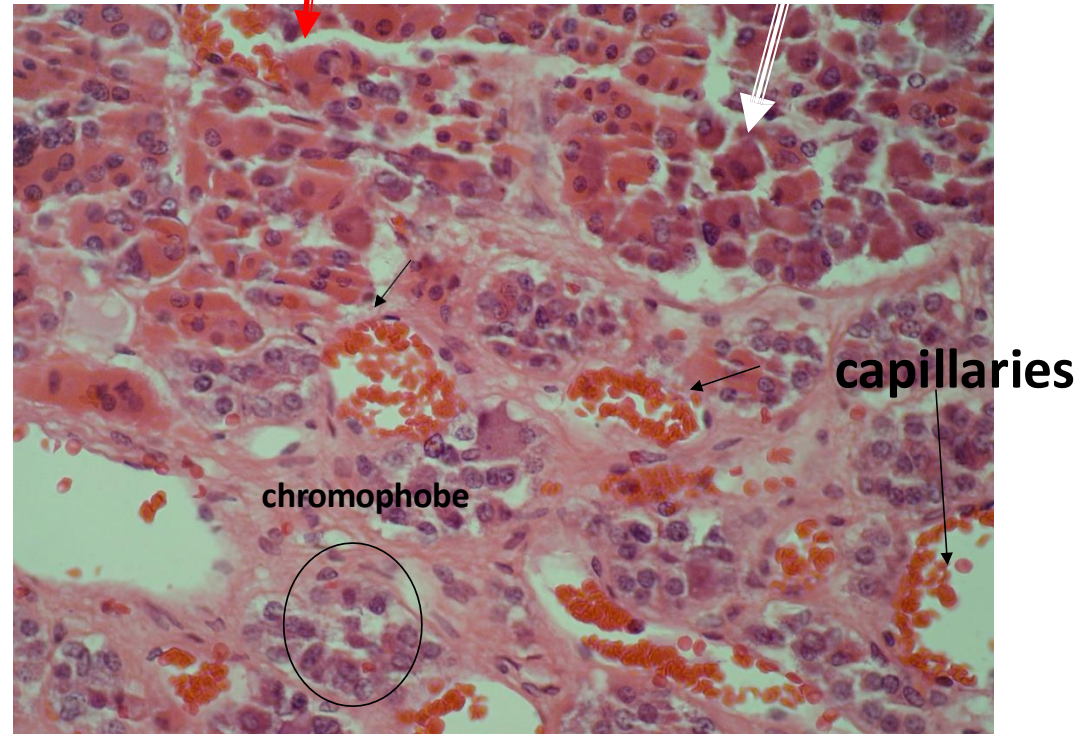
When we don't see RBCs we look at the endothelial cells



- Same as before

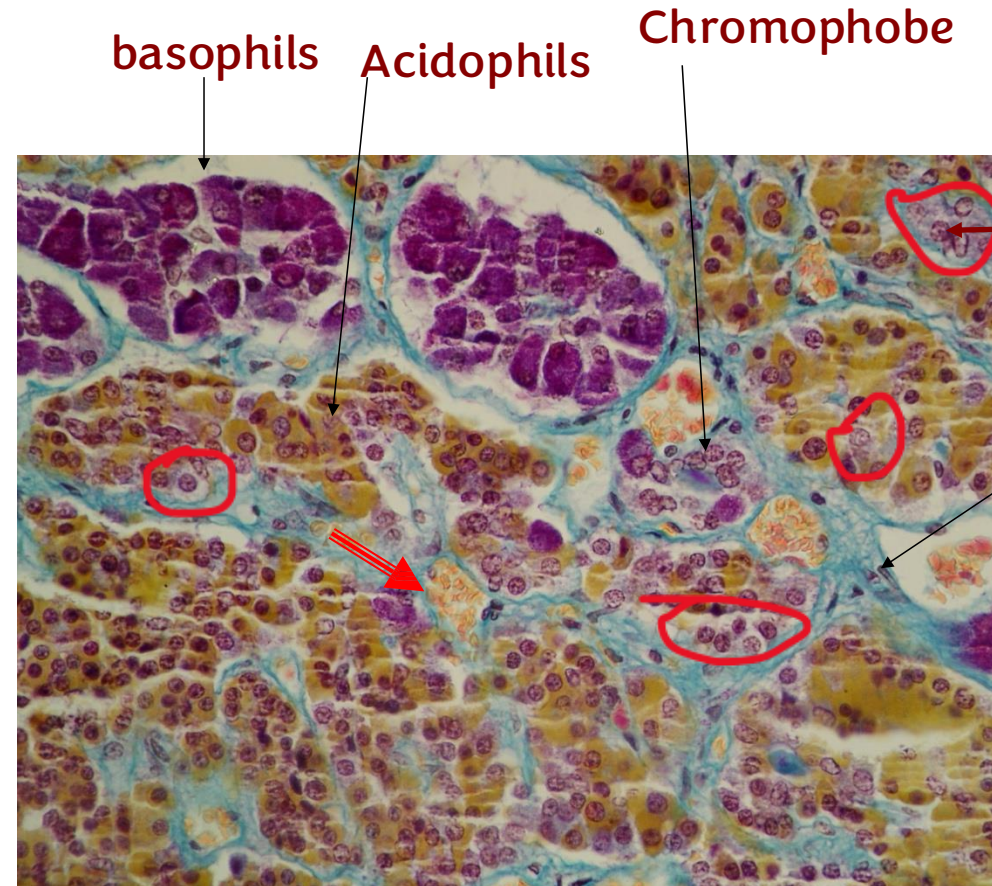
Acidophil

basophil



- **Trichrome stain**

Violet cells : basophils
Yellowish cells : acidophils

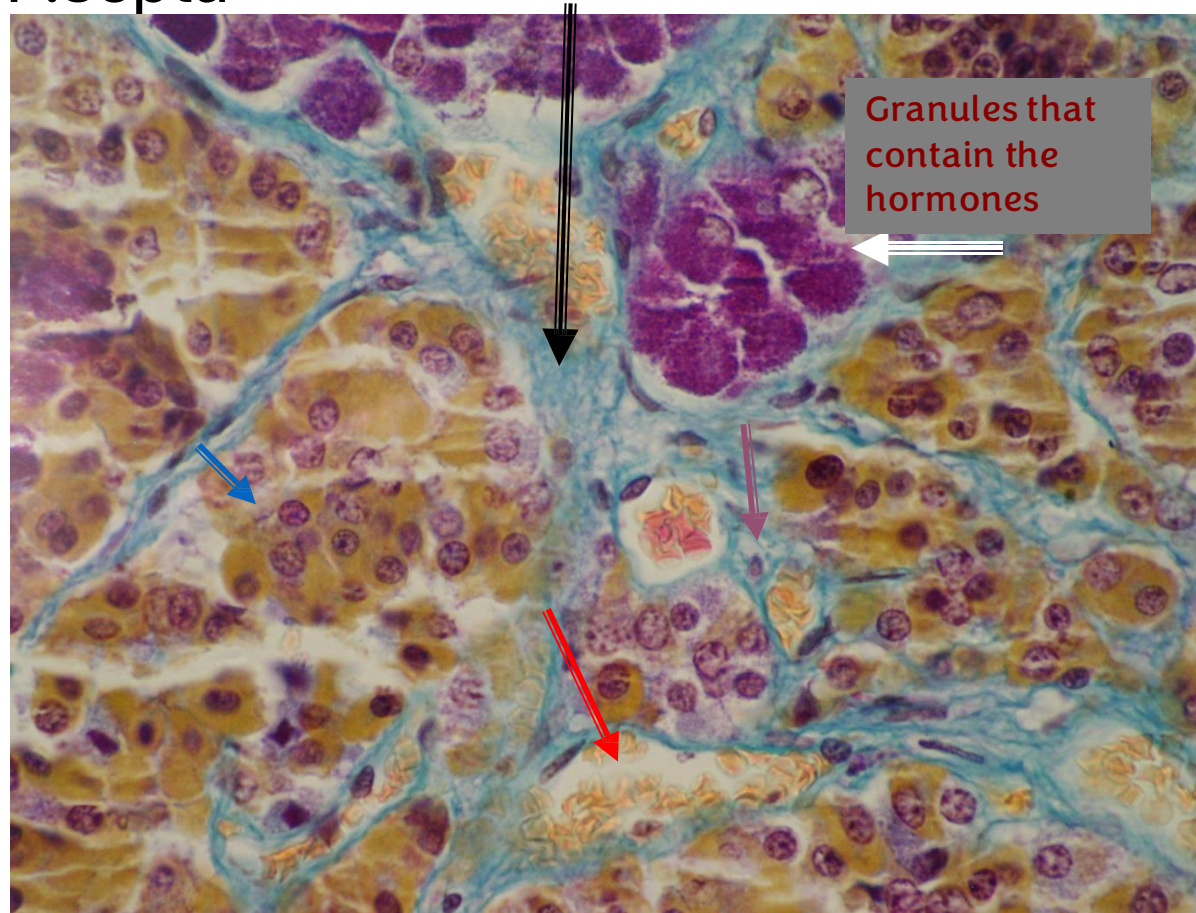


We can still see some traces of basophilia and this is an evidence that supports the theory which says : chromophobes were actually basophils or acidophils that depleted their storage .

C.T. (reticular fibers)

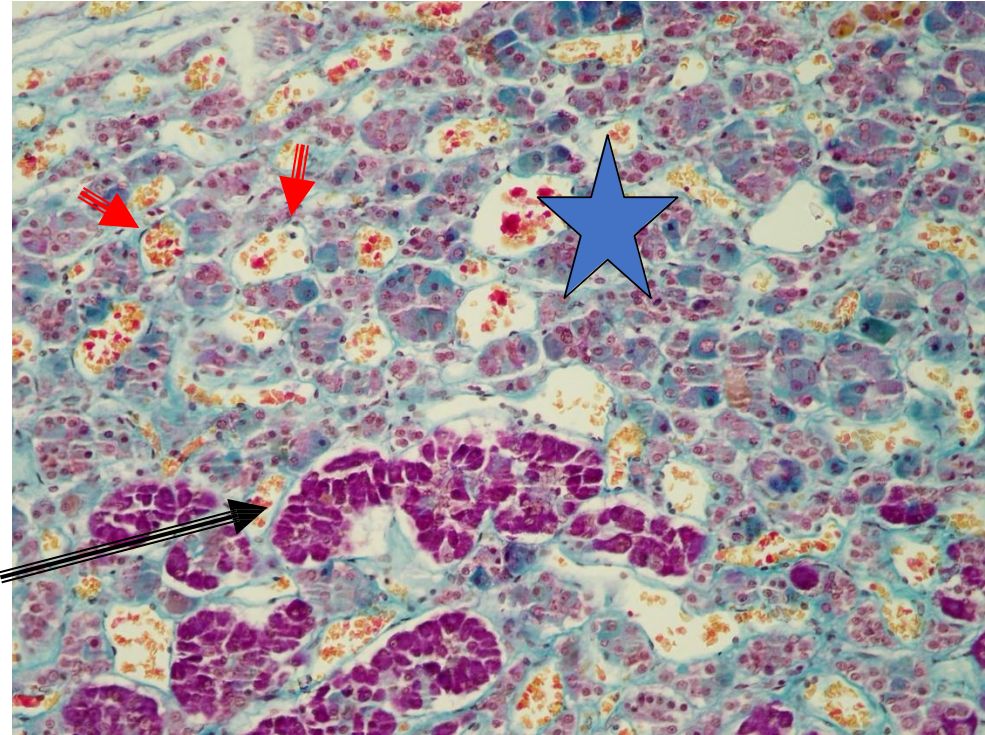
- Circled cells are chromophobes

C.T .septa



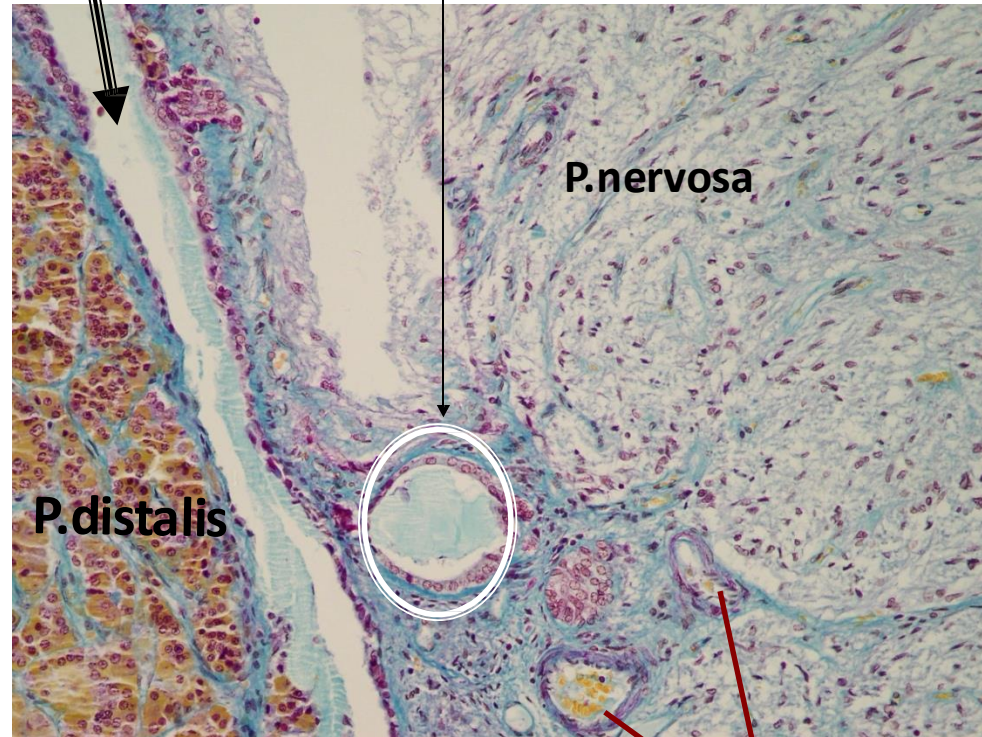
Chromophobe★

basophil



Rathke's pouch

follicles of p.intermedia

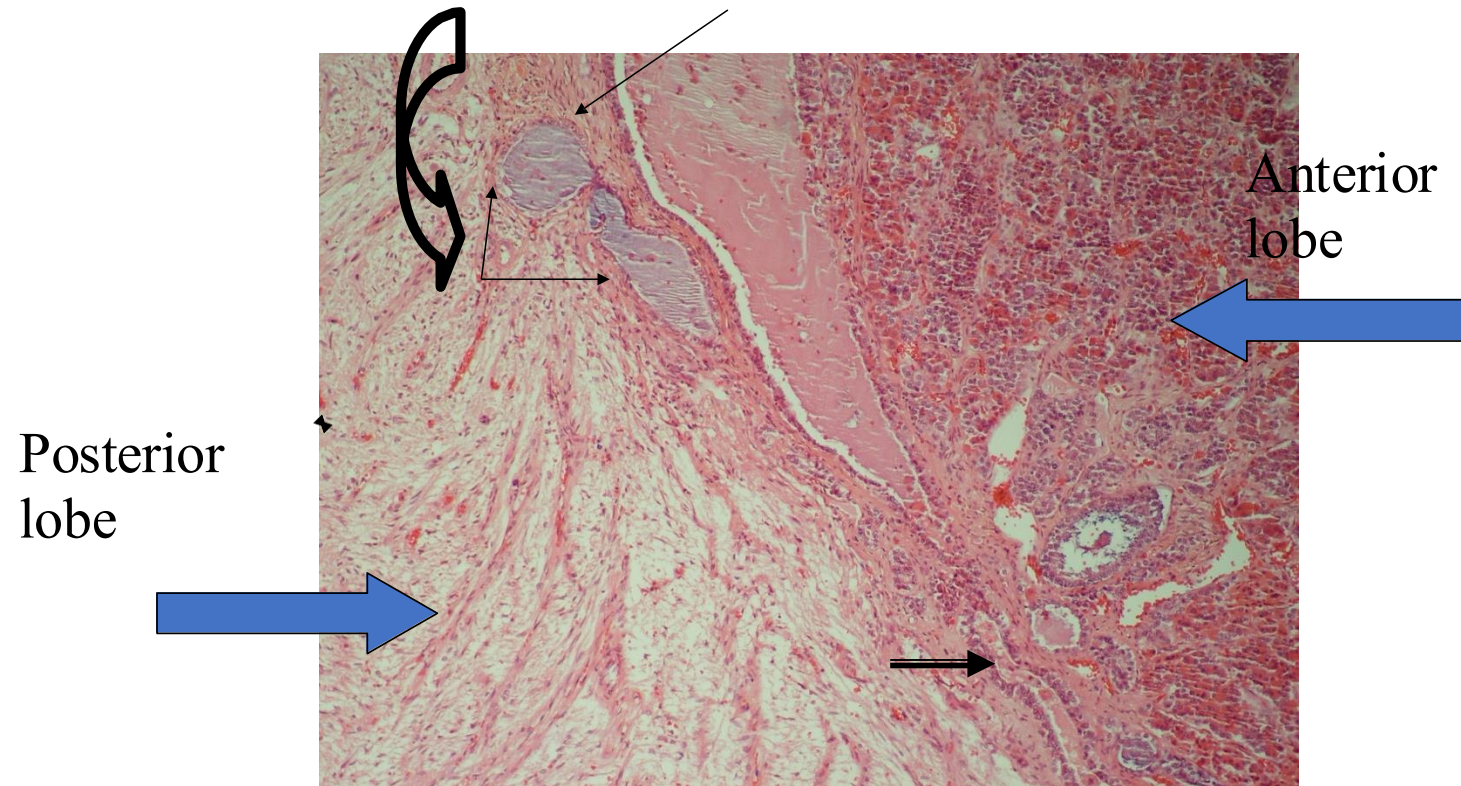


P.nervosa

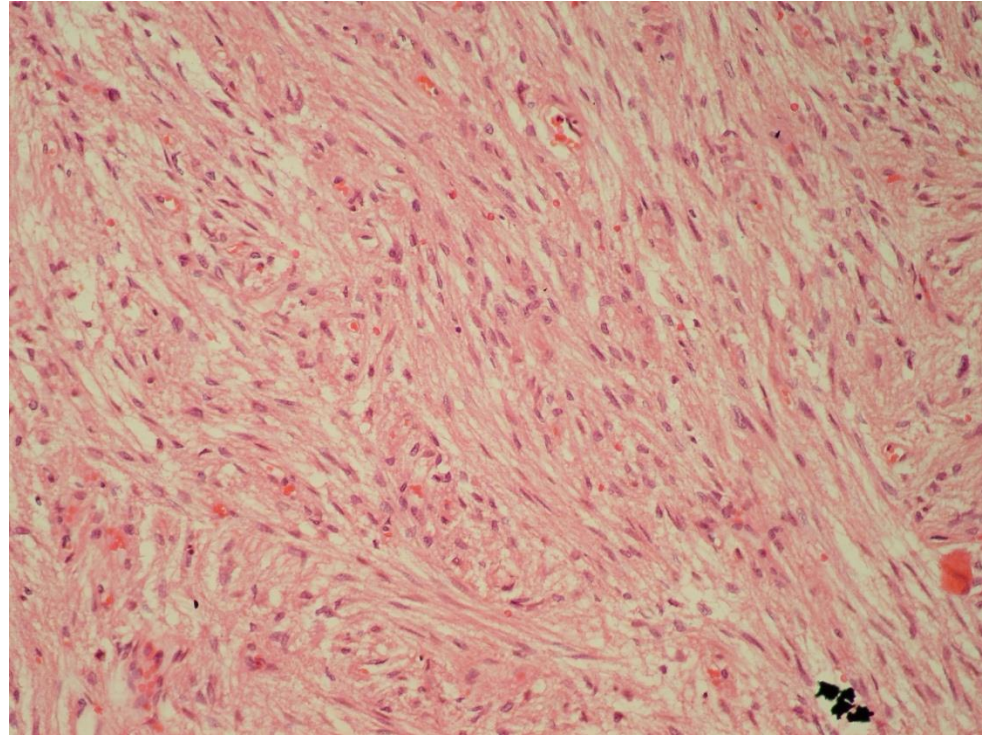
P.distalis

Blood vessels

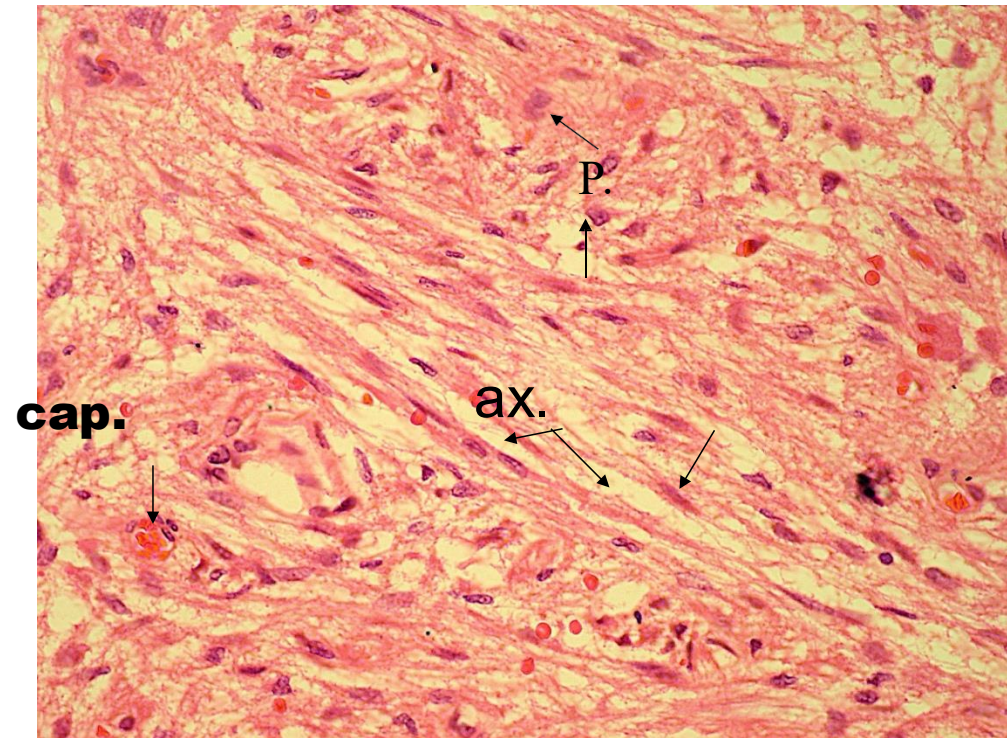
H&E stain pituitary gl.
Colloid: follicles of p.intermedia

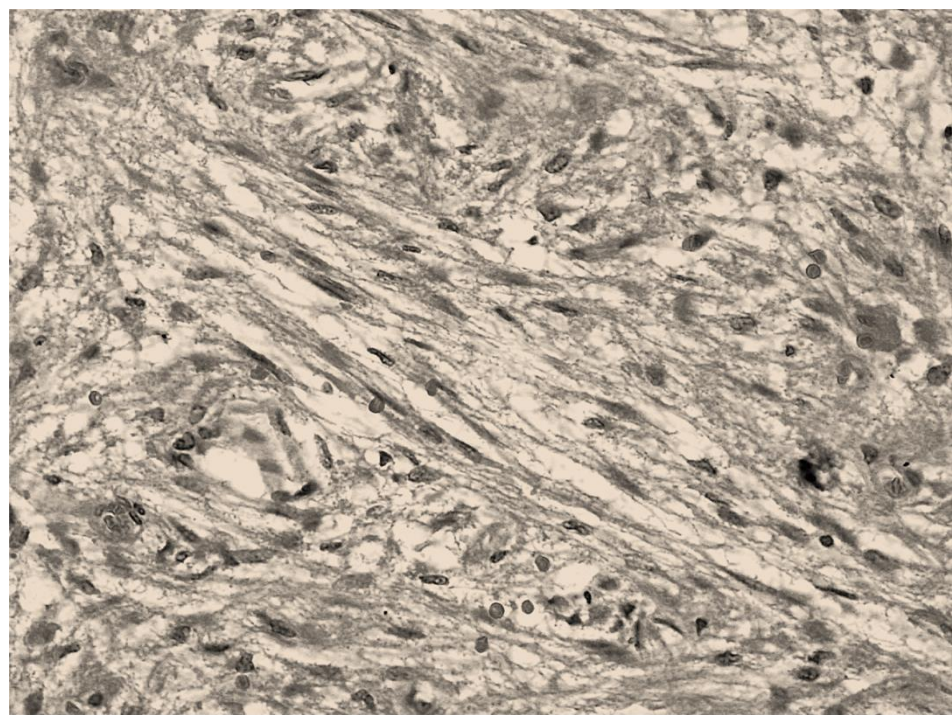


Neurohypophysis (posterior lobe)

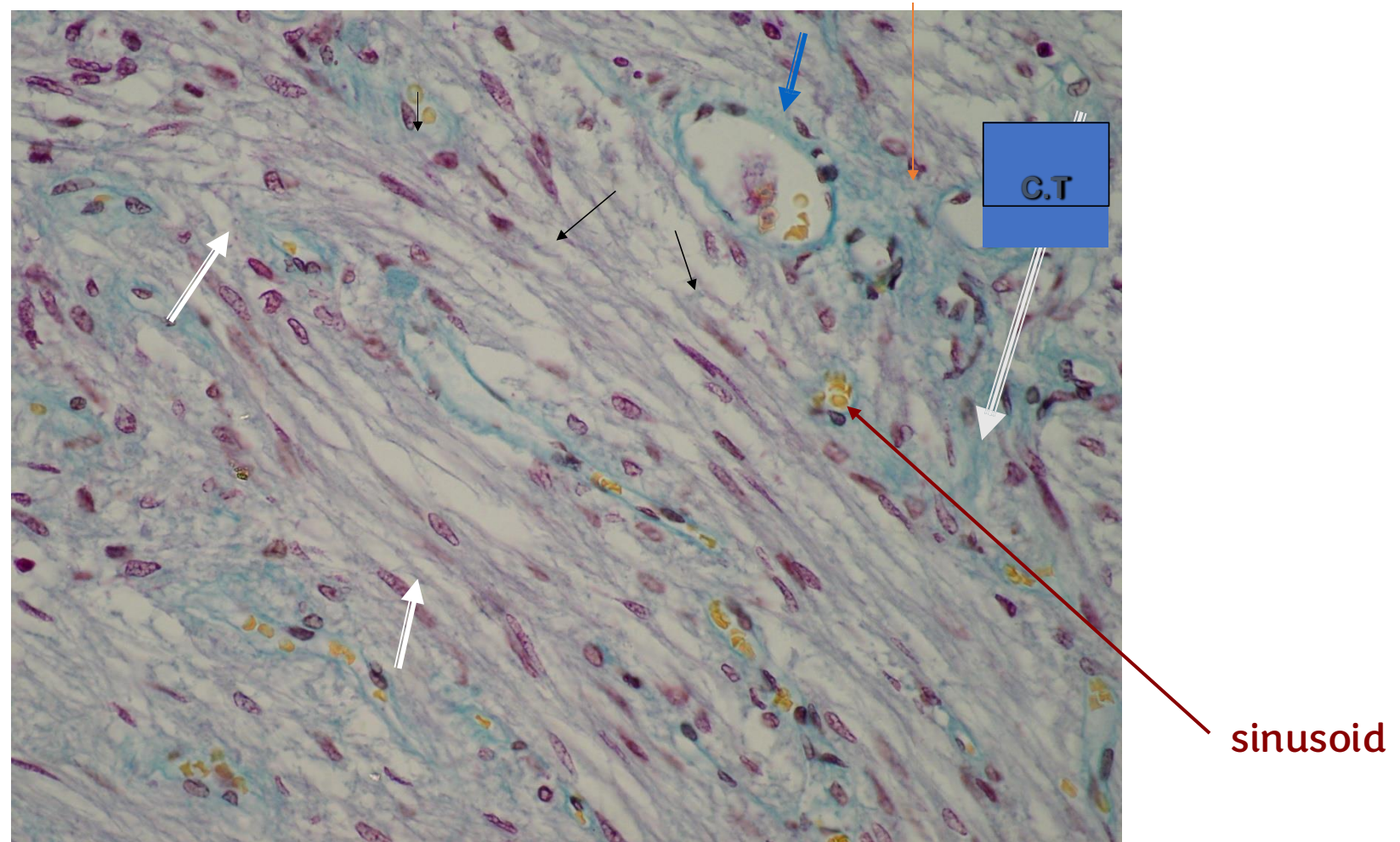


Axons of unmyelinated nerve fibers, pituicytes, Hering bodies





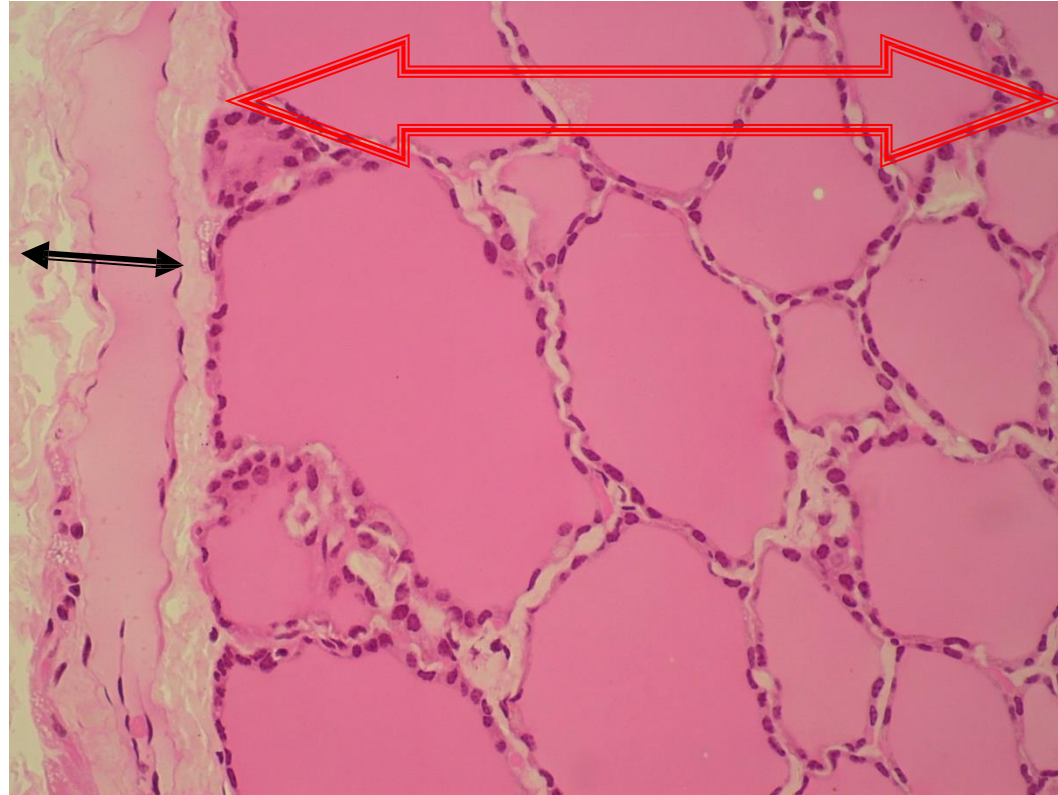
- This picture is a combination of axons ,
pituicytes and blood vessels



Thyroid gland

Capsule - follicles of thyroid gland

Capsule with a small
vein running in it

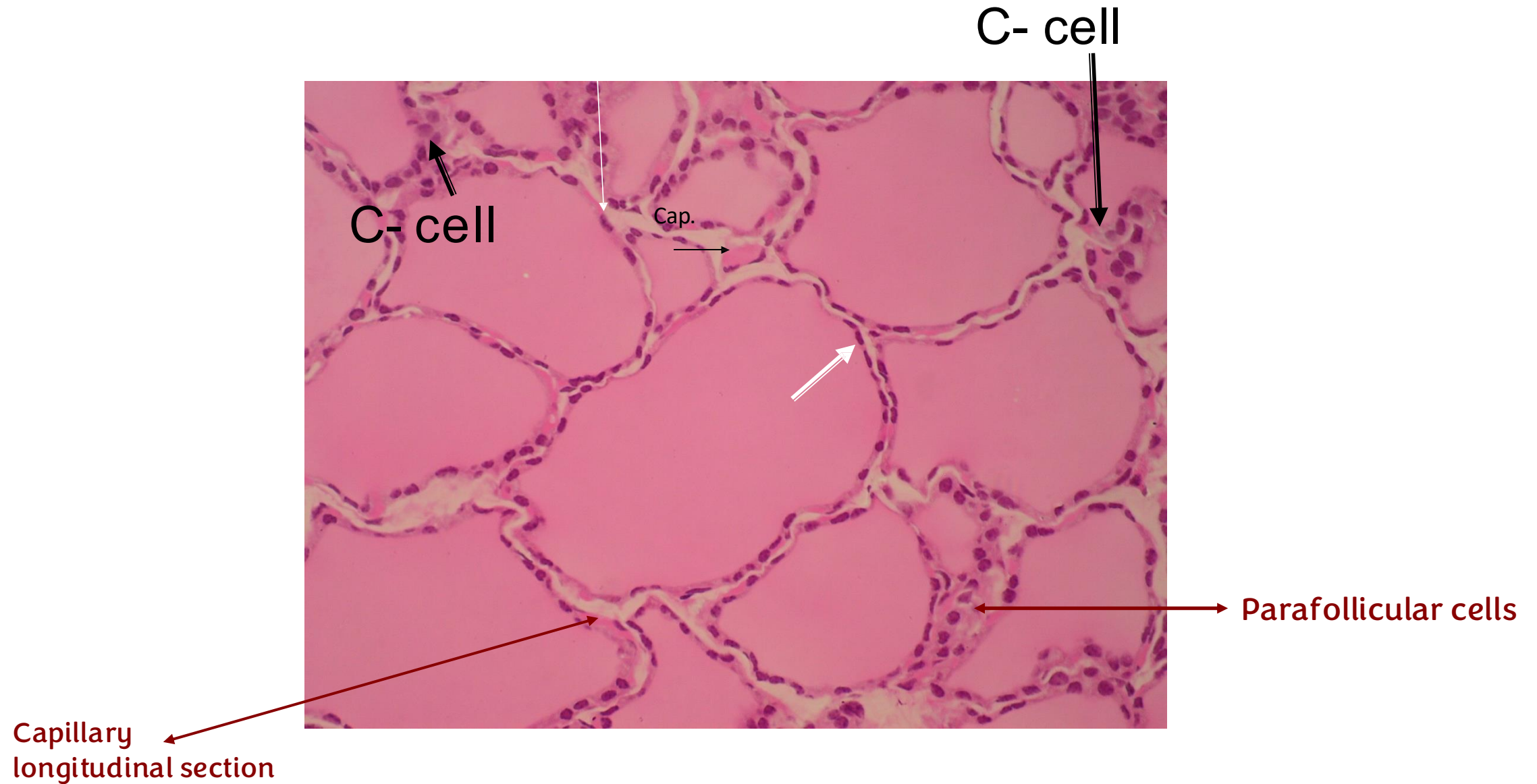


Flat nucleus ---> inactive
thyroid

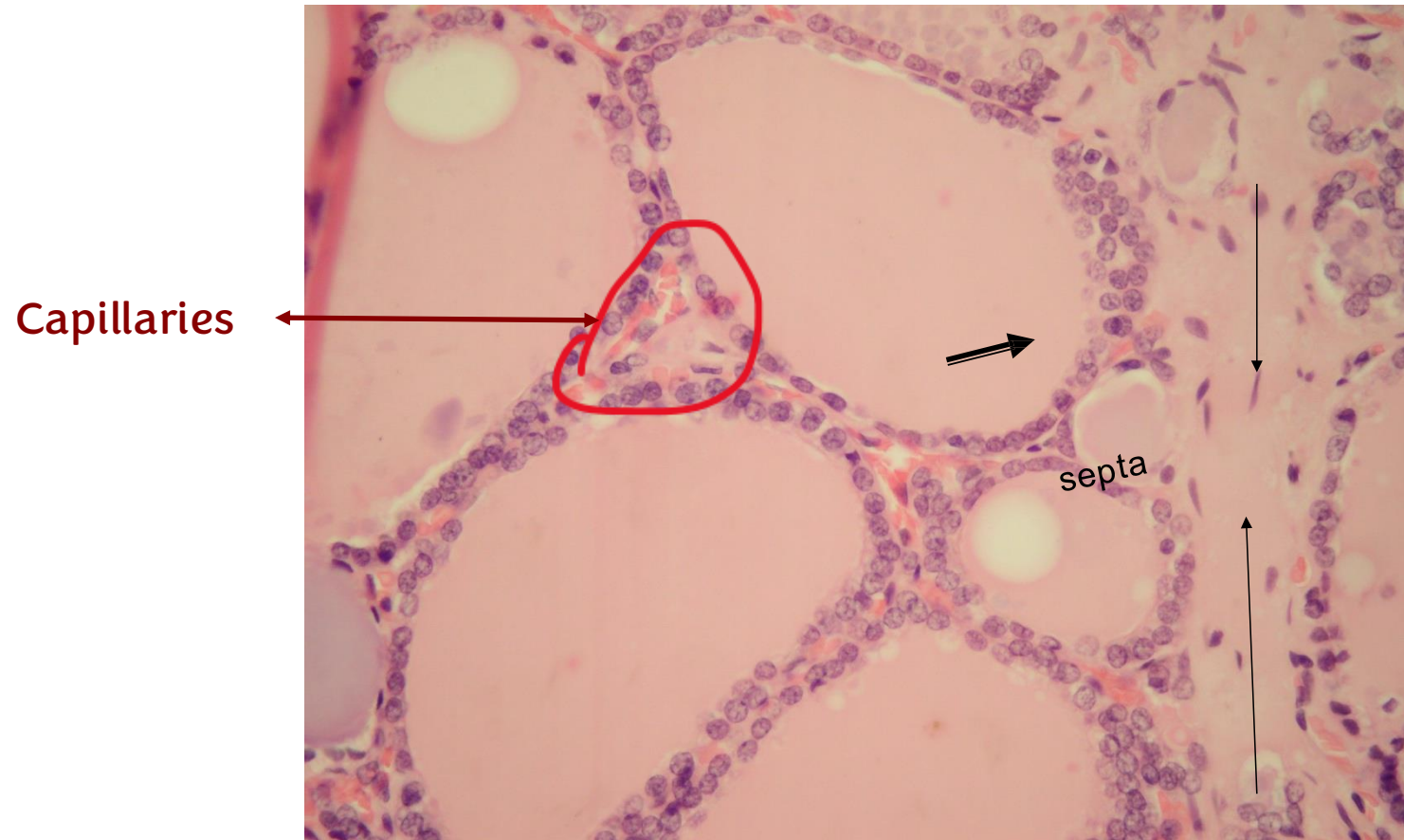
Resting(hypoactive)thyroid gl.



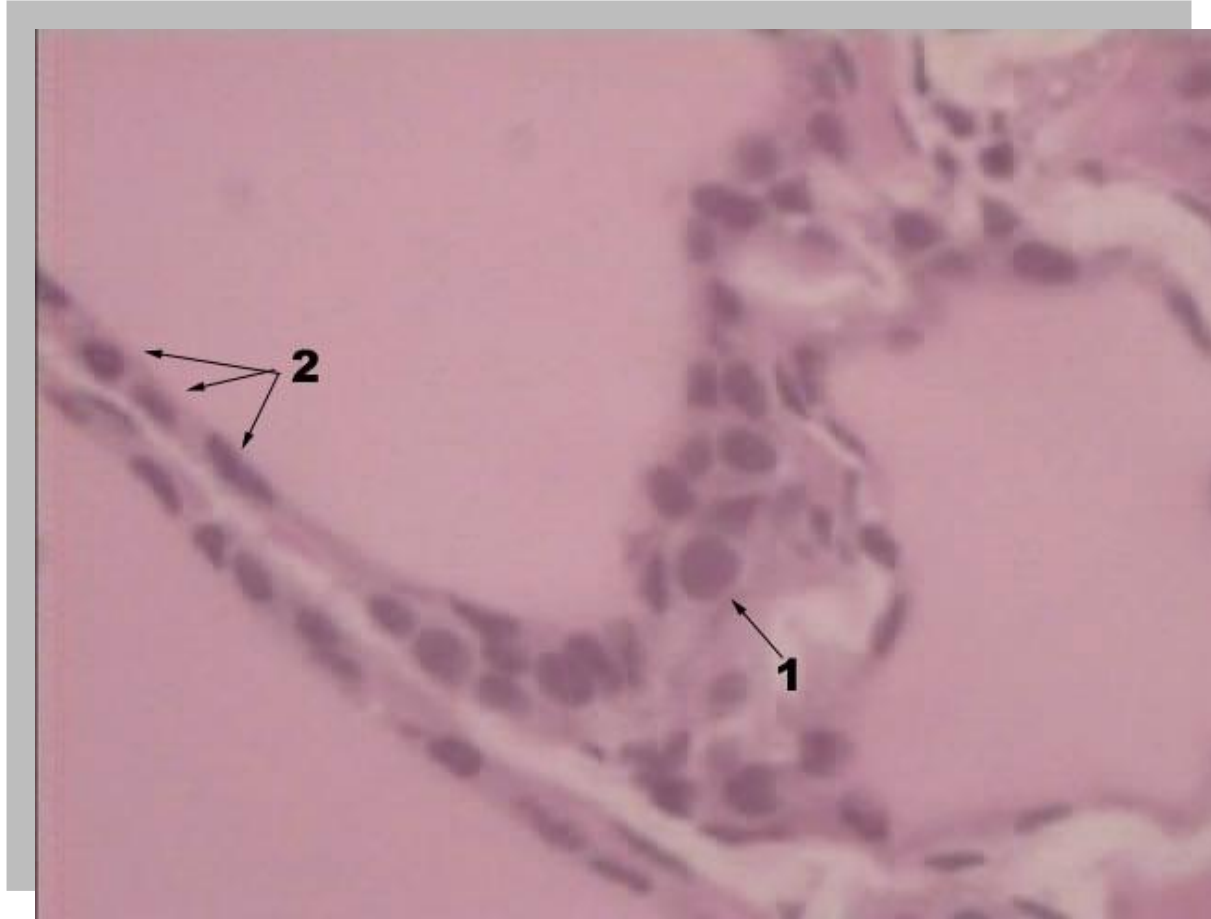
Simple squamous ep.



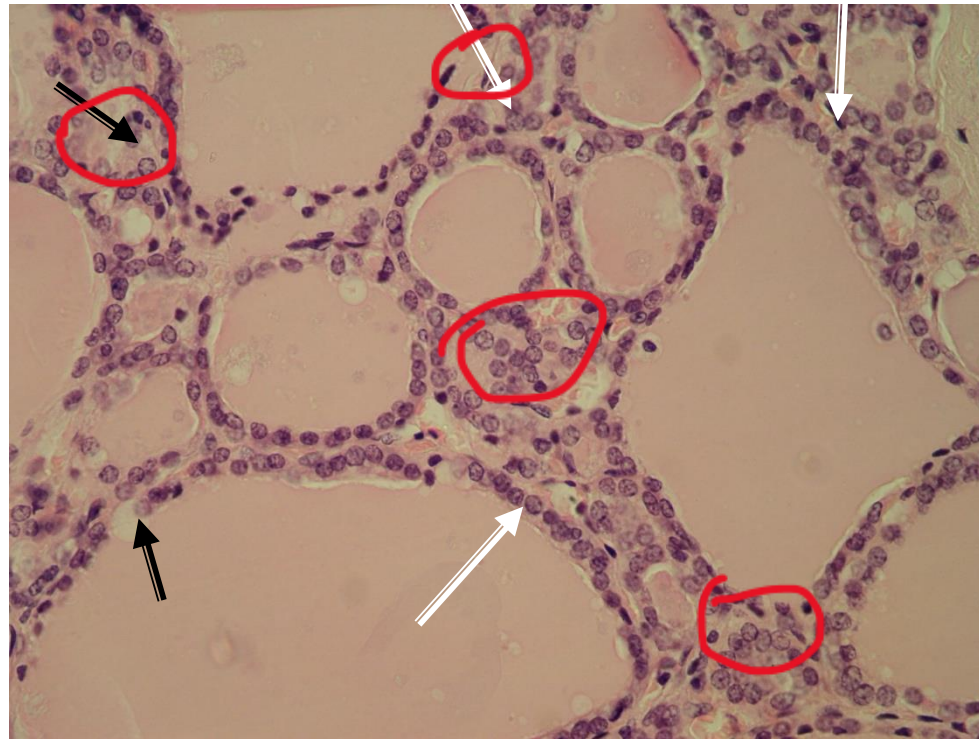
**** active thyroid (cuboidal cells not flat)**



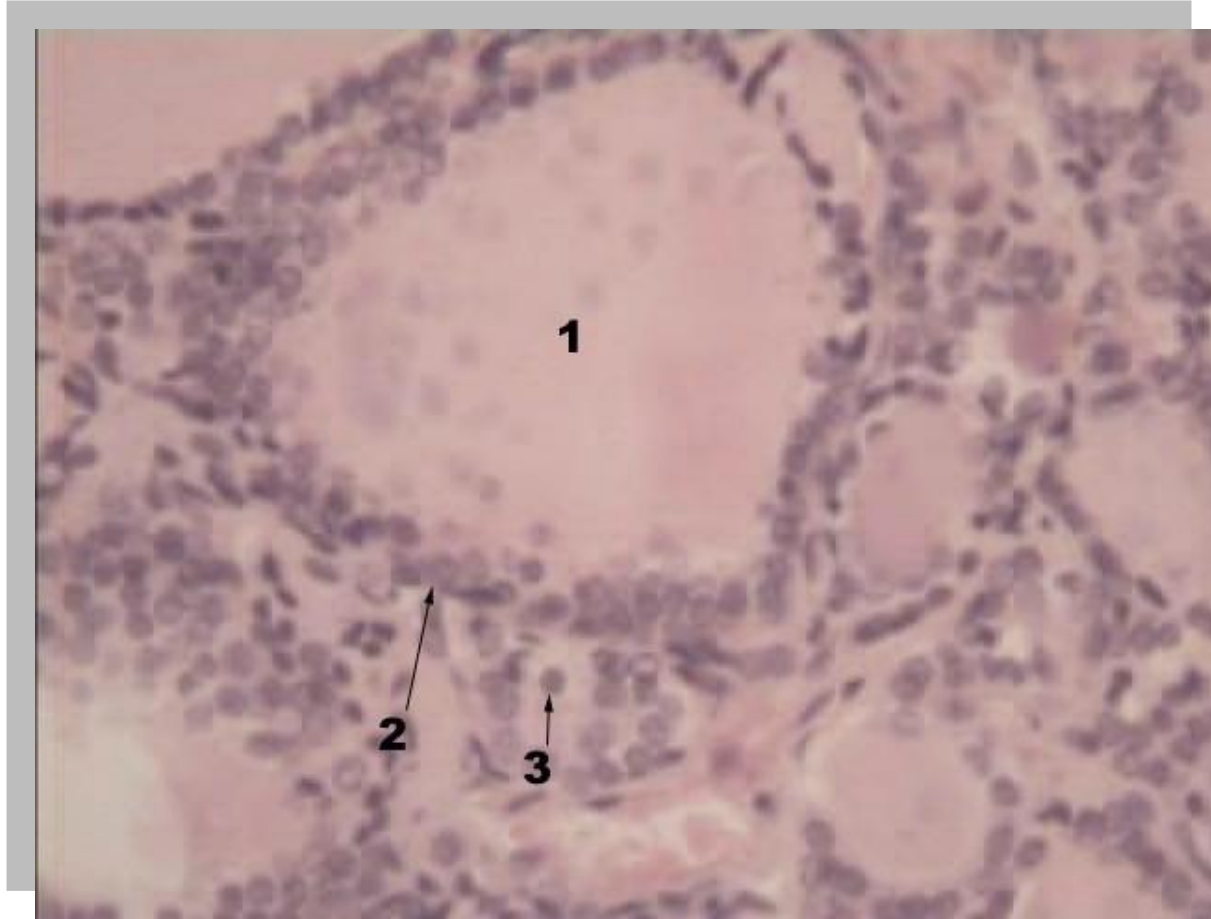
- **Ideal staining : the colloid staining versus the capillaries was optimized .**



Active thyroid –simple cuboidal ep. interfollicular cells



Circled cells : C cells



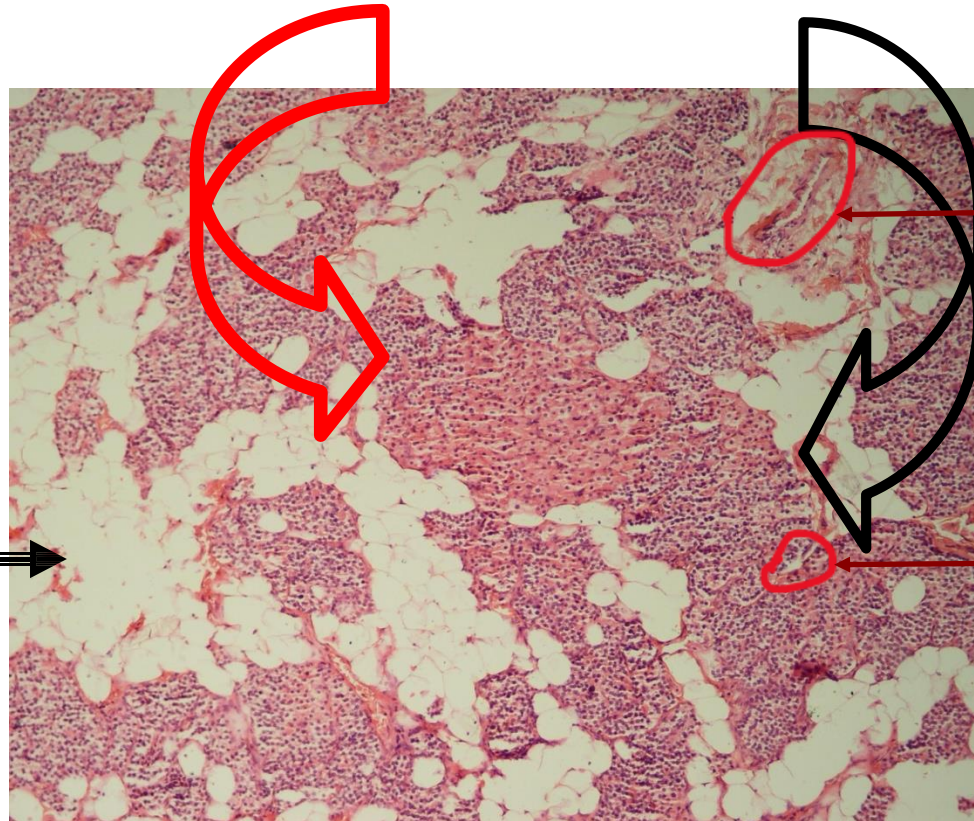
Parathyroid gland

Oxyphil cells & chief cells

Eosinophilic , larger , not well understood , first appear around puberty , increase with age

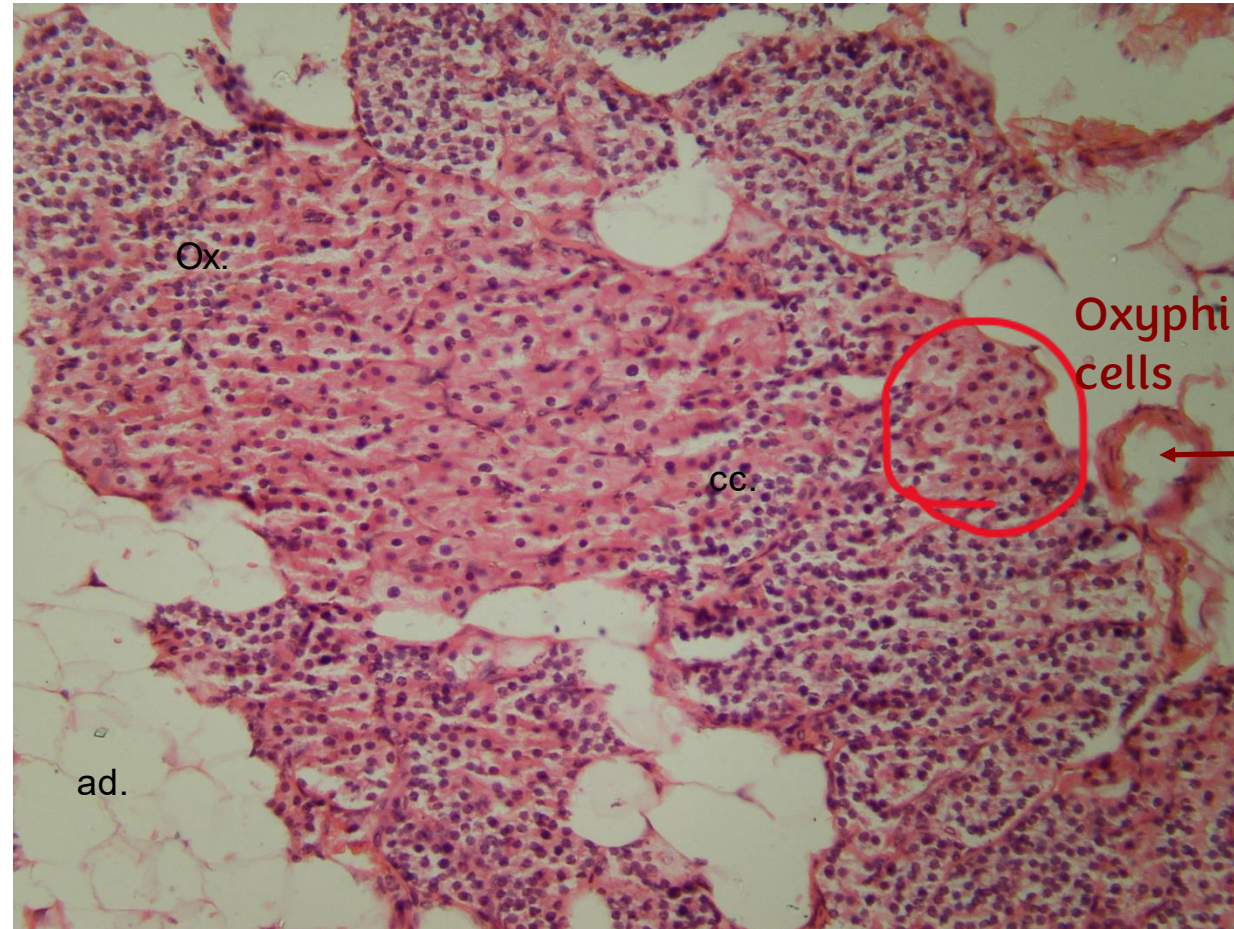
Basophilic , smaller , synthesize and release PTH which restores the level of calcium

Adipose cells
sign of aging



Blood vessel

Oxyphil cells
surrounded by
chief cells



Ox.

Oxyphil
cells

cc.

ad.

Blood vessel

○○○○○Adrenal gland

**** WHAT should you see ?**

- **A cortex surrounding the medulla**
- **A layered cortex and covered by a capsule just like any other gland**

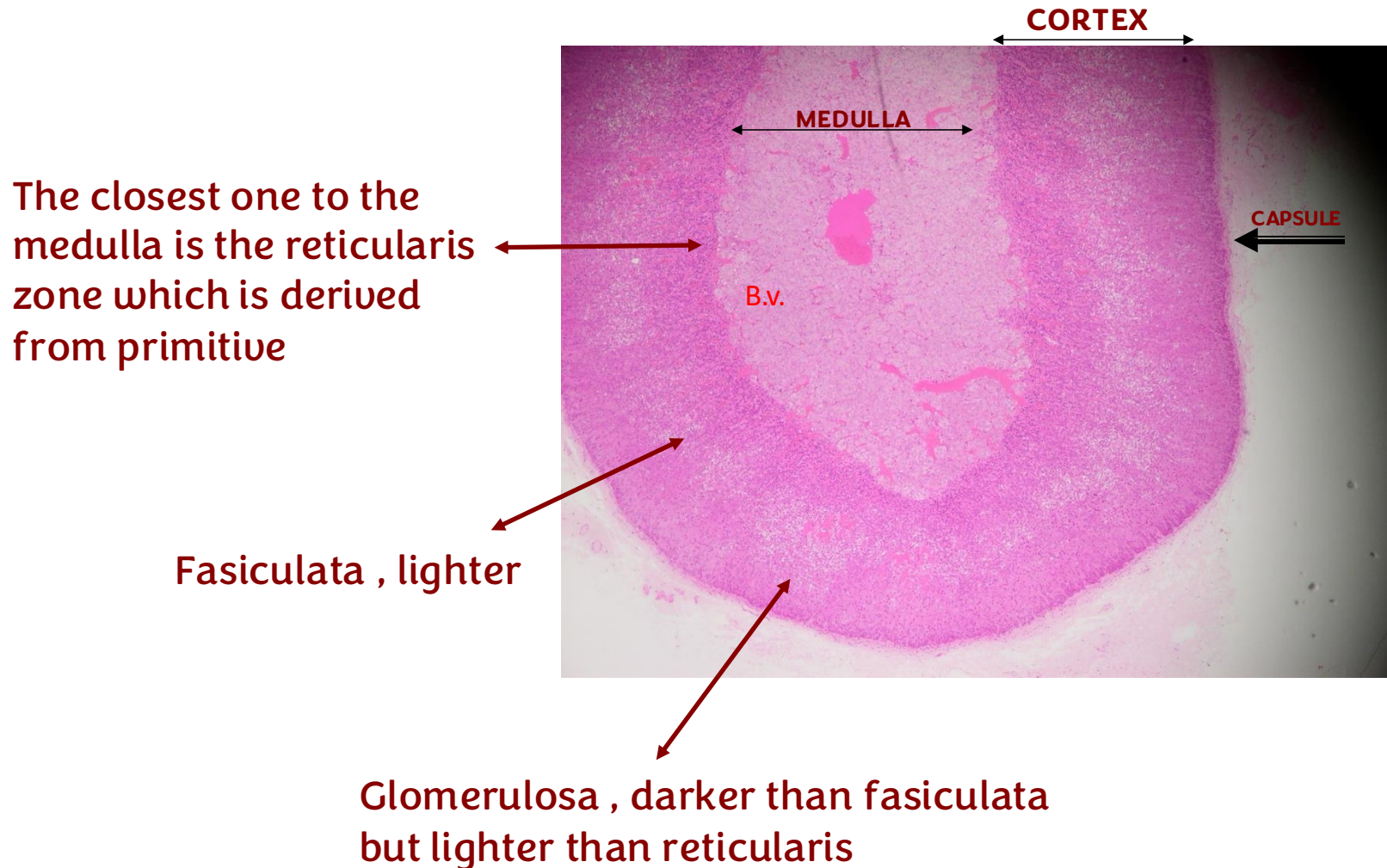
**** HOW to distinguish the layers of the cortex ?**

- **The outer two layers are way lighter because they are rich with lipid droplets (in low magnification)**
- **The inner reticular layer is darker**

**** The sinusoids in the reticularis are wider , the cords are interconnected & darker cytoplasm due to lesser lipid droplets**

Medulla Cortex

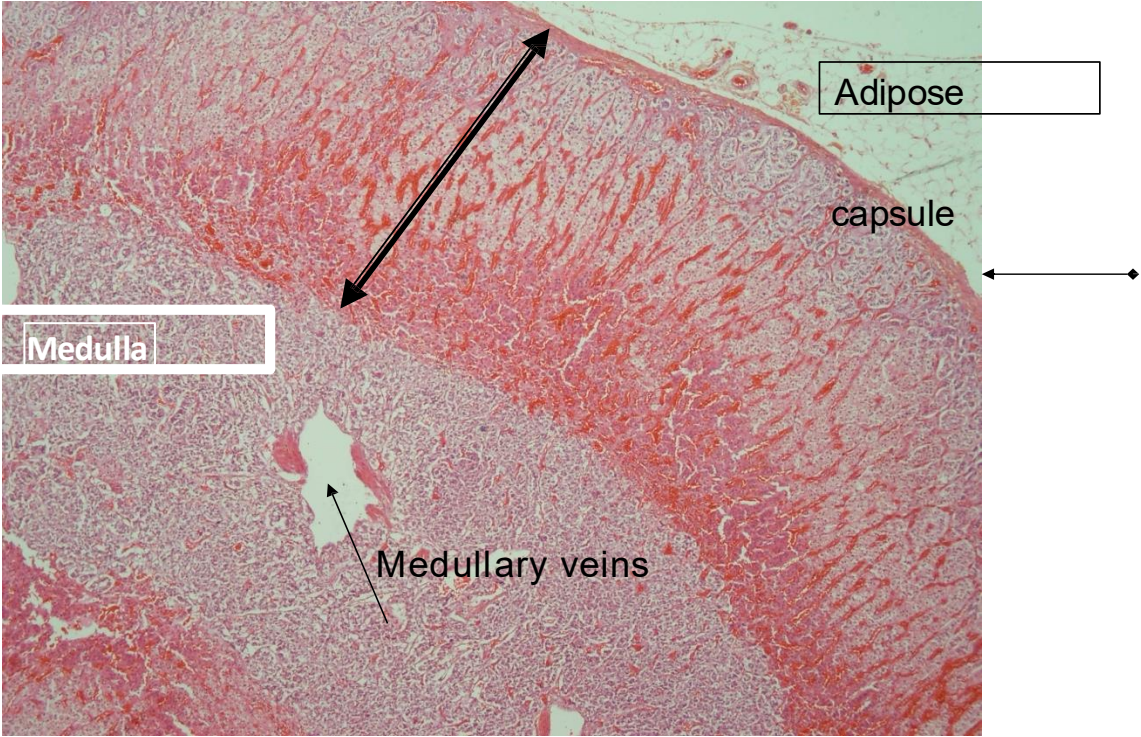
H&E
Brightfield LM



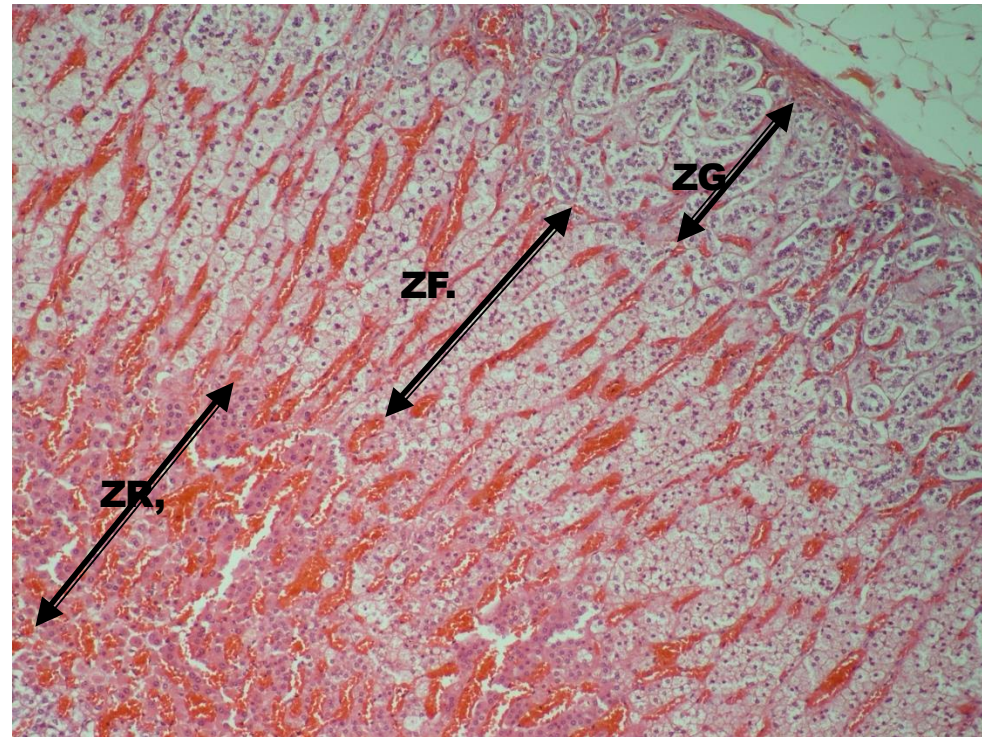
KEEP IN MIND

- ** all the cortex is derived from mesoderm
- ** medulla is derived from neural crest (ectoderm)

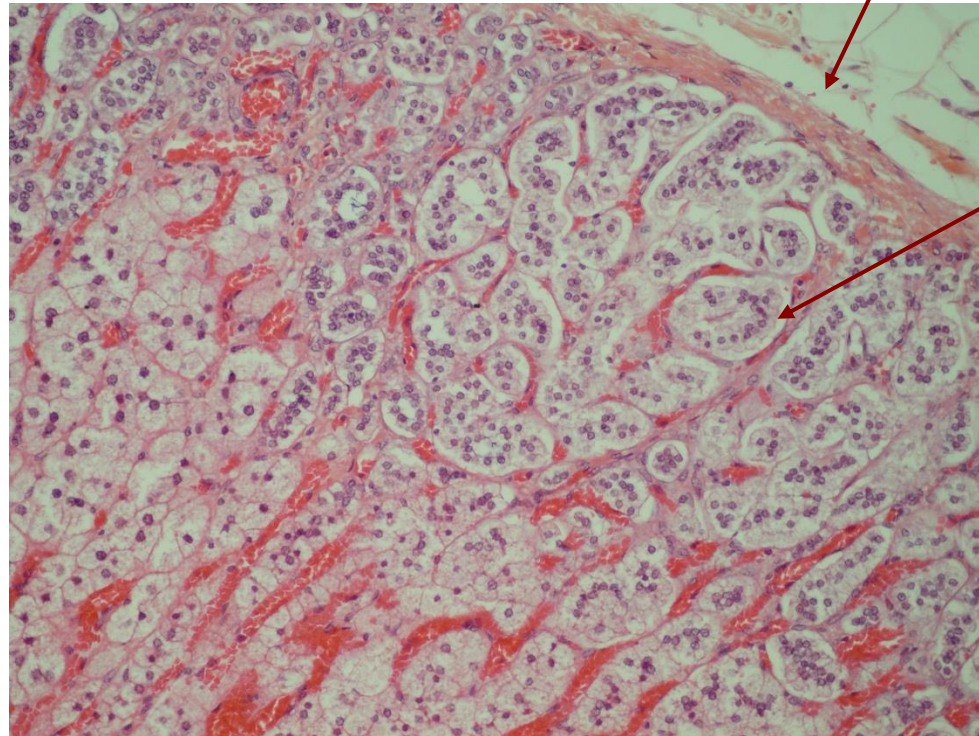
cortex



Zona Glomerulosa Fasciculata&Reticularis



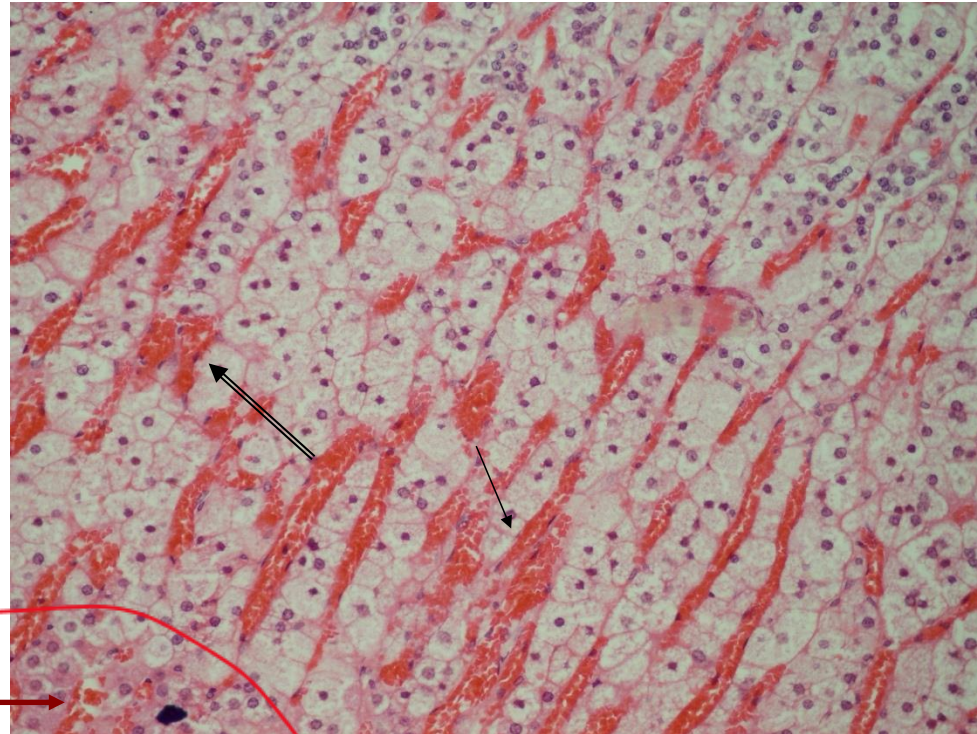
Zona Glomerulosa



Capsule

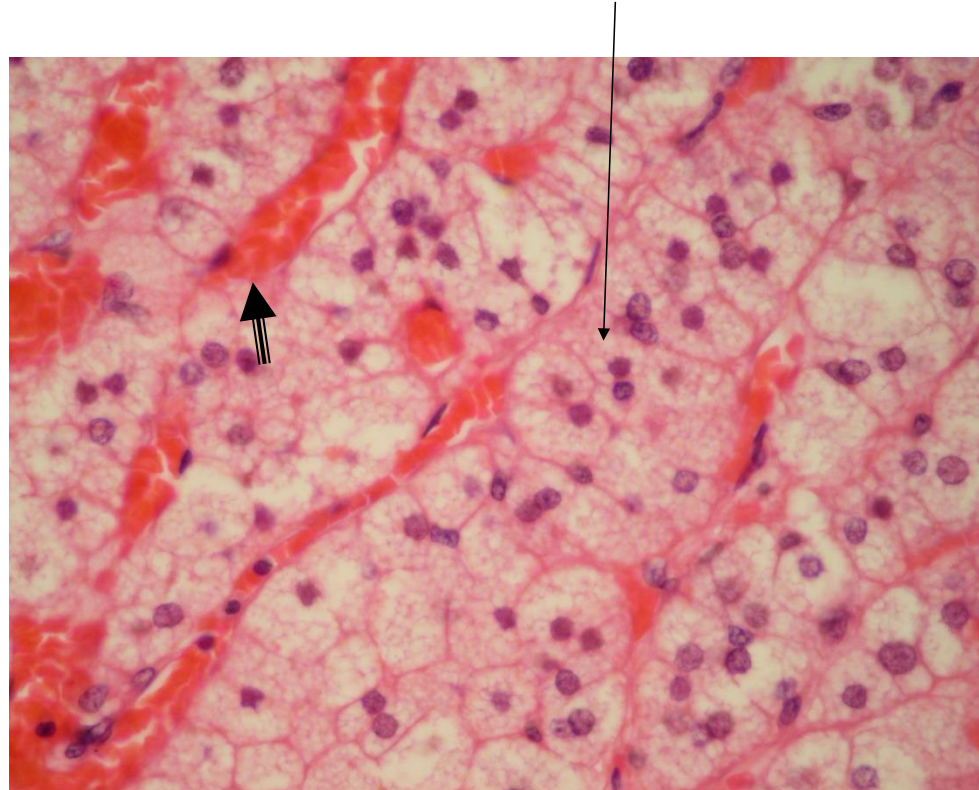
Arching

Zona Fasciculata-capillaries

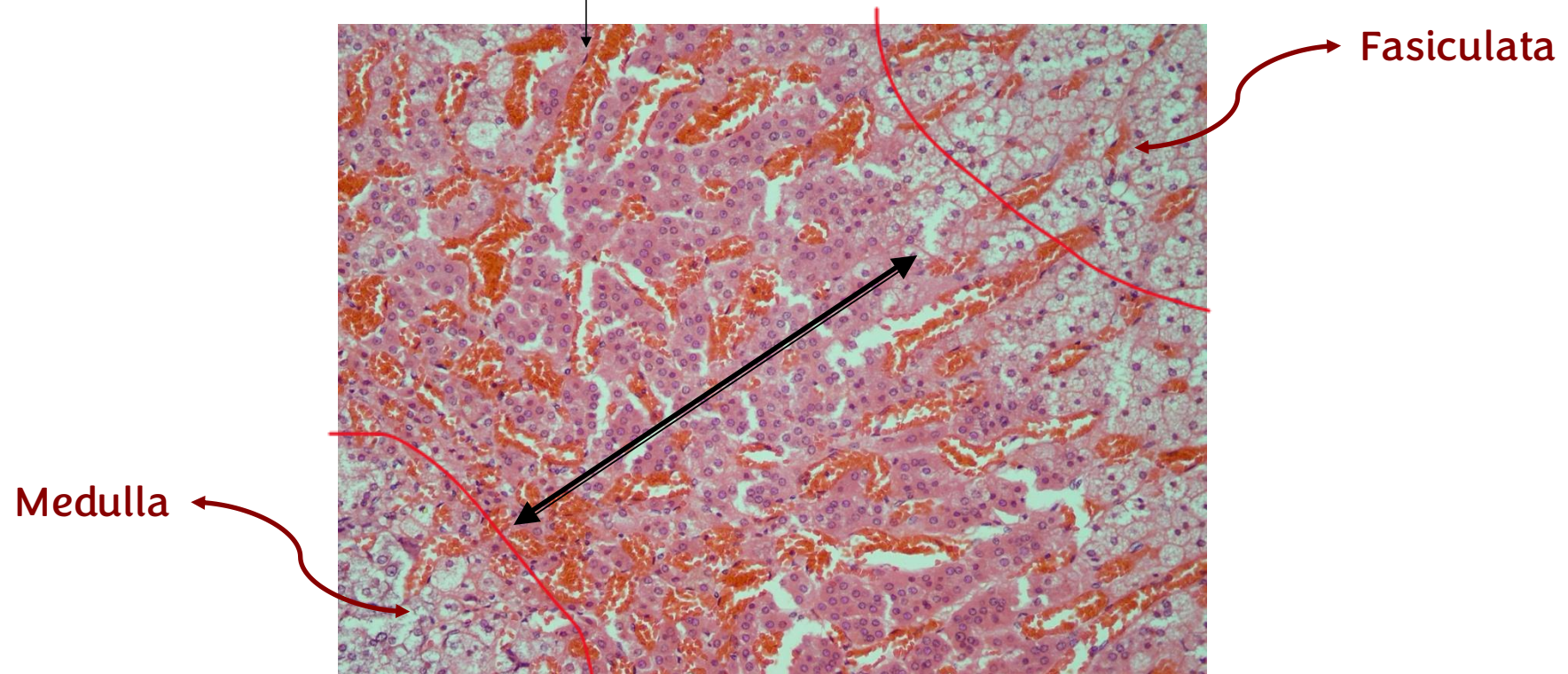


Part of reticularis ,
since its darker

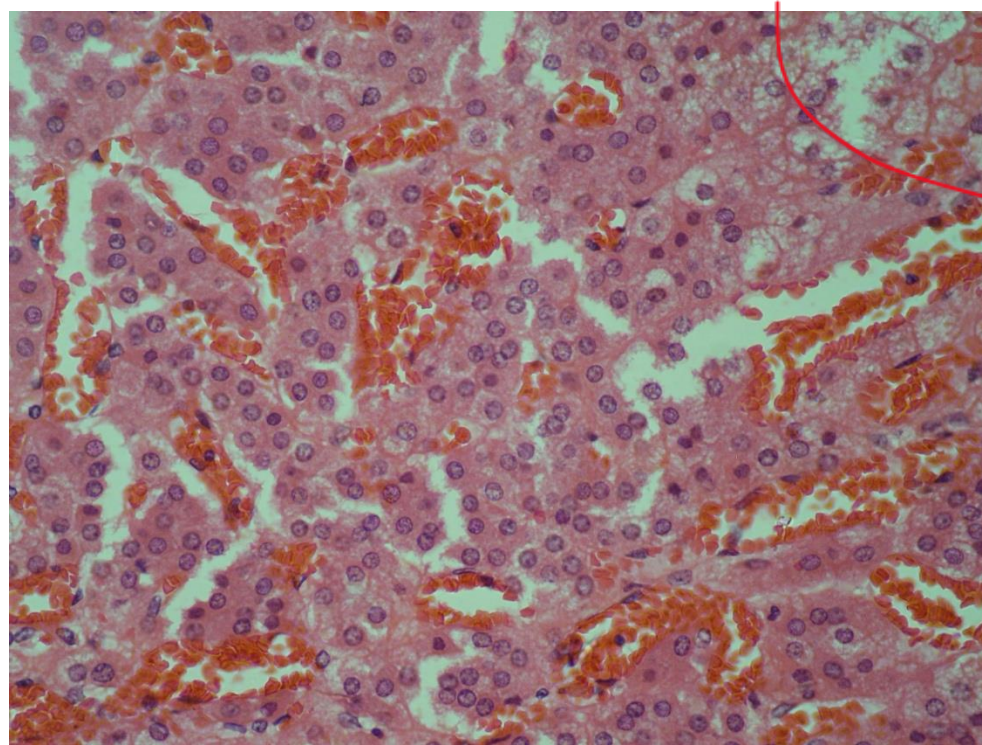
spongiocytes



Zona Reticularis -capillaries

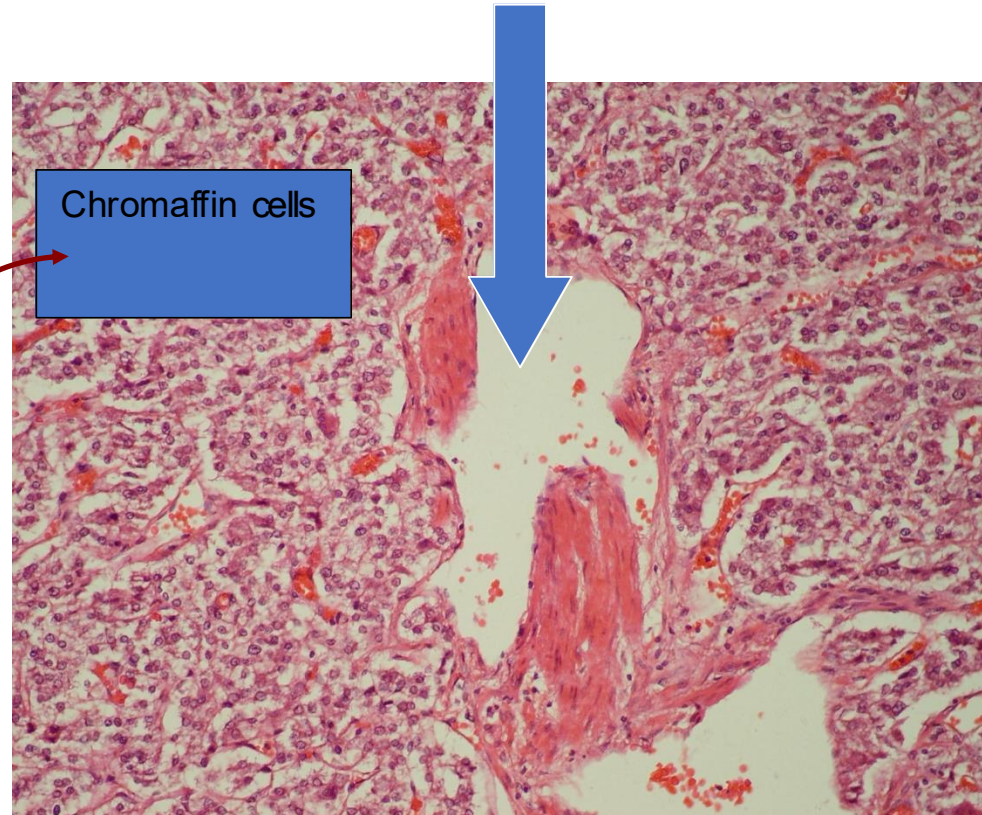


Reticularis



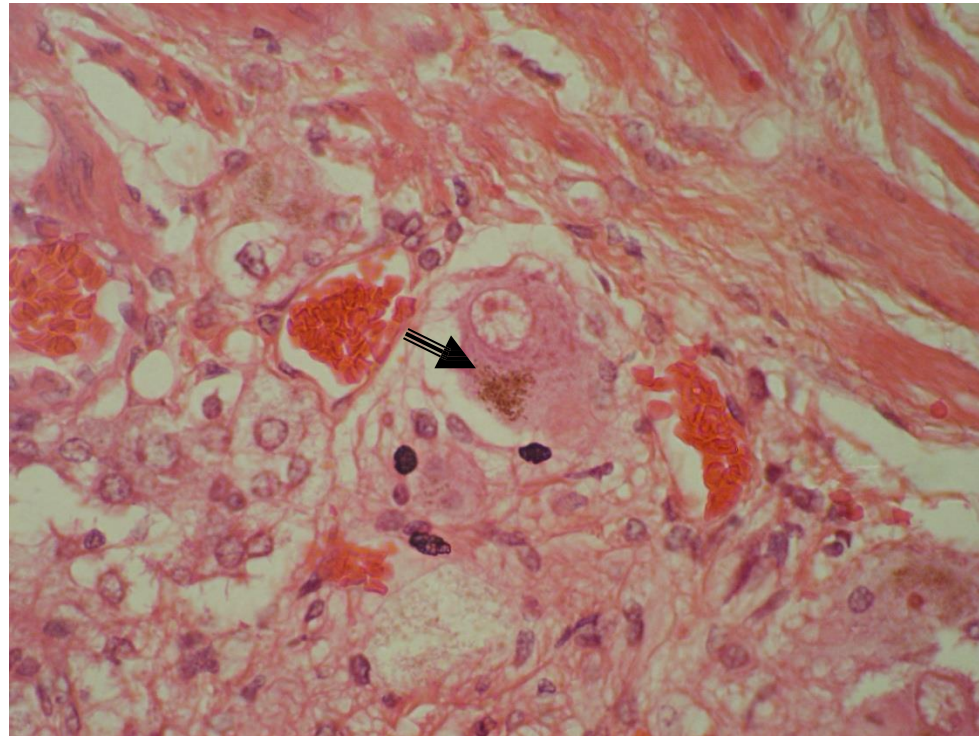
Small part of fasciculata

Medullary veins in adrenal medulla

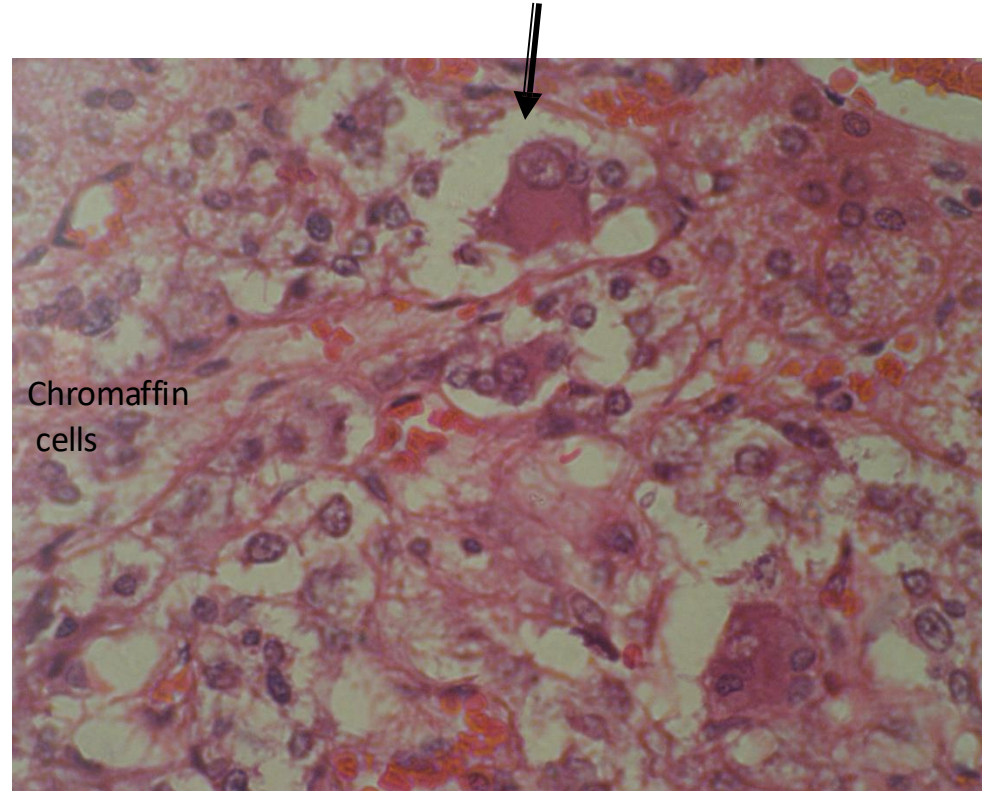


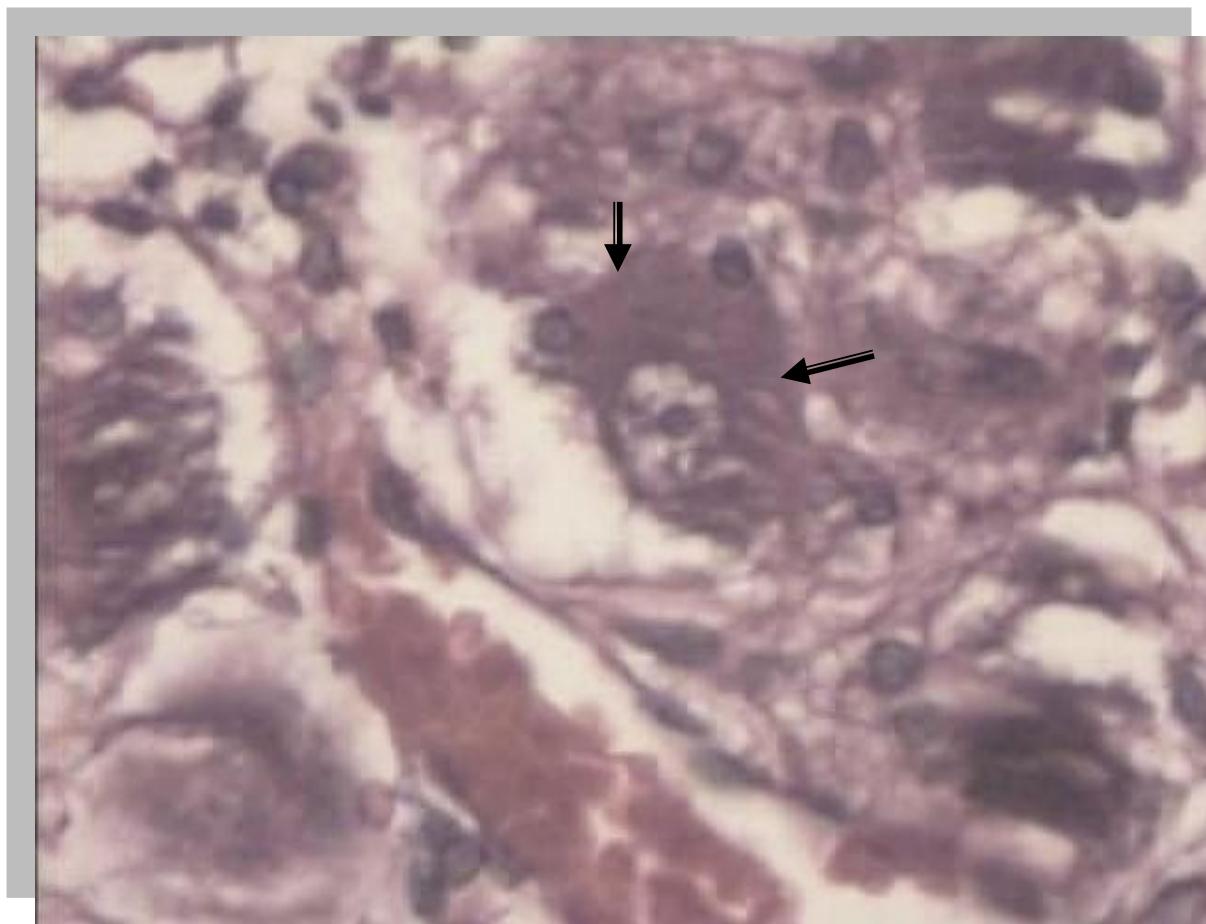
Which are modified post
ganglionic sympathetic

Lipofuschin in Ganglionic cells



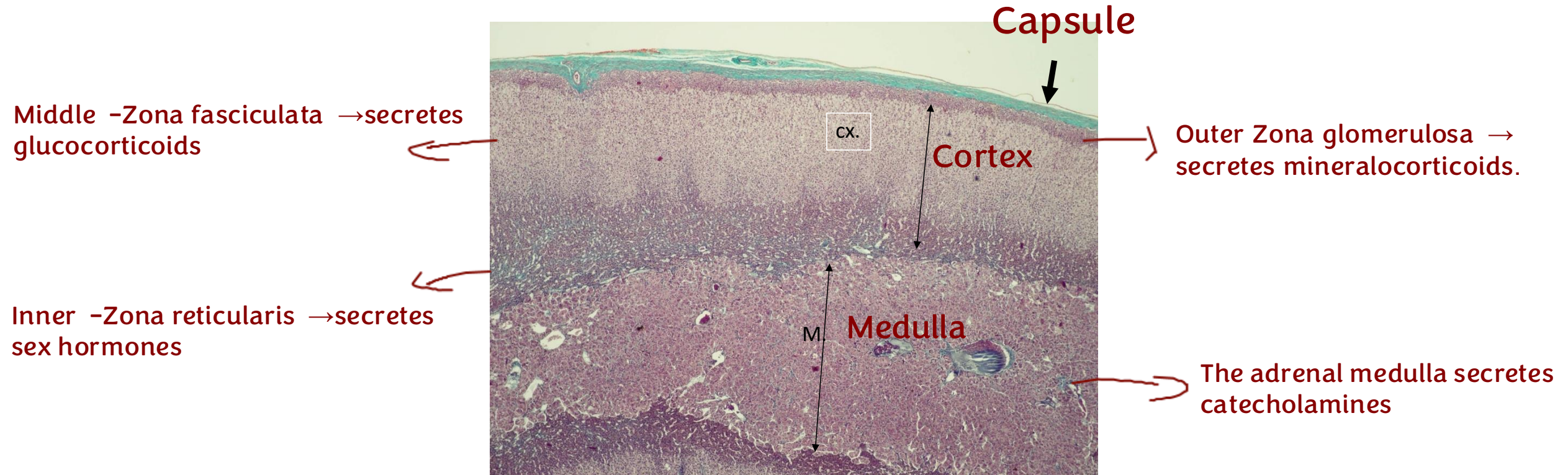
Ganglionic cells





Special stain: Trichrome

Adrenal gland-special stain



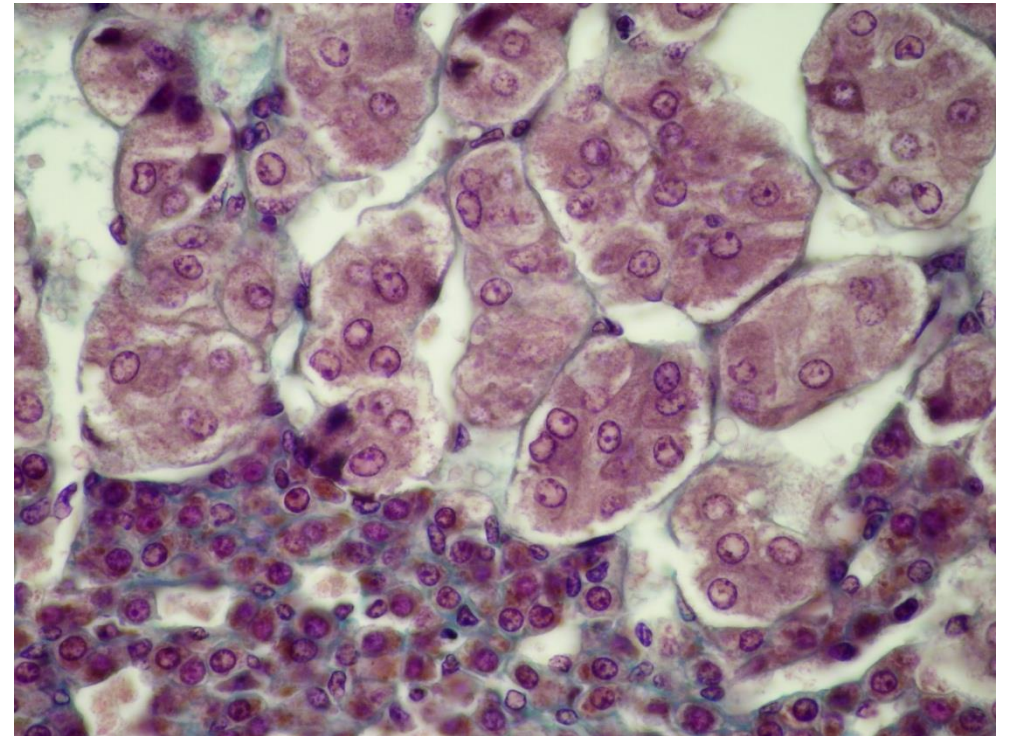
Chromaffin cells in adrenal medulla

The heading is missing the word "Zona" →Zona reticularis.

The adrenal cortex and adrenal medulla do not have the same embryological origin.

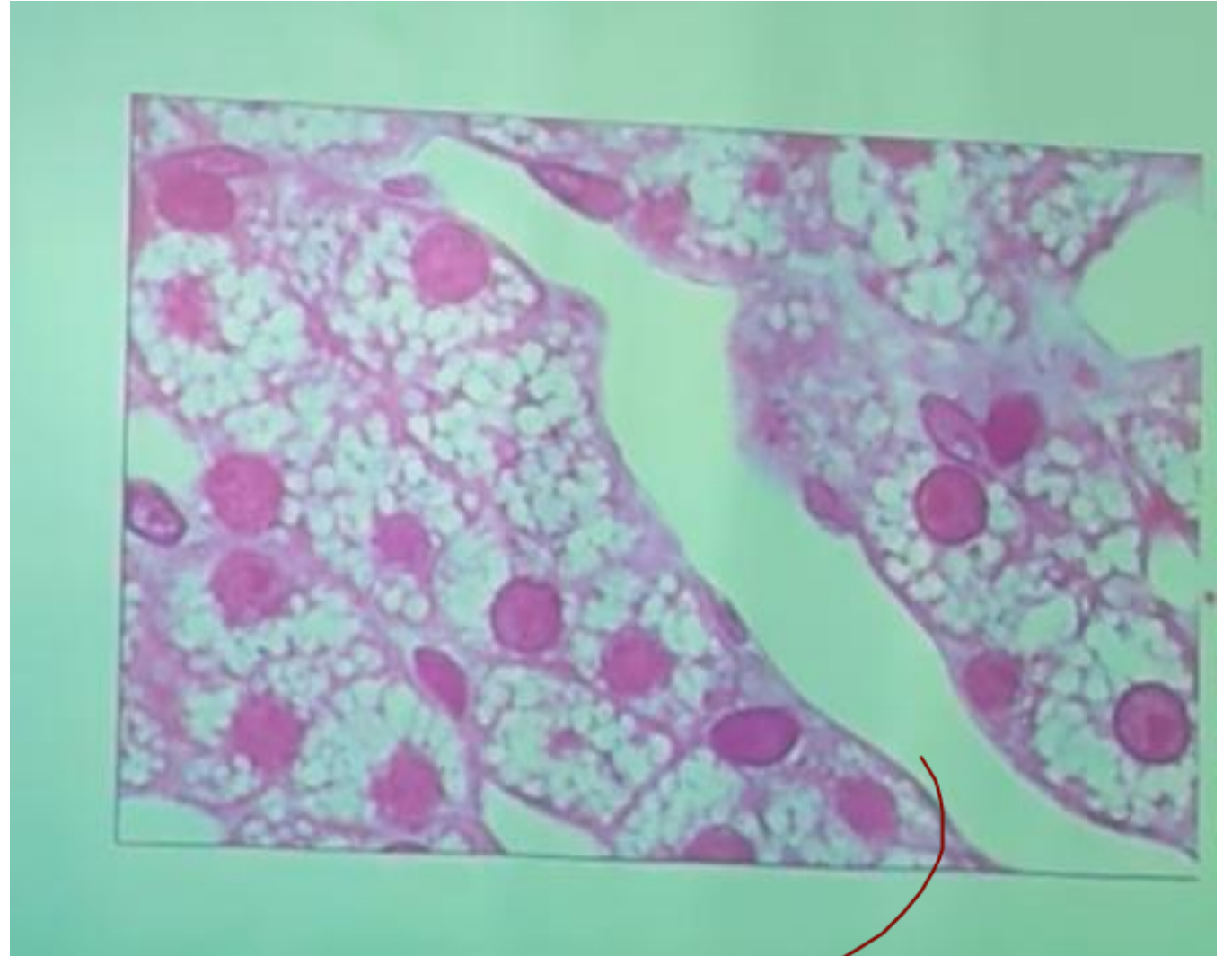
The adrenal cortex develops from the mesoderm.

The adrenal medulla develops from the neural crest (ectoderm).



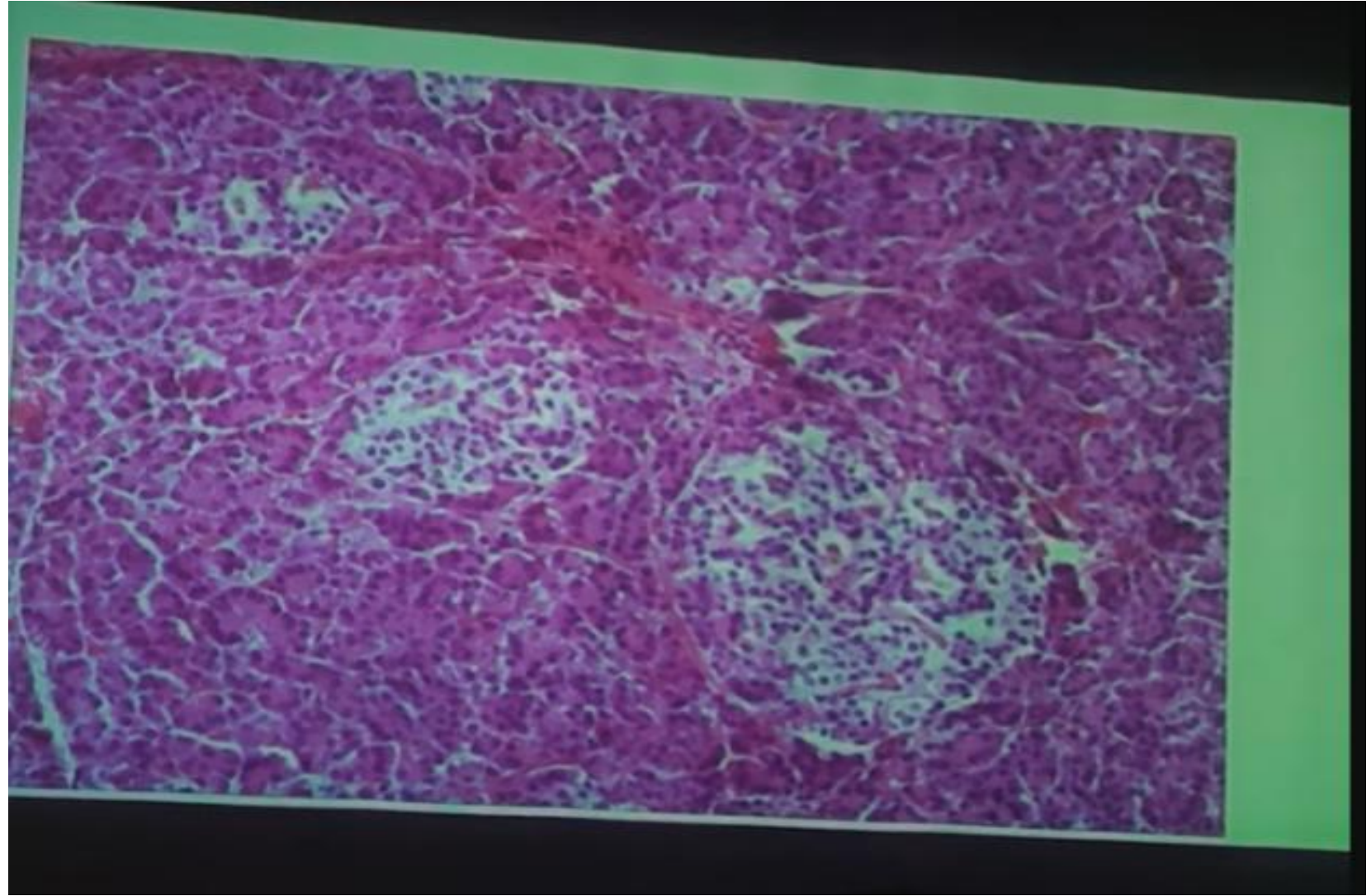
This image is taken from the adrenal gland.

It can be identified by the presence of numerous lipid (fat) droplets in the cortical cells



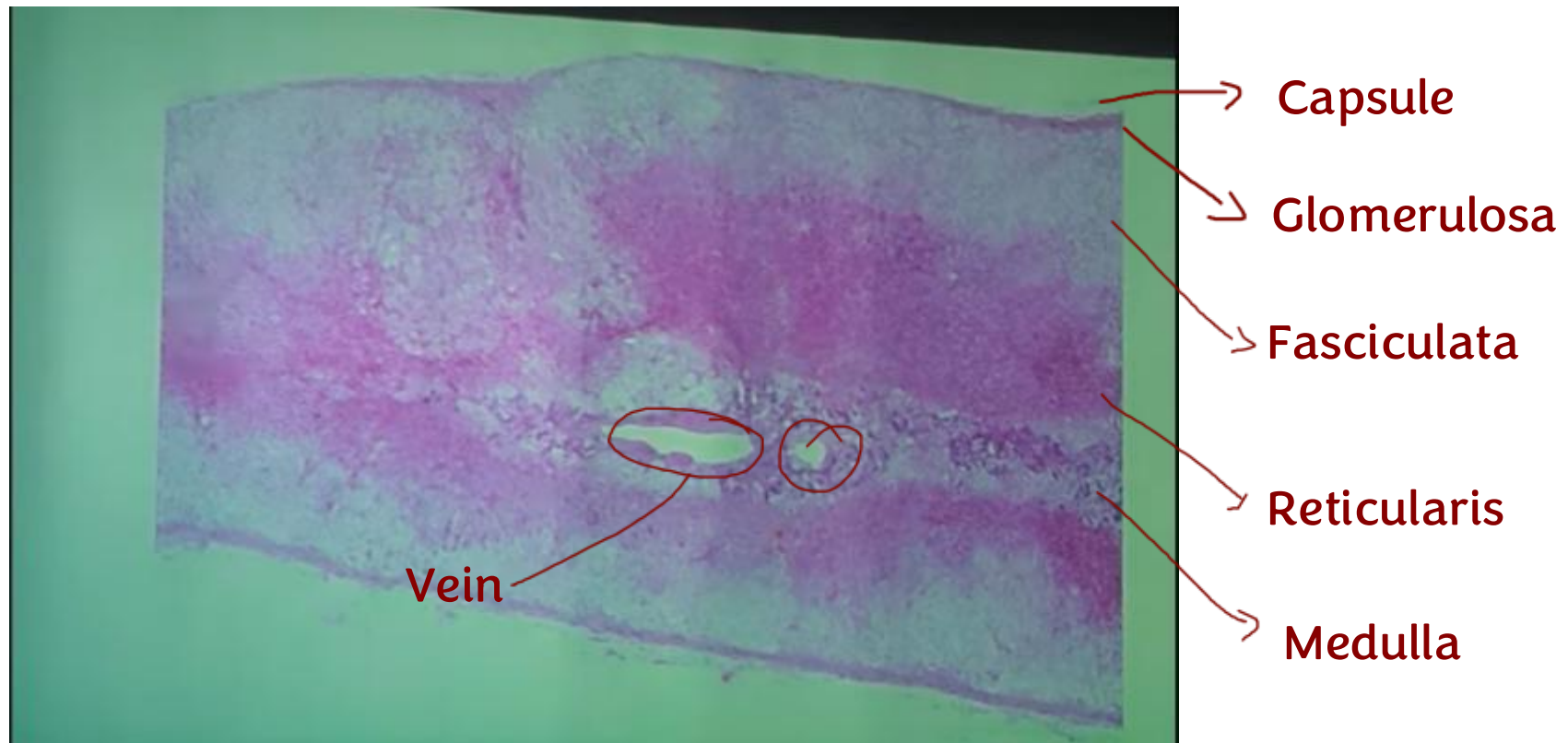
Capillaries

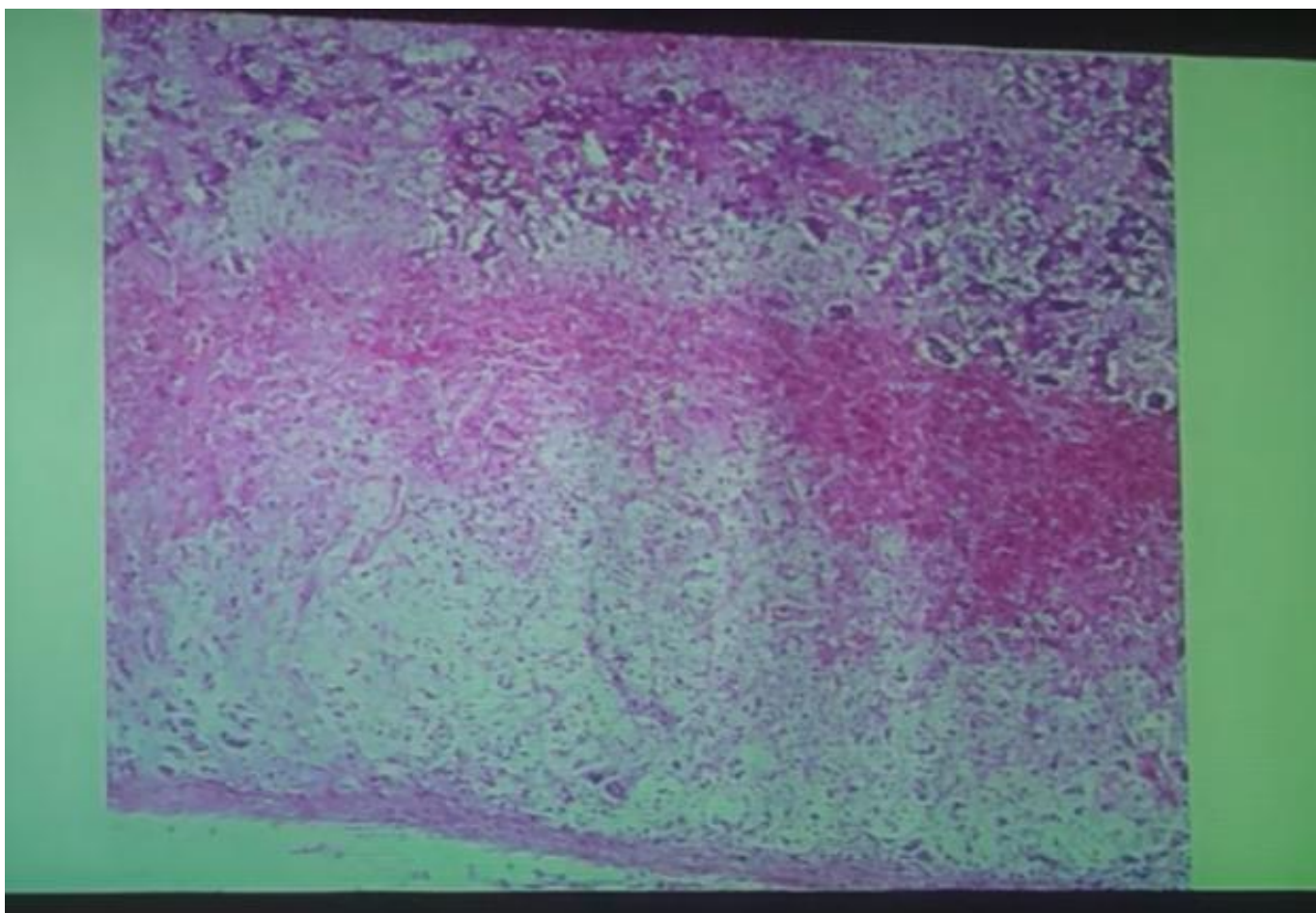
Islets of Langerhans



This image is taken from the adrenal gland

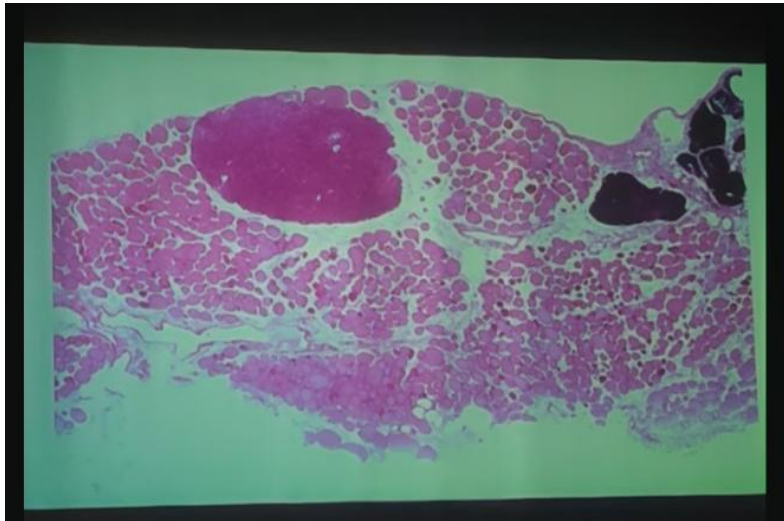
It can be identified by its three cortical layers surrounding the central medulla, giving it a sandwich-like appearance





The thymus gland appears dark in this image because it contains a large number of lymphocytes.

The lymphocytes are small, densely packed, and numerous, which makes the tissue appear darker microscopically.



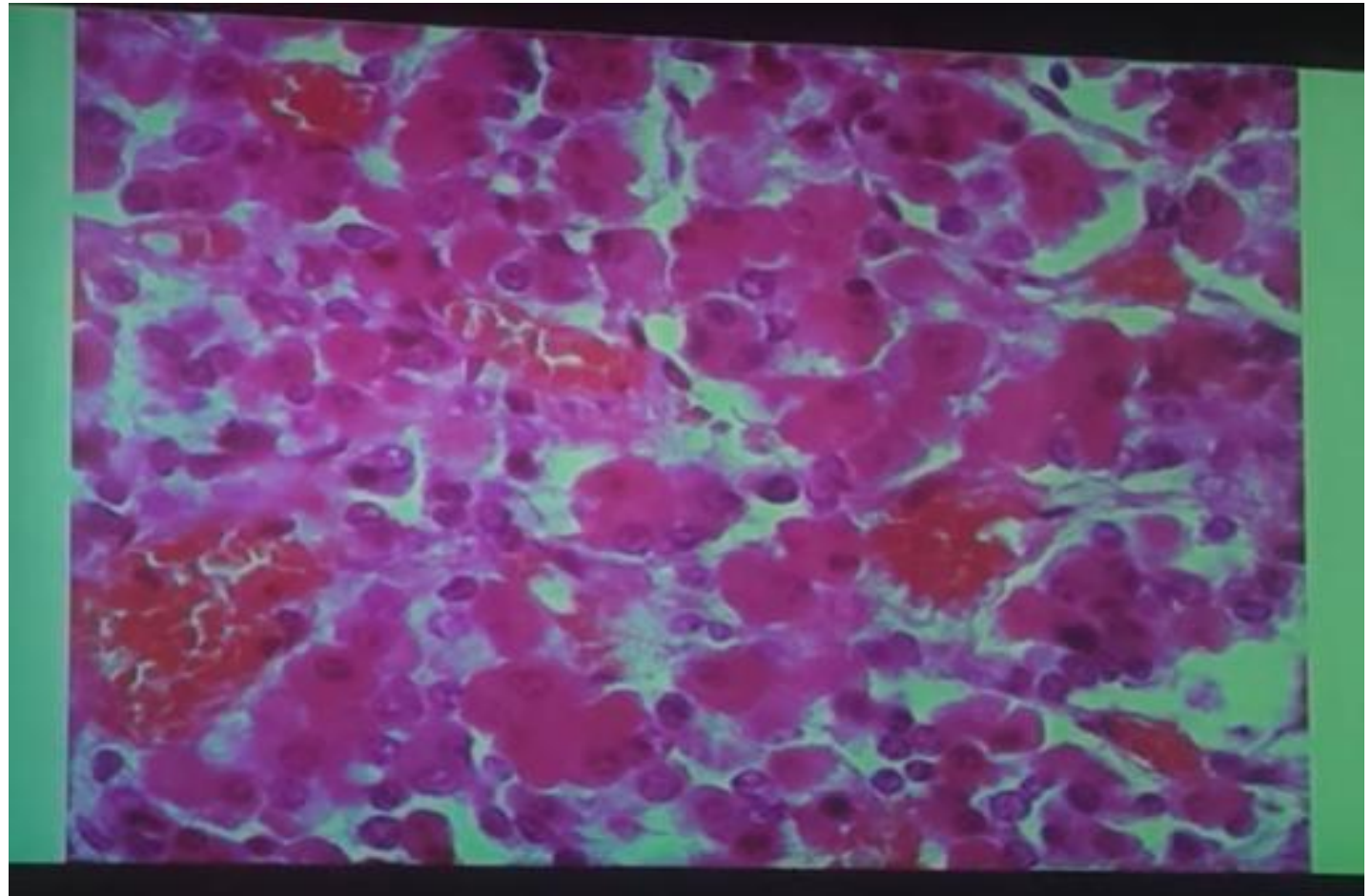
This image is taken from
the pituitary gland.

It can be identified by the
presence of three types
of cells:

Acidophilic cells

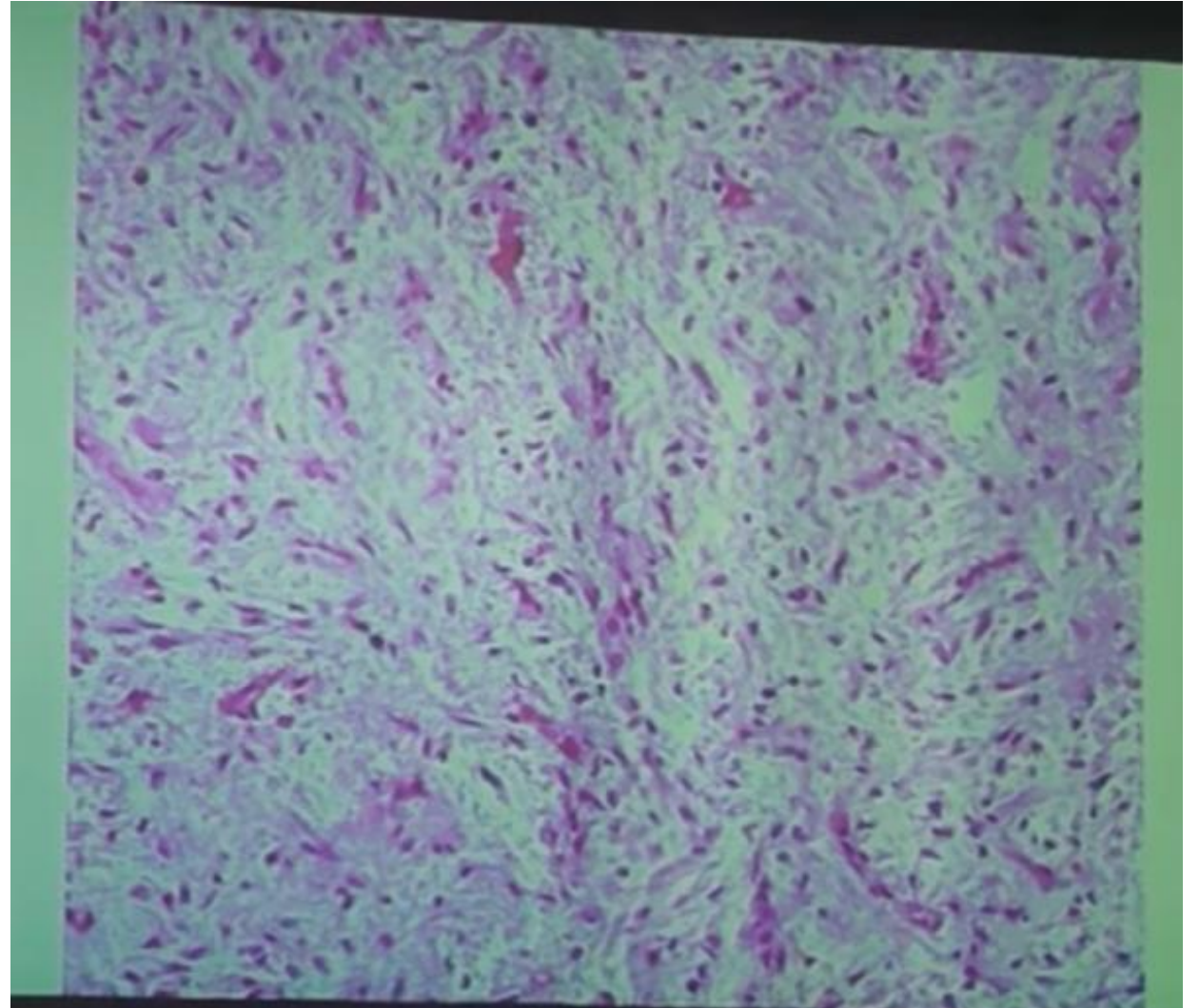
Basophilic cells

Chromophobe cells.



This image represents the posterior part of the pituitary gland

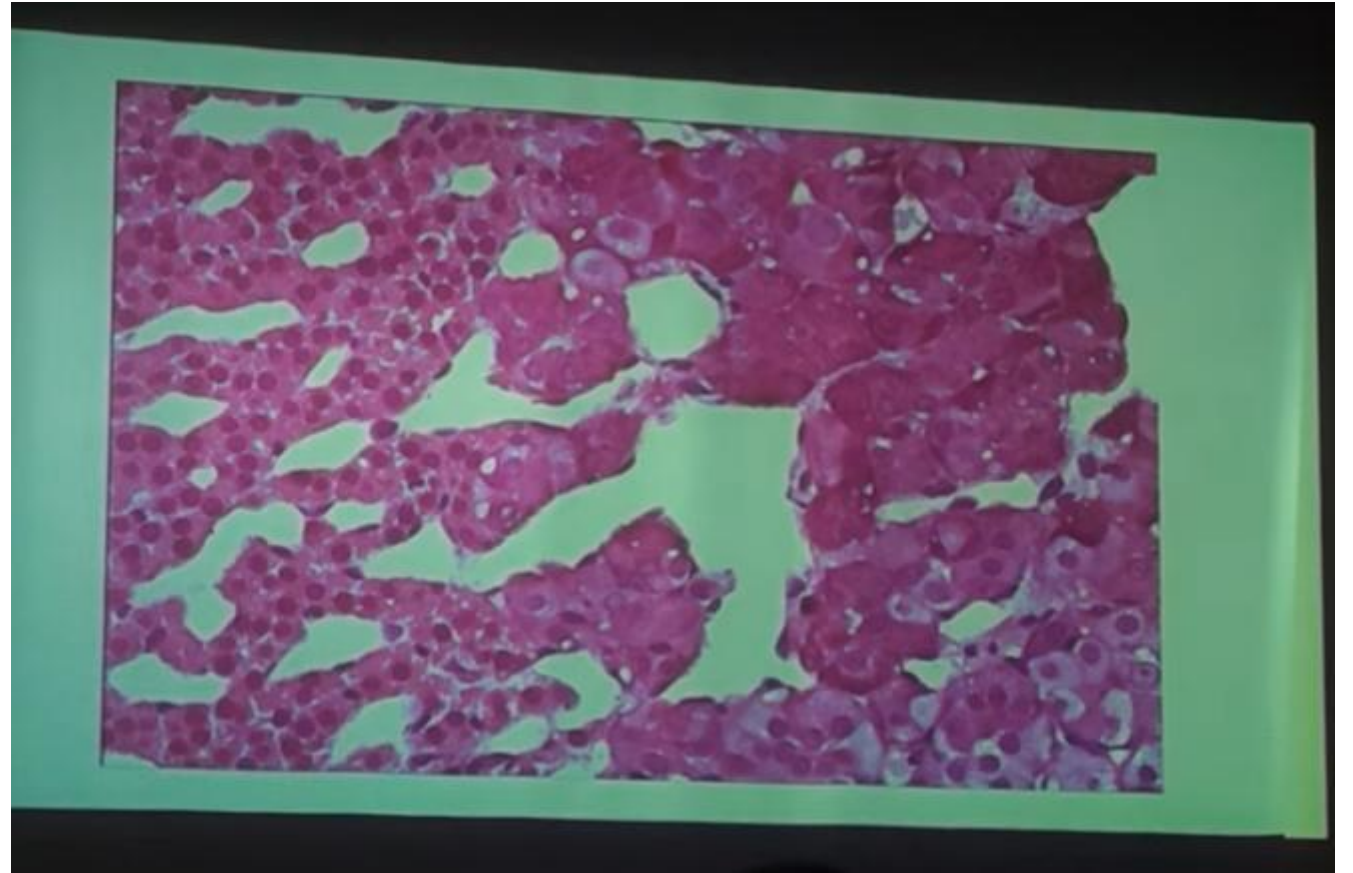
It can be identified by the presence of axons, which appear wavy in shape, and the presence of Herring bodies.



This image represents the adrenal gland.

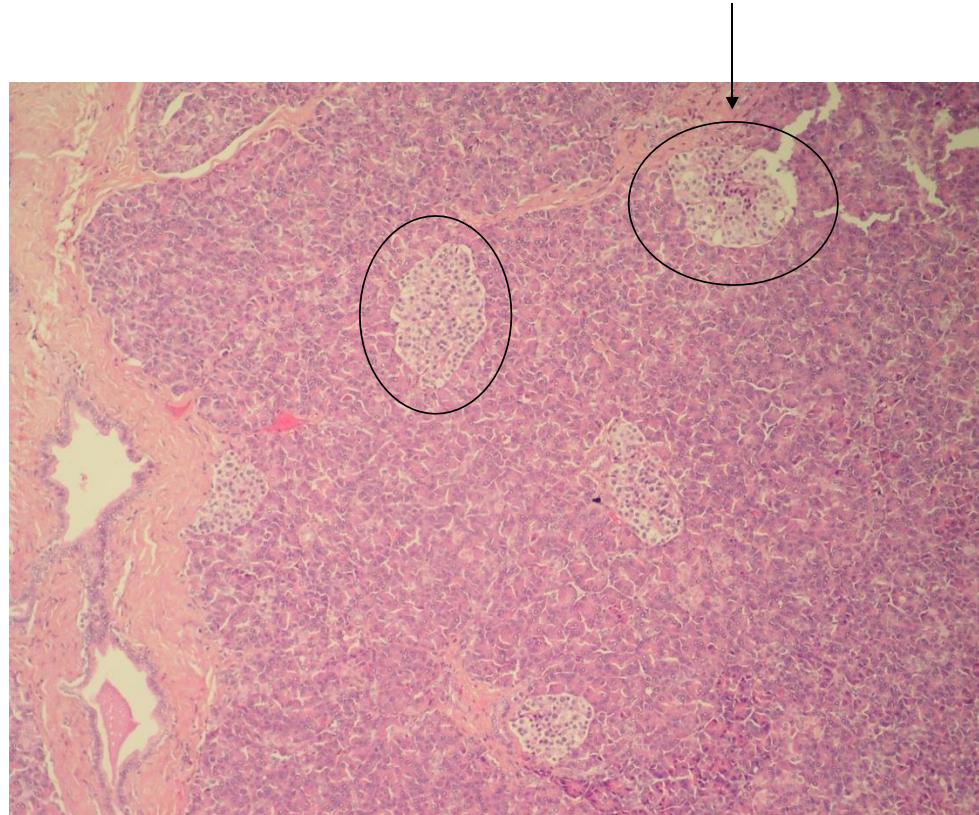
The right side represents the adrenal medulla.

The left side shows similar interconnected cells, representing the zona reticularis of the adrenal cortex.

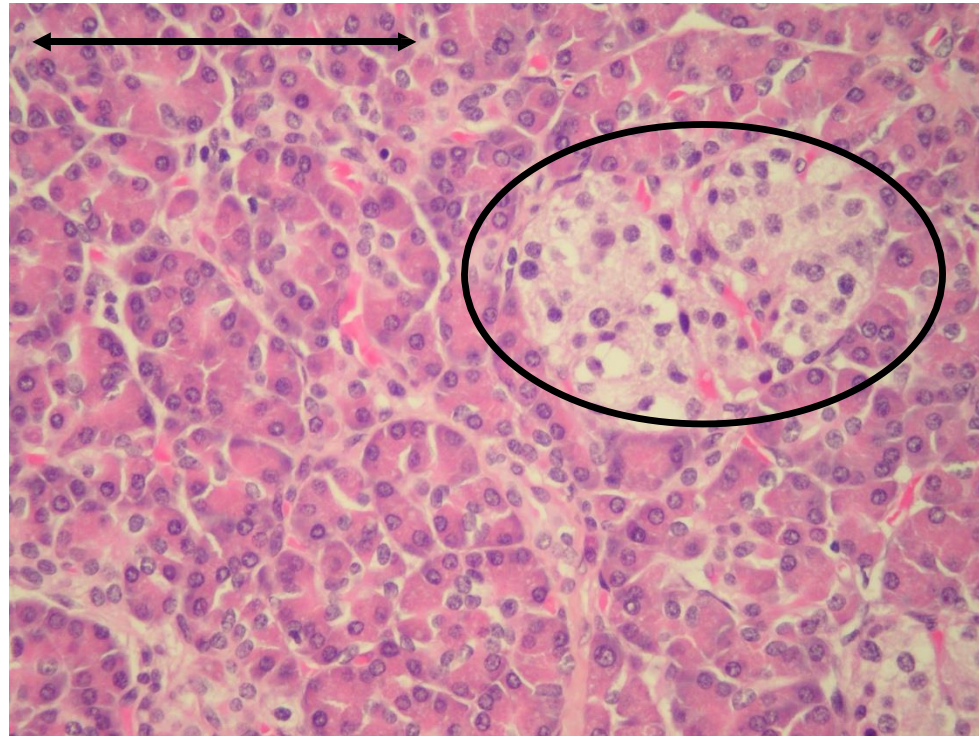


Pancreas
(Islet of Langerhans)

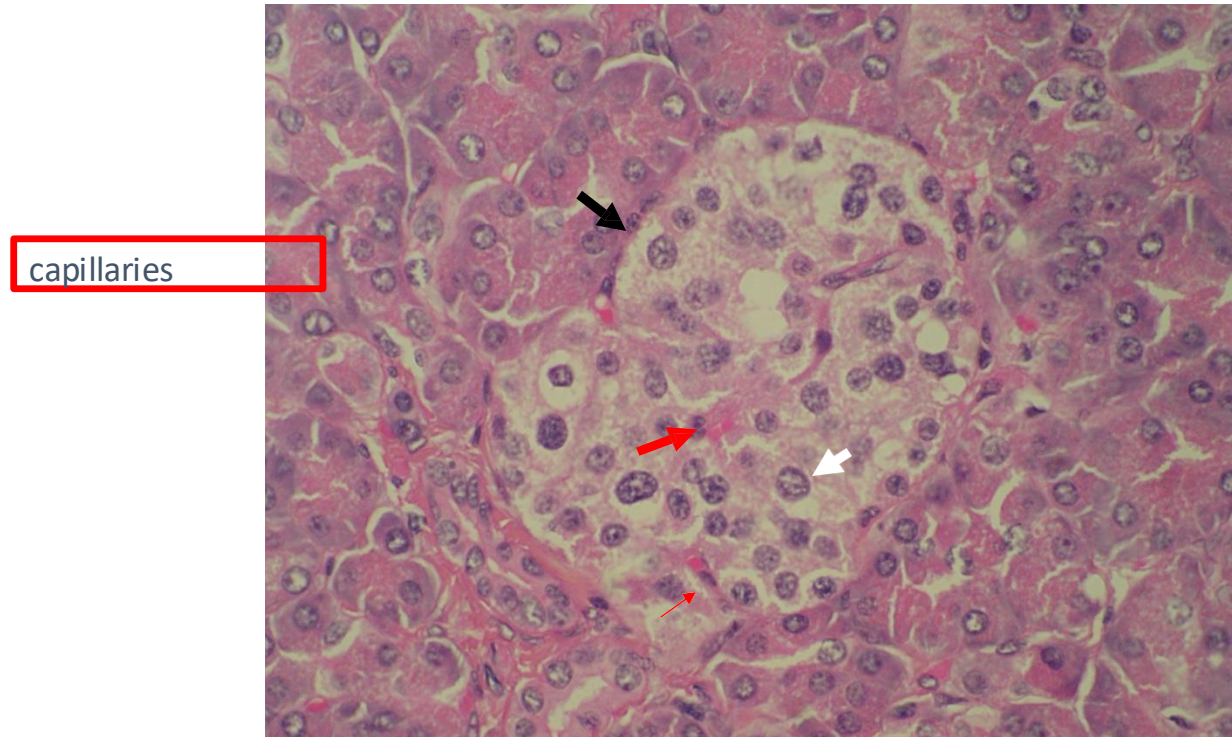
Pancreas (exocrine & endocrine)



Exocrine part & endocrine (islet of Langerhans)



Types of endocrine cells



رسالة من الفريق العلمي:

{إِنَّ الْإِنْسَانَ لِرَبِّهِ لَكَنُودٌ}

ما هو الكنود ؟

- هو الذي يعد المصائب وينسى نعم الله عليه
أحد السلف كان أبرص البدن أعمى العينين مشلول
القدمين واليدين

وكان يقول : الحمد لله الذي عافاني مما ابتلى به كثيراً
ممن خلق وفضلني تفضيلاً، فمر به رجل فقال له، مما عافاك،
اعمى وأبرص ومشلول فمما عافاك ؟
فقال له ويحك يا رجل ، جعل لي لساناً ذاكراً وقلباً شاكراً
ويدناً على البلاء صابراً.

فاللهم لك الحمد حتى ترضى ولك الحمد بعد الرضى.

For any feedback, scan the code or click on it.



Corrections from previous versions:

Versions	Slide # and Place of Error	Before Correction	After Correction
V0 → V1			
V1 → V2			