



College of Veterinary Medicine

Department of Anatomy



Endocrine Histology

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Endocrine organs are organs whose cells that synthesize and secrete hormones directly into blood the bloodstream whereas exocrine organs such as sweat glands

Hormones are chemical messengers that are secreted (released) from endocrine glands (cells) into the blood and affect cells in another part of the body.



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The Thyroid Gland

Gross Anatomy

The thyroid gland is located dorsolateral to the trachea, close to the larynx. It has two lobes that are connected by a narrow isthmus.

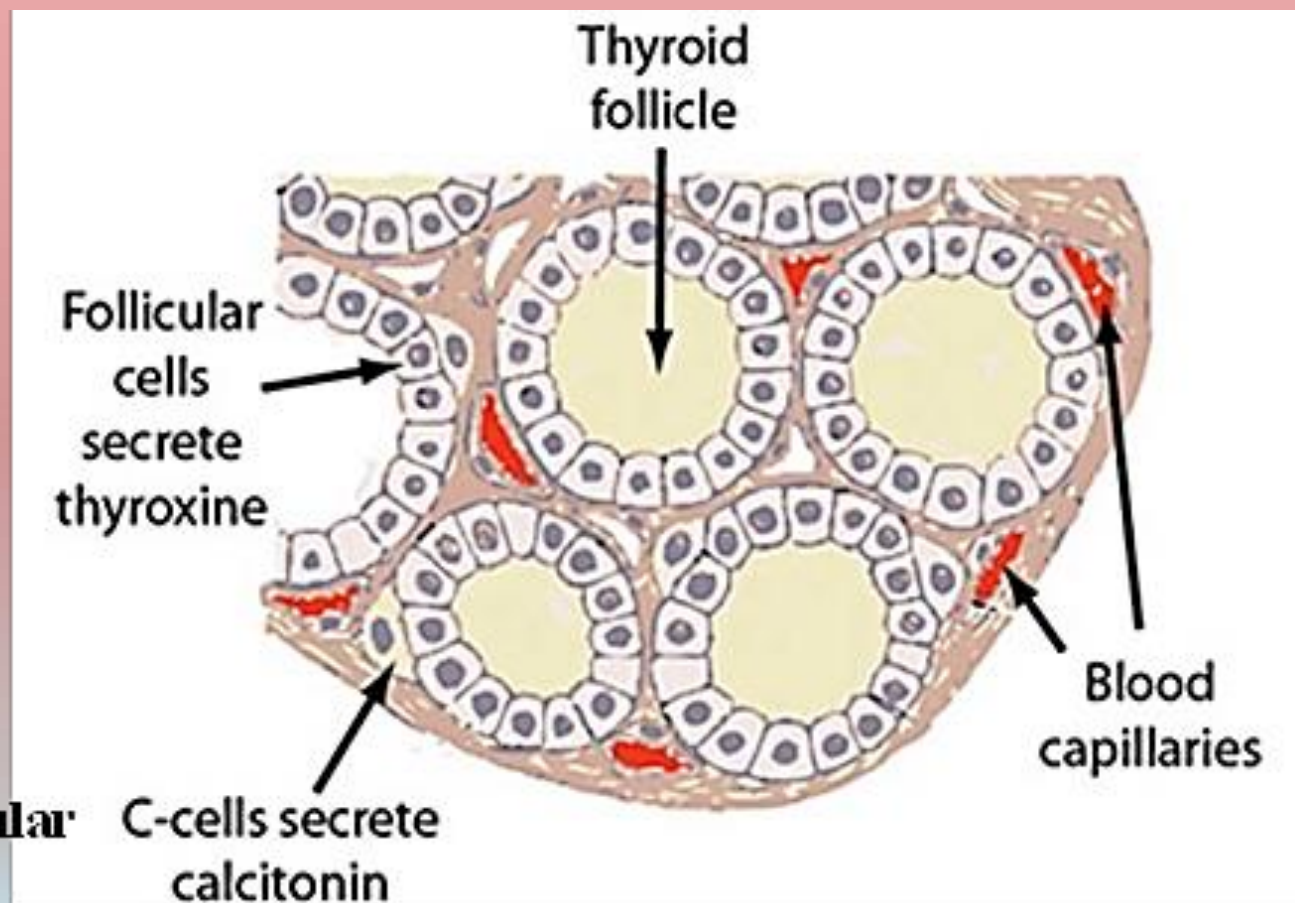
Histology

The thyroid gland is composed of follicles and interfollicular connective tissue. The capsule, classified as loose areolar connective tissue, surrounds the mass of thyroid follicles and sends smaller pieces of connective tissue into the gland to surround the individual thyroid follicles.



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The **principal cell (follicular cells)** is the most numerous cell present in the simple epithelial layer and is responsible for secreting the thyroid hormones as well as thyroglobulin, a glycoprotein

The size of follicles and the height of principal cells varies even within one section of the gland. *Squamous principal cells* indicate a relatively inactive gland whereas *cuboidal to columnar cells* indicate more activity in removing the hormone from the stored form.



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In addition to principal cells there is another type of functional cell in the thyroid gland. This is the **parafollicular cell** which may be found as single cells in the epithelial lining of the follicle or in groups in the connective tissue between follicles. They usually appear as large, clear cells since they do not stain well with hematoxylin and eosin. They are sometimes called **parafollicular cells** based on their location and **clear cells (C cells)** based on their appearance of their cytoplasm. Parafollicular cells secrete *calcitonin*, a hormone that lowers the level of calcium in the blood.



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III. Function

- **Follicular cells** secretes the thyroid hormones tri-iodothyronine (*T3*) and tetra-iodothyronine (*T4 or thyroxin*) that help to regulate the metabolic rate.

•Parafollicular Cells

Secrete *calcitonin* which inhibits osteoclasts from resorbing bone resulting in decrease in calcium in the blood

- Controlled by the level of calcium in the blood