430
HISTOLOGY
TEAM

ENDOCRINE BLOCK

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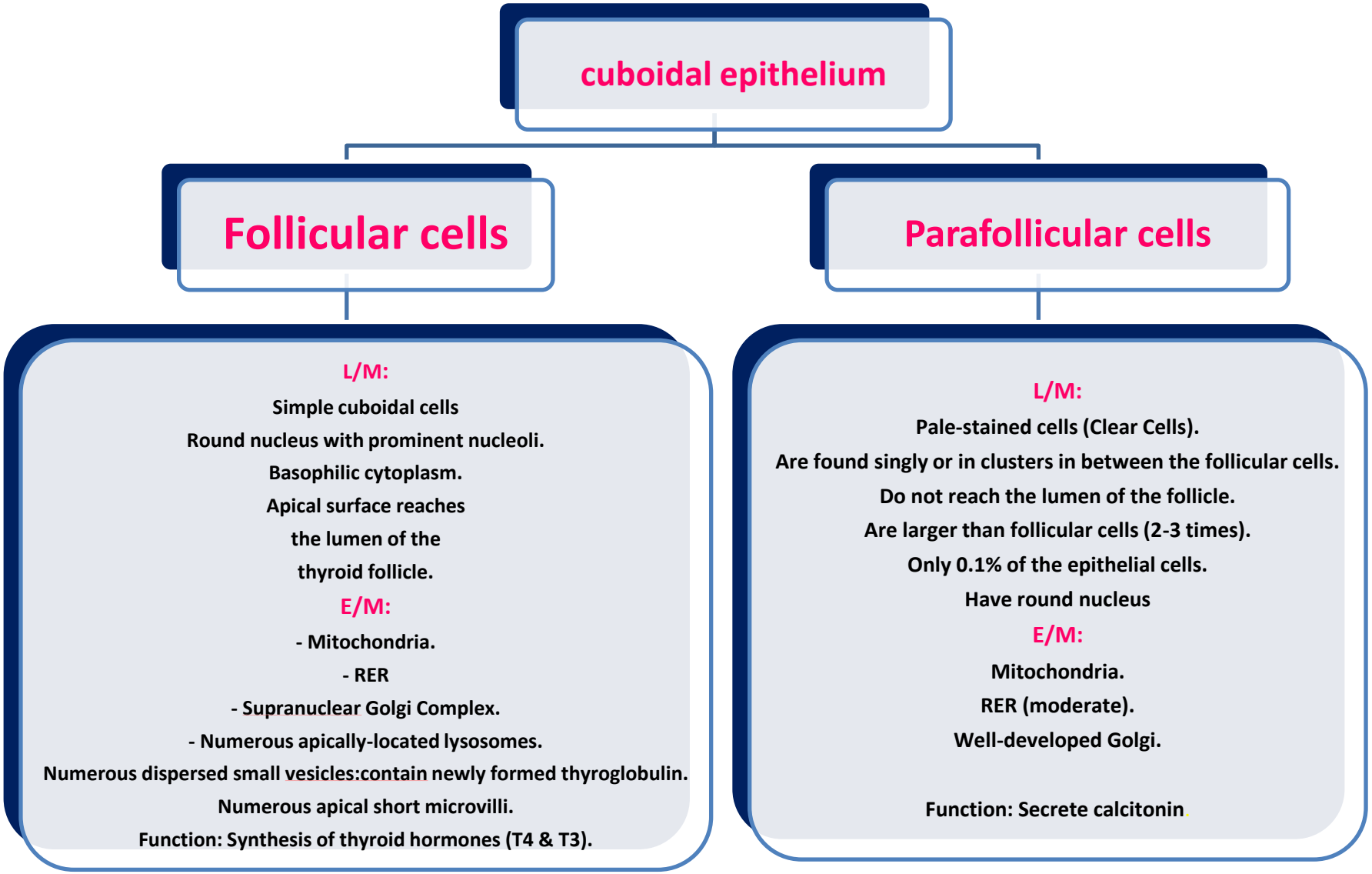
PITUITARY GLAND		THYROID GLAND	PARATHYROID GLAND	Adrenal gland	PANCREAS
(a)ADENOHYPOPHYSIS CEREBRI: 1- Pars Tuberalis 2- Pars Intermedia 3- Pars Distalis **Types of parenchymal cells:** **(1) Chromophils:** **a- Acidophils:** 1- Somatotrophs (GH) 2- Mammotrophs (Prolactin cells) **b- Basophils:** 1- Thyrotrophs (TSH) 2- Gonadotrophs (Gonadotropic cells) (FSH, LH) 3- Corticotrophs (ACTH) **(2) Chromophobes:** 1- stem cells. 2- degranulated chromophils. 3- degenerated cells	**(B) NEUROHYPOPHYSIS CEREBRI:** 1- Median eminence 2- Infundibulum: Neural (Infundibular) Stalk 3- Pars Nervosa CONTENTS: 1- Unmyelinated axons of secretory neurons situated in supraoptic & paraventricular nuclei (i.e. Axons of hypothalamhypophyseal tract). Function: Storage & release of: a- Vasopressin (ADH) b- Oxytocin 2- Fenestrated blood capillaries. 3. HERRING BODIES Are distentions of the axons in p.nervosa. - Representing accumulation of neurosecretory granules at axon termini and along the length of the axons in p. nervosa. 4. Pitucytes: Are glial-like cells in p. nervosa. Structure: Have numerous cytoplasmic Processes. Functions: Support the axons of the p. nervosa. N.B. No secretory or neuronal cells in pars nervosa.	STROMA 1- Capsule: dense irregular collagenous C.T. 2- Septa (Interlobular septa) 3- Reticular fibers Thin C.T., composed mostly of reticular fibers with rich capillary plexus surrounds each thyroid follicle. PARENCHYMA: THYROID FOLLICLES: 1- Simple cuboidal epithelium: a- Follicular cells. b- Parafollicular cells. 2- Colloid: central colloid-filled lumen. N.B. Each follicle is surrounded by thin basal lamina.	(A) Stroma: 1- Capsule: Each gland has its Thin capsule. 2. Septa: thin. 3. Reticular C.T. (B) Parenchyma : The parenchyma is formed of cords or clusters of epithelial cells (chief cells & oxyphil cell) with blood capillaries in between. These cells are surrounded by reticular fibers. *(B) Parenchyma of Parathyroid gland:* 1. Chief cells: are slightly eosinophilic. are rich in rER. They secrete parathyroid hormone(blood calcium). 2. Oxyphil cells: They are arranged in groups or clusters or as isolated cells. They are deep eosinophilic They have more numerous mitochondria They are less numerous but larger than chief cells. They are of unknown function N.B. (They may be inactivated chief cells).	It is formed of: Stroma. Parenchyma: that is divided into I. Cortex that is composed of: A-Zona glomerulosa. B-Zona fasciculata. C-Zona reticularis. II.Medulla : *It is the central portion of the adrenal gland. *It is completely invested with adrenal cortex (not separated from it by CT. septa) *It contains: *1-Chromaffin cells* (Pheochromocytes): Contains granules of catecholamine as that of sympathetic NS. (They produce epinephrine and norepinephrine). They stain deep brown with chromic salts. *2. Sympathetic ganglion cells :* Relay on chromaffin cells.	Stroma: capsule, septa & reticular fibers. Parenchyma: Pancreas is a mixed gland: Exocrine part (acini & ducts): produces digestive pancreatic enzymes. Endocrine part (islets of Langerhans): produces hormones


cuboidal epithelium
Follicular cells
Parafollicular cells
L/M:
Simple cuboidal cells
Round nucleus with prominent nucleoli.
Basophilic cytoplasm.
Apical surface reaches
the lumen of the
thyroid follicle.
E/M:
- Mitochondria.
- RER
- Supranuclear Golgi Complex.
- Numerous apically-located lysosomes.
Numerous dispersed small vesicles:contain newly formed thyroglobulin.
Numerous apical short microvilli.
Function: Synthesis of thyroid hormones (T4 & T3).
L/M:
Pale-stained cells (Clear Cells).
Are found singly or in clusters in between the follicular cells.
Do not reach the lumen of the follicle.
Are larger than follicular cells (2-3 times).
Only 0.1% of the epithelial cells.
Have round nucleus
E/M:
Mitochondria.
RER (moderate).
Well-developed Golgi.
Function: Secrete calcitonin.

Pancreas

Exocrine Pancreas

1-Pancreatic Acini:

Serous acini with:

Centroacinar cells (the beginning of the ducts).

No myoepithelial cells.

Nuclei are basal.

Cytoplasm:

Basal part basophilic (due to abundant rER).

Apical part acidophilic (due to secretory granules).

2- Duct System:

Centroacinar cells

Intercalated ducts (low cuboidal).

Intralobular ducts (NOT prominent).

Interlobular ducts.

Main pancreatic duct.

Endocrine Pancreas

α (A) cells:

Constitute 15-20%.

Concentrated in islet periphery.

Granules are much more numerous, more tightly packed, smaller, and denser than those of β cells.

Function: secrete glucagon which ↑ blood sugar.

β (B) cells:

Constitute 70% of islet cells.

Concentrated in islet center.

Function: secrete insulin which ↓ blood sugar.

PP cells:

Constitute 1% of islet cells.

Scattered throughout the islet.

Function: secrete pancreatic polypeptide which ↓ exocrine secretions of pancreas.

G cells:

Constitute 1% of islet cells.

Scattered throughout the islet.

Function: secrete gastrin which ↑ production of HCl by parietal cells of stomach.

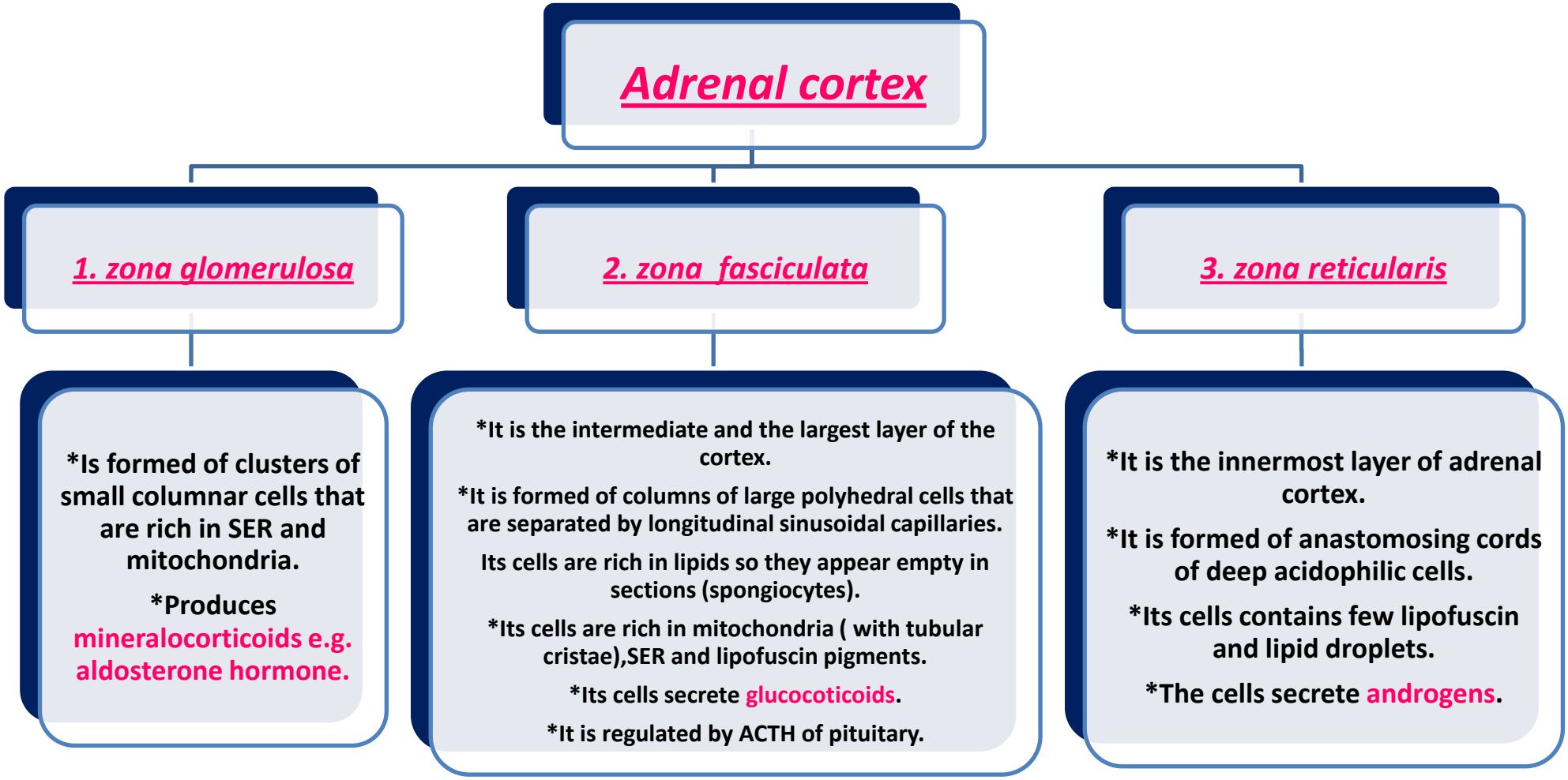
δ (D) cells:

Constitute 5-10% of islet cells.

Scattered throughout the islet.

Granules are less dense than those of β and α cells.

Function: secrete somatostatin which ↓ release of hormones from endocrine pancreas and enzymes from exocrine pancreas.


Adrenal cortex
1. zona glomerulosa
2. zona fasciculata
3. zona reticularis
*Is formed of clusters of small columnar cells that are rich in SER and mitochondria.
*Produces mineralocorticoids e.g. aldosterone hormone.
*It is the intermediate and the largest layer of the cortex.
*It is formed of columns of large polyhedral cells that are separated by longitudinal sinusoidal capillaries.
Its cells are rich in lipids so they appear empty in sections (spongiocytes).
*Its cells are rich in mitochondria (with tubular cristae),SER and lipofuscin pigments.
*Its cells secrete glucocoticoids.
*It is regulated by ACTH of pituitary.
*It is the innermost layer of adrenal cortex.
*It is formed of anastomosing cords of deep acidophilic cells.
*Its cells contains few lipofuscin and lipid droplets.
*The cells secrete androgens.