



438
HISTOLOGY TEAM
KING SAUD UNIVERSITY



THYROID & PARATHYROID GLANDS

Objectives:

- Describe the histological structure of thyroid & parathyroid glands.
- Identify and correlate between the different endocrine cells in thyroid gland and their functions.
- Describe the functional structure of the parathyroid cells.

- ▣ **Editing file**
- ▣ **Important**
- ▣ **Doctor notes / Extra**

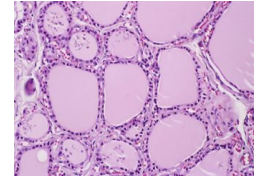
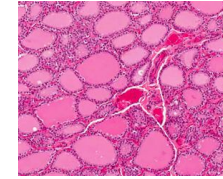


THYROID GLAND

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

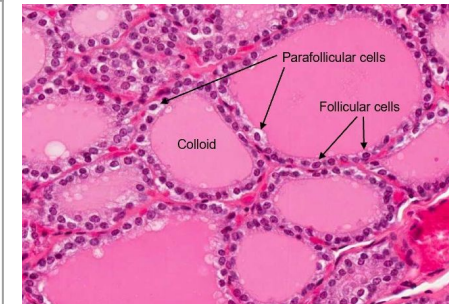
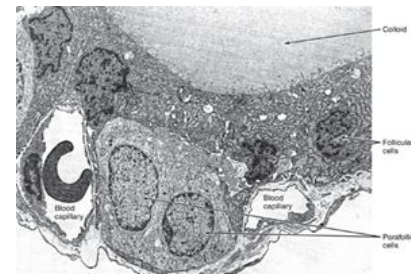
Are the structural and functional units of the thyroid gland.

1- Simple cuboidal epithelium:

2- Colloid: central colloid-filled lumen.

	a- Follicular (principal) cells	b- Parafollicular cells (C cells) (Clear cells)
L/M:	<ul style="list-style-type: none"> - Simple cuboidal cells. - Round nucleus with prominent nucleoli. - Basophilic cytoplasm. - Apical surface reaches the lumen of the thyroid follicle. 	<ul style="list-style-type: none"> - Pale-stained cells (Clear Cells). (Polygonal/pyramidal cells) - Found singly or in clusters in between the follicular cells. - Their apices do not reach the lumen of the follicle. - Are larger than follicular cells (2-3 times). (larger but less in number) - Only 0.1% of the epithelial cells. - Have round nucleus
E/M:	<ul style="list-style-type: none"> - Mitochondria. - RER. (synthesis of thyroglobulin) - Supranuclear Golgi Complex. - Numerous apically-located lysosomes. - Numerous dispersed small vesicles - The vesicles contain newly formed thyroglobulin. - Numerous apical short microvilli. 	<ul style="list-style-type: none"> - Mitochondria. - RER (moderate). - Well-developed Golgi.
Function:	Synthesis of thyroid hormones (T4 & T3).	Secrete calcitonin.

N.B. Each follicle is surrounded by thin basal lamina. (Acidophilic)



PARATHYROID GLAND

They are 4 glands on the posterior of thyroid gland.

STROMA

- 1- Capsule: Each gland has its **Thin** capsule.
2. Septa: thin.
3. Reticular C.T.

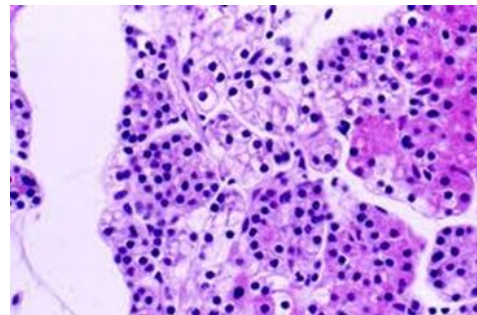
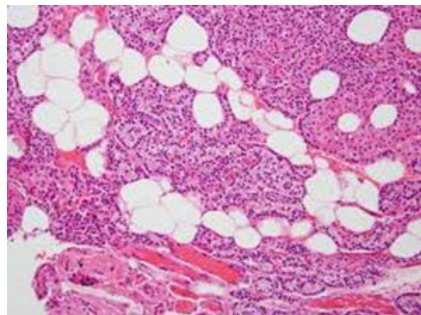
C.T. stroma in older adults often contains many adipose cells. (adipose cells found only in old people >20 year)

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.

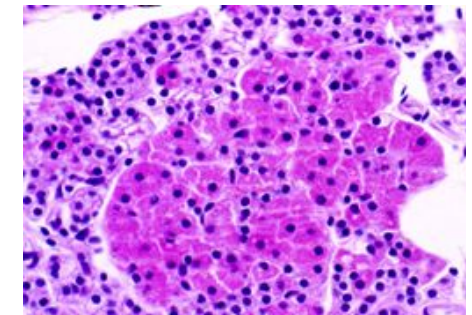
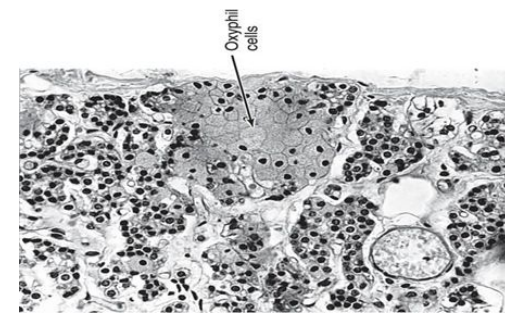
1. Chief cells

- **are slightly eosinophilic.** (Pale acidophilic)
- are rich in **rER**.
- **They secrete parathyroid hormone (blood calcium).**
- **In newborn only chief cell will be found**



2. Oxyphil cells

- They are arranged in groups or clusters or as isolated cells.
 - **They are deep eosinophilic (acidophilic)**
 - **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).



Quiz

Q1 : Which of the following have unknown function?

- A. Follicular (principal) cells
- B. Parafollicular cells
- C. Chief cells
- D. Oxyphil cells

Q2: Which one of the following have more mitochondria?

- A. Chief cells
- B. Oxyphil cells
- C. Chief cells and Oxyphil cells are equal in mitochondria count.

Q3: thyroid gland secretes:

- A. T4 & T3 & calcitonin
- B. T4 & T3 & PTH
- C. PTH & calcitonin

Q4: Which one of the following organelles is responsible for the synthesis of thyroglobulin?

- A. Lysosomes
- B. Mitochondria
- C. Rough endoplasmic reticulum
- D. Smooth endoplasmic reticulum

Q5 : Which of the following is the largest thyroid cell?

- A. Follicular (principal) cells
- B. Parafollicular cells
- C. Chief cells
- D. Oxyphil cells

Q6: It secretes thyroid hormones

- A. Follicular (principal)
- B. Parafollicular cells
- C. Chief cells
- D. Oxyphil cells

Q7: Which gland have dense capsule?

- A. thyroid gland
- B. parathyroid gland
- C. thyroid and parathyroid gland

Q8: Which ONE of the following is true about follicular cells?

- A. Have pyramidal shape
- B. Do not reach the luminal surface
- C. Larger than parafollicular cells
- D. Have round nucleus



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Team Leaders

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Good luck 