EXOCRINE GLANDS

(THEIR VARIOUS CLASSIFICATIONS)

LEARNING OBJECTIVES

At the end of lecture , the students should be able to :

- Define glands
- Discuss the general feature and structure of exocrine glands
- Classify exocrine glands

  -on the basis of number of cells.

  -on the basis of their structure

  -on the basis of type of secretion

GLANDS

Definition

Structure made up of one or more cells of a special epithelial character which forms a product, the secretion which is discharged upon a surface or released into blood stream

OR

Cells or aggregations of cells that synthesizes a substance to be released ,either in the blood stream or into cavities inside the body or its outer surface

FORMATION OF GLANDS

- Every gland is formed by an ingrowth from an epithelial surface.
- This ingrowth may from the beginning possess a tubular structure, but in other instances glands may start as a solid column of cells which subsequently becomes tubulated.

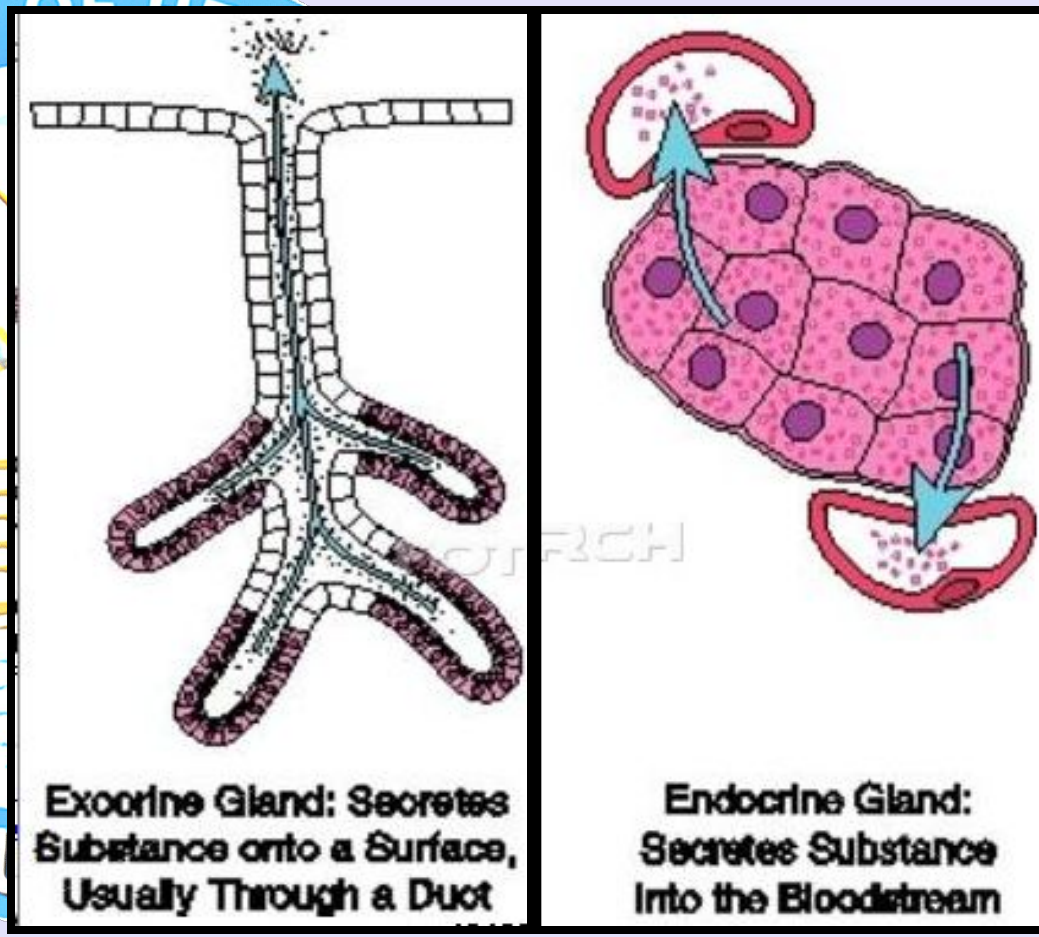
CLASSIFICATION OF GLANDS

- Broadly the glands can be classified on basis of where they release their secretion
- **ENDOCRINE GLANDS**

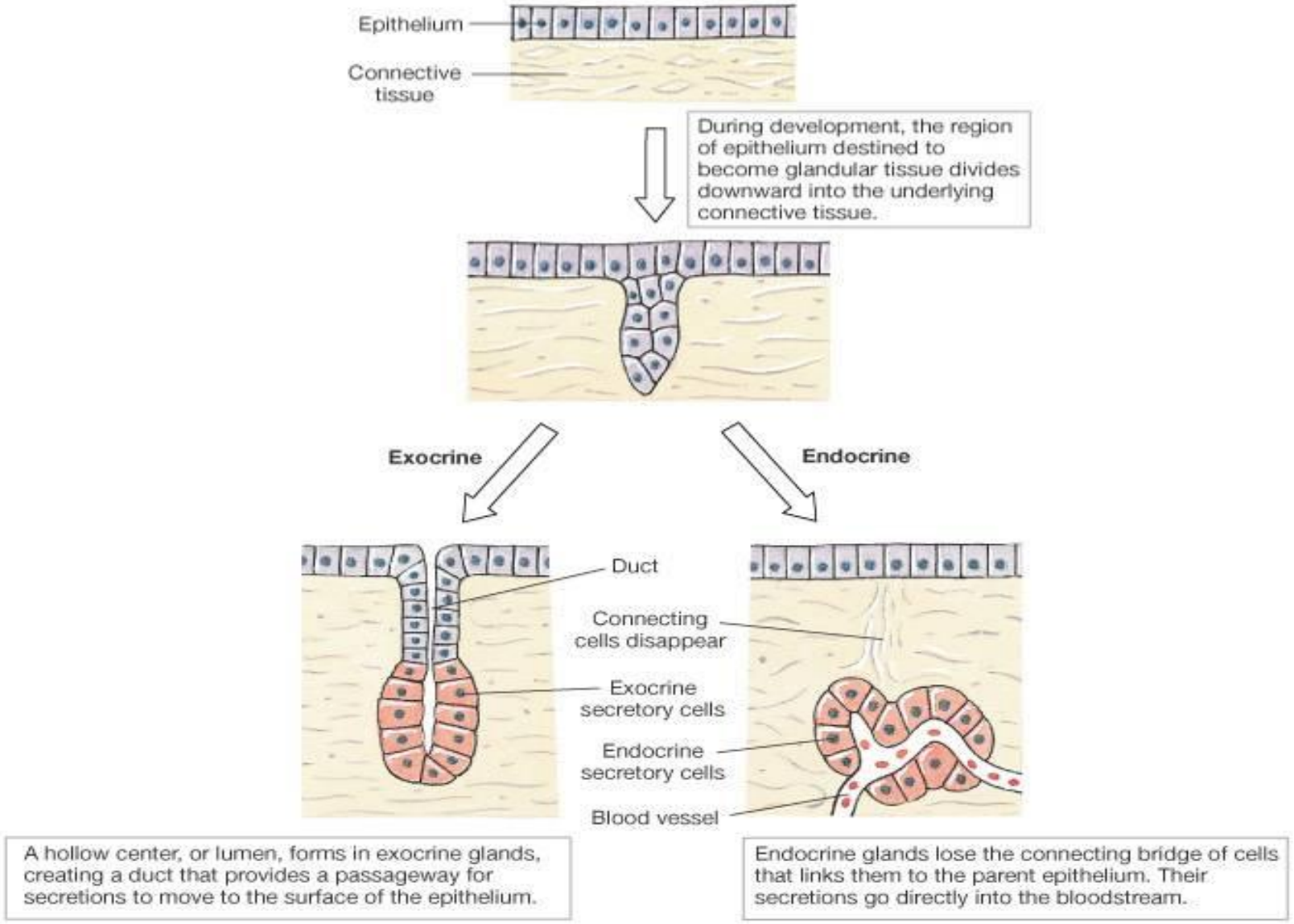
- via bloodstream.

- **EXOCRINE GLAND**

– via system of ducts.



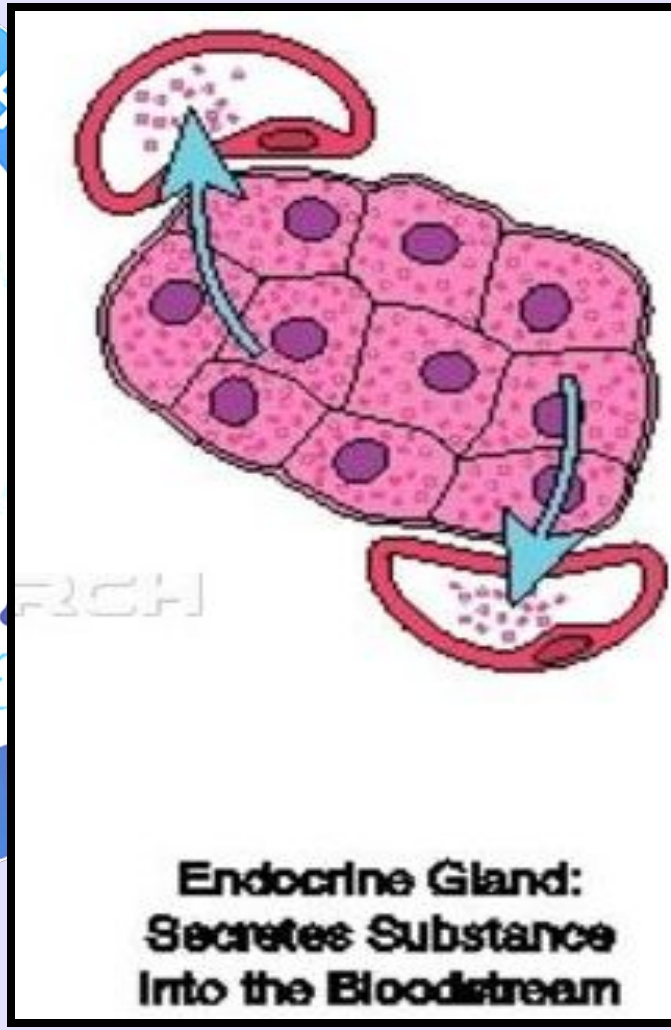
SECRETORY EPITHELIA



Development of endocrine and exocrine glands from epithelium

ENDOCRINE GLANDS

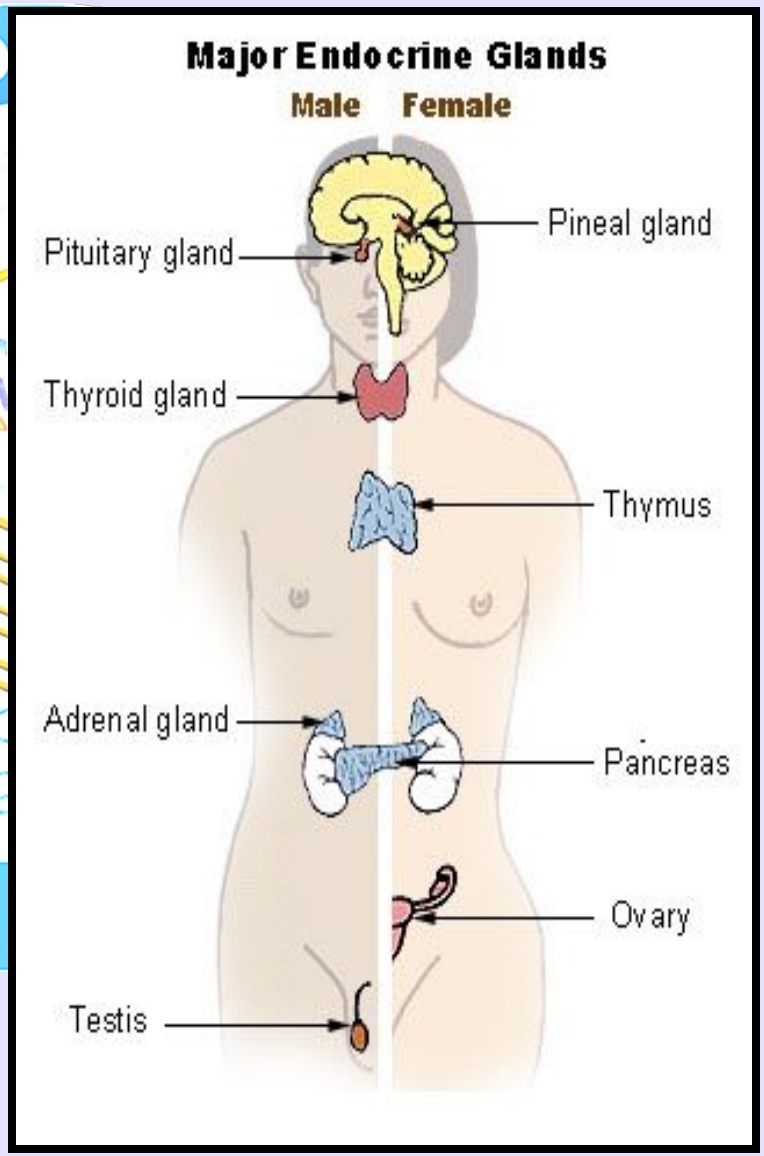
- **Are Ductless Glands**
- pour their secretions **directly in blood**
- The secretions are called as Hormones
- Most of them are regulated via feedback loops ,either positive or negative feedback ,in which the secretion of one hormone is controlled by another hormone
- Most of them have intracellular vacuoles in them



ENDOCRINE GLANDS

The major endocrine glands include:

- Pituitary
- Hypothalamus
- Thyroid
- Parathyroid
- Adrenal
- Pancreas
- Ovary (females)
- Testis (males)

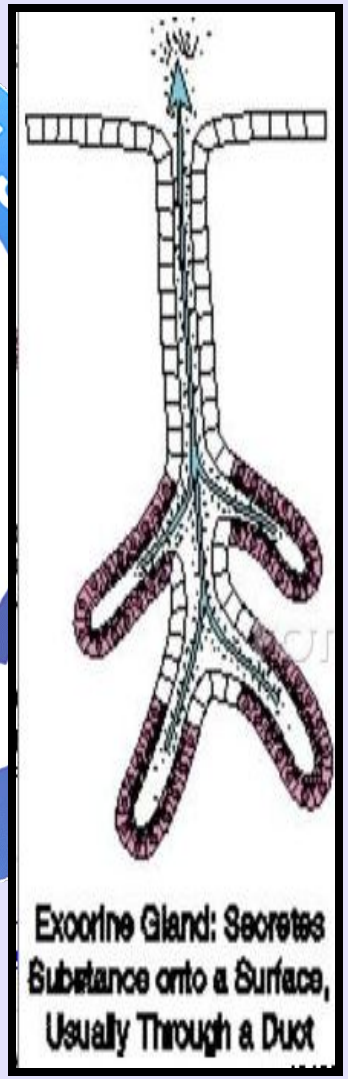


EXOCRINE GLANDS

These Glands pour their **secretion onto an epithelial surface either or via ducts ,**

Examples:

- Sweat
- Sebaceous
- Salivary
- Mammary



EXOCRINE GLANDS

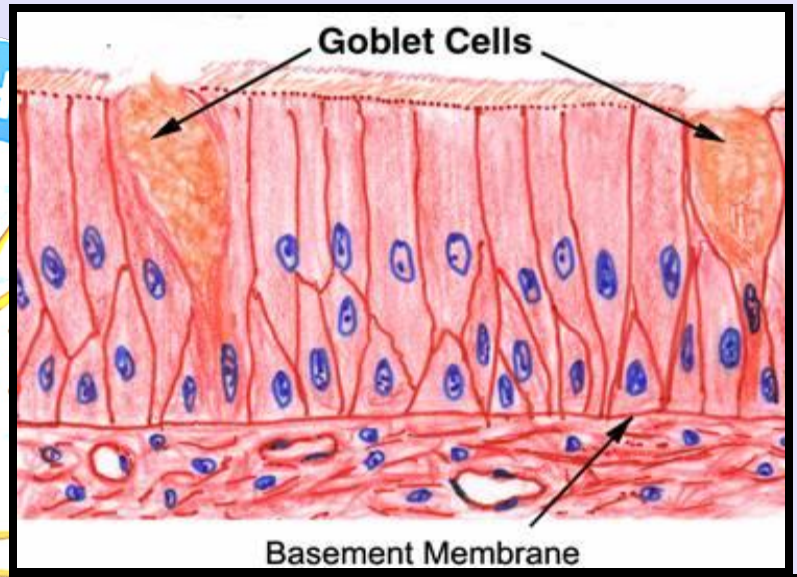
Classification:

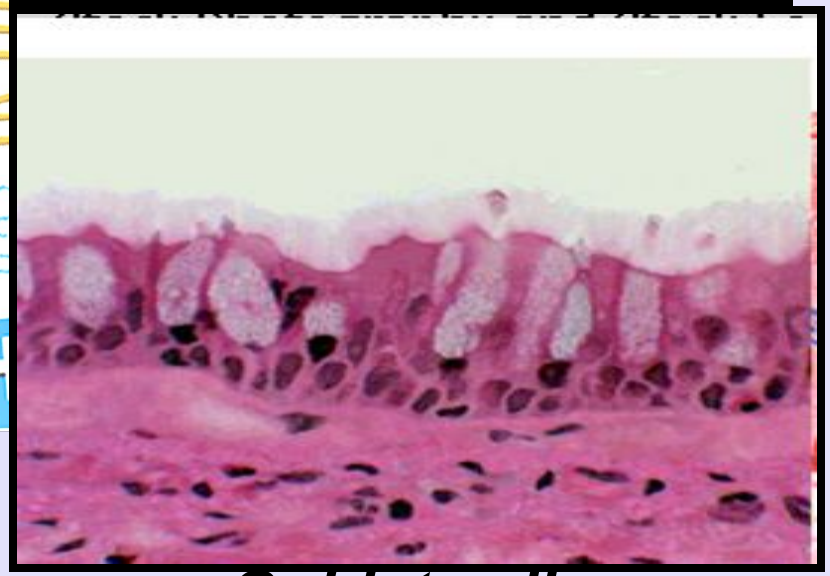
- According to number of cells
- According to structure
- According to method of secretion
- According to product secreted

EXOCRINE GLANDS

According to number of cells

- **Unicellular Glands**
  - consist of a single secretory cell.
  - In mammals the only example of unicellular exocrine glands are goblet cells, which occur in the epithelium of many mucous membranes.
  - ***Goblet cells*** secrete the glycoprotein mucin , which by the uptake of water is converted into a slimy substance, mucus.





Goblet cells

Multicellular glands

EXOCRINE GLANDS

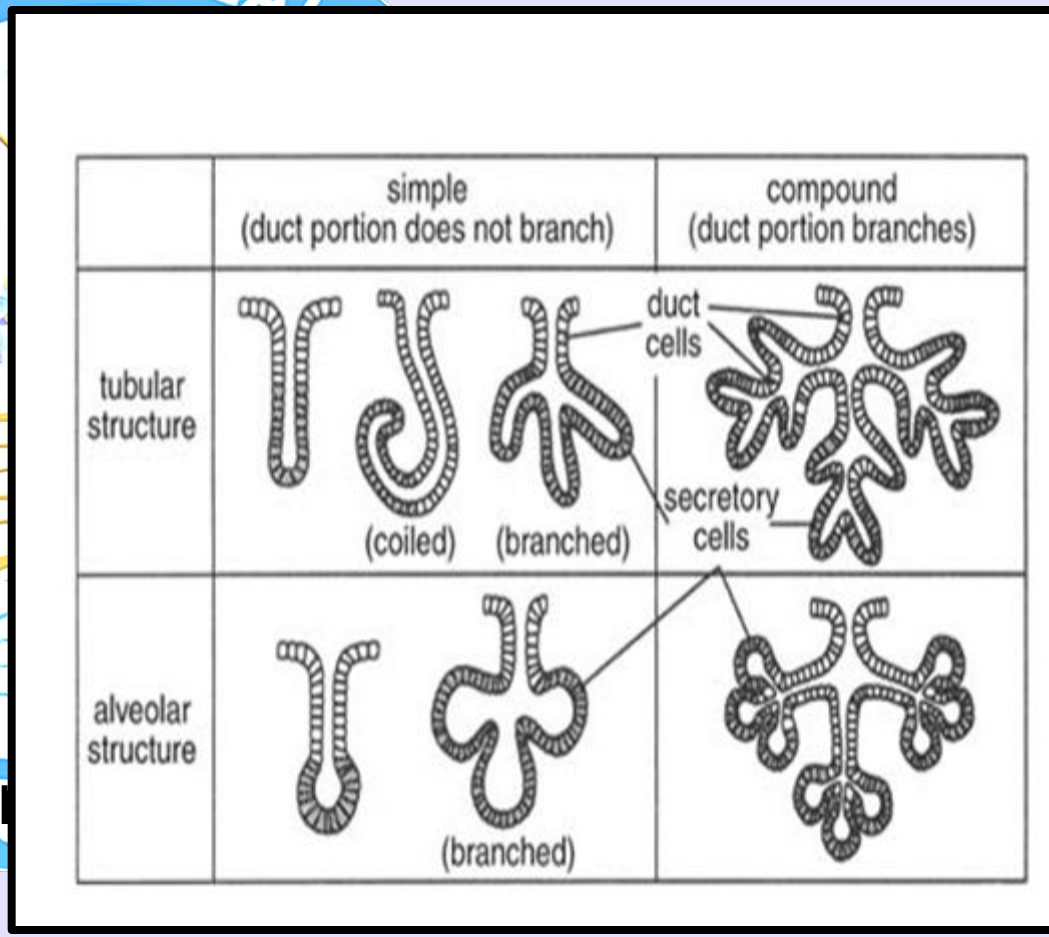
According to structure:

- **Simple glands**

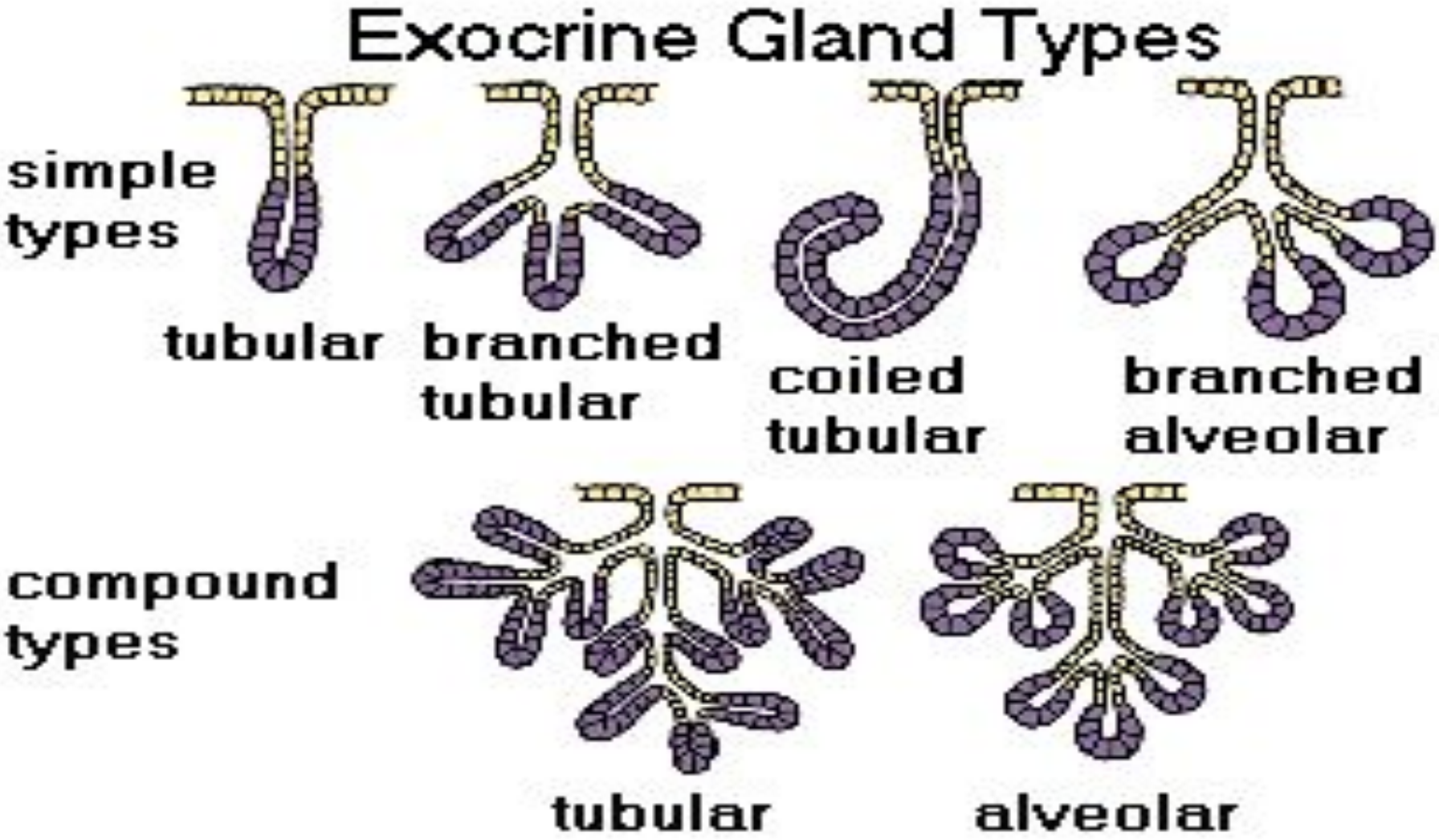
in which the portion of duct (not the secretory portion) does not have branches

- **Compound glands**

in which the duct portion has branches



EXOCRINE GLANDS



EXOCRINE GLANDS

According to structure:

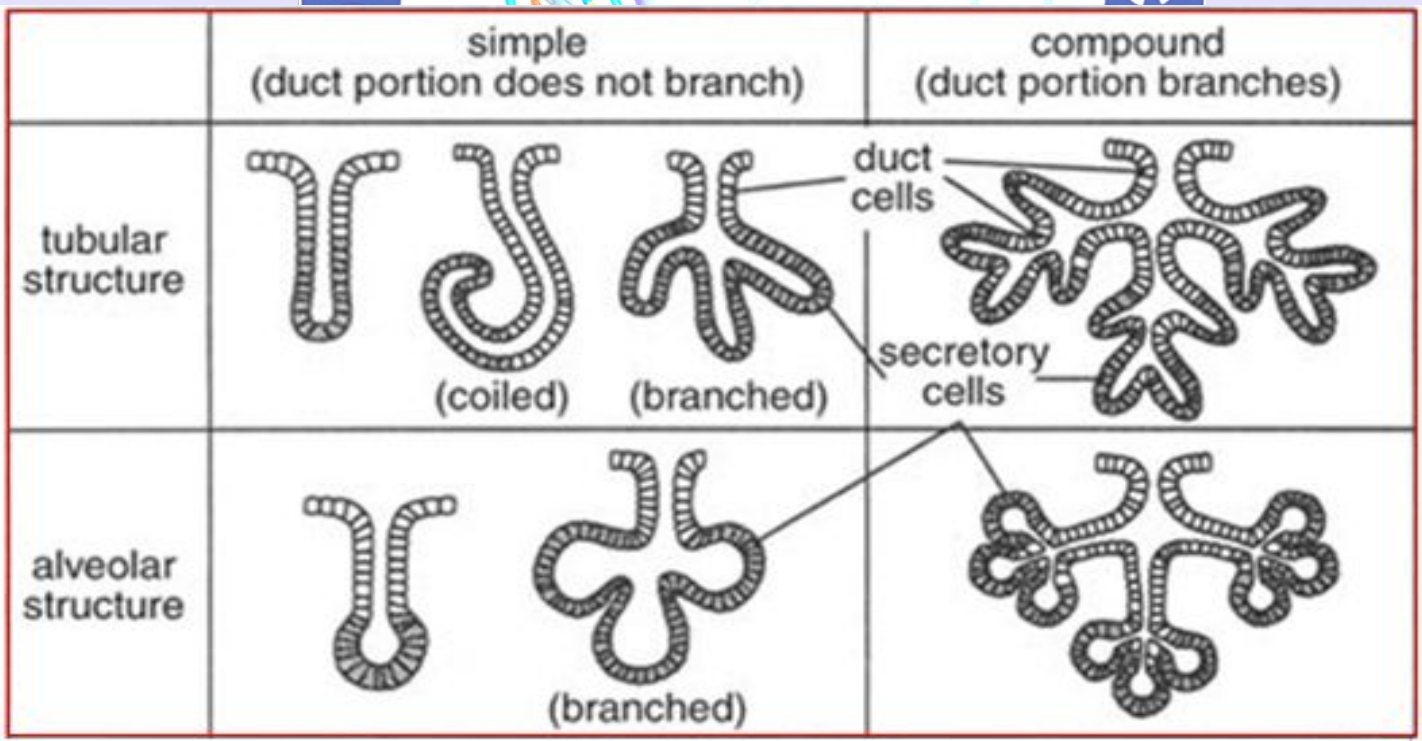
Tubular

refers to glands whose secretory portion forms tube

Acinar / alveolar

refers to glands whose secretory portion forms sac like structure

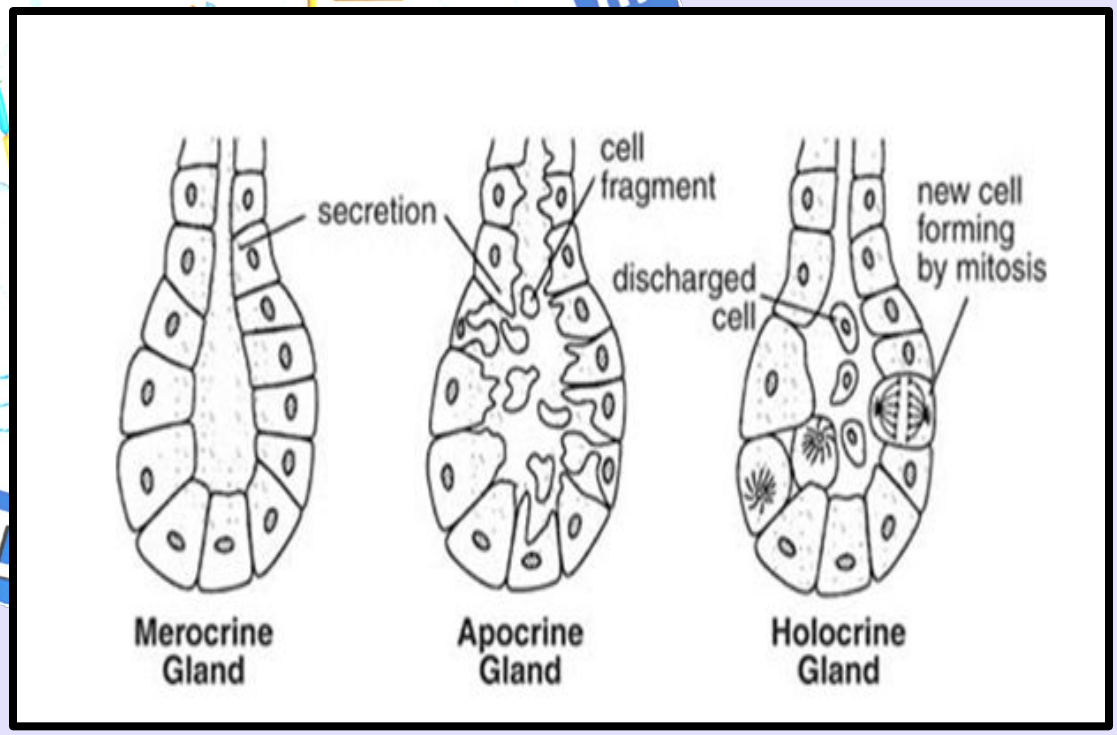
Both tubular and acinar types can be branched or unbranched



EXOCRINE GLANDS

According to method of secretion

- Apocrine
- Merocrine / Eccrine
- Holocrine



EXOCRINE GLANDS

- **Apocrine** : a portion of cell containing secretions is released as it separates from rest of the cell

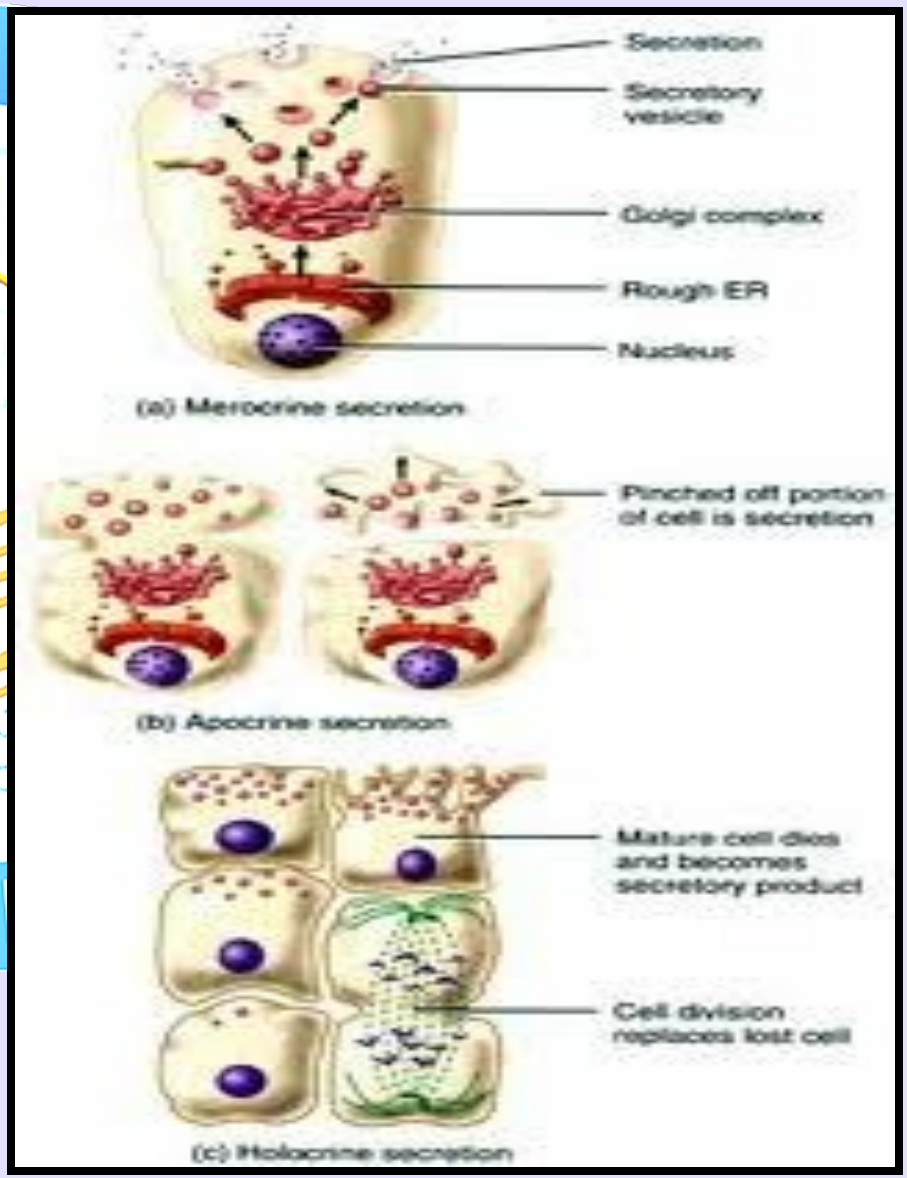
Example; Mammary glands

- **Merocrine / Eccrine**: secretions pass through the cell membranes of the secretory cells.

Example; Pancreatic acinar cells

- **Holocrine** : entire secretory cells disintegrate and are released along with their contents.

Example: Sebaceous glands on skin and nose



EXOCRINE GLANDS

According to product secreted

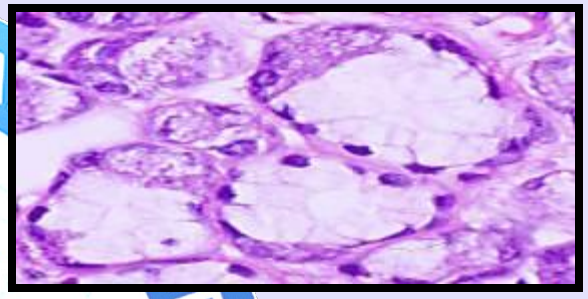
A)Serous glands : Secretes proteins , often enzymes
e.g : Chief cells of stomach

B)Mucus Glands : Secretes mucus
e.g:esophageal glands ,pyloric glands

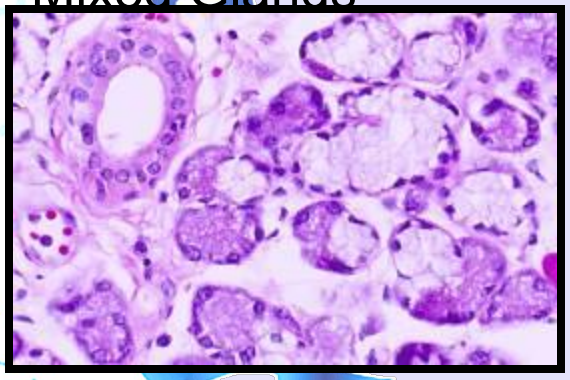
C)Mixed Glands : Secretes both proteins and mucous
e.g : Salivary glands

D)Sebaceous Glands : Secretes oil / lipids

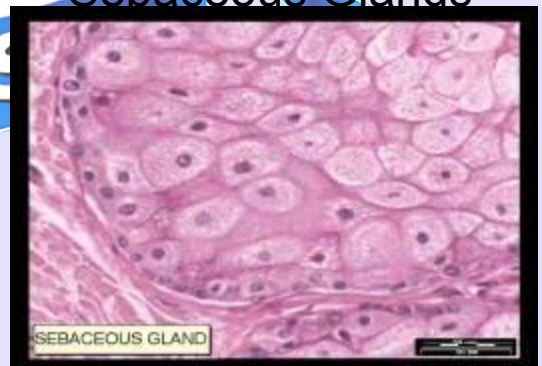
Mucus Glands



Mixed Glands

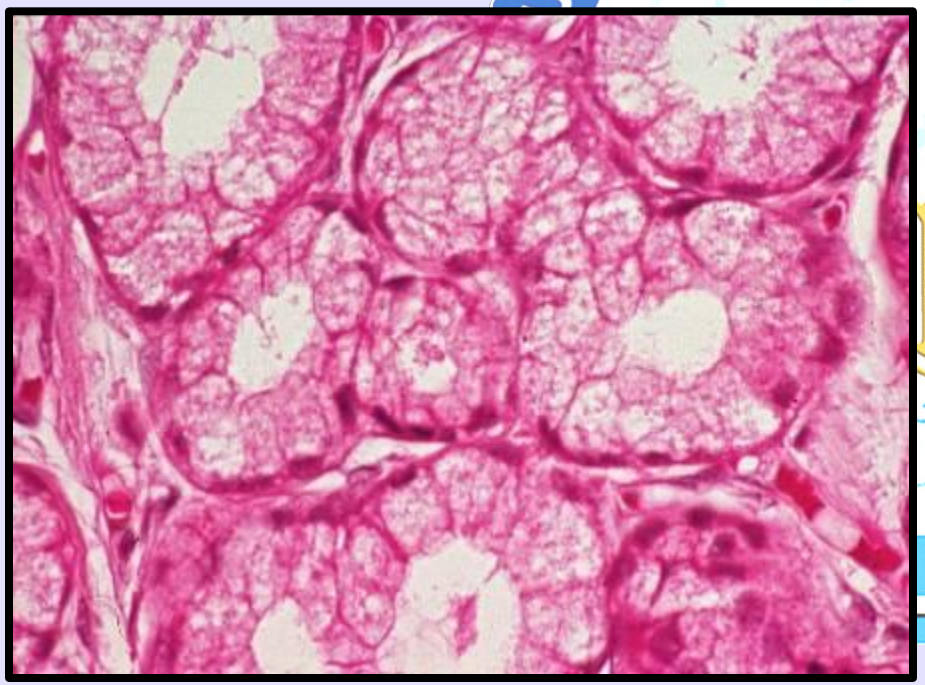


Sebaceous Glands

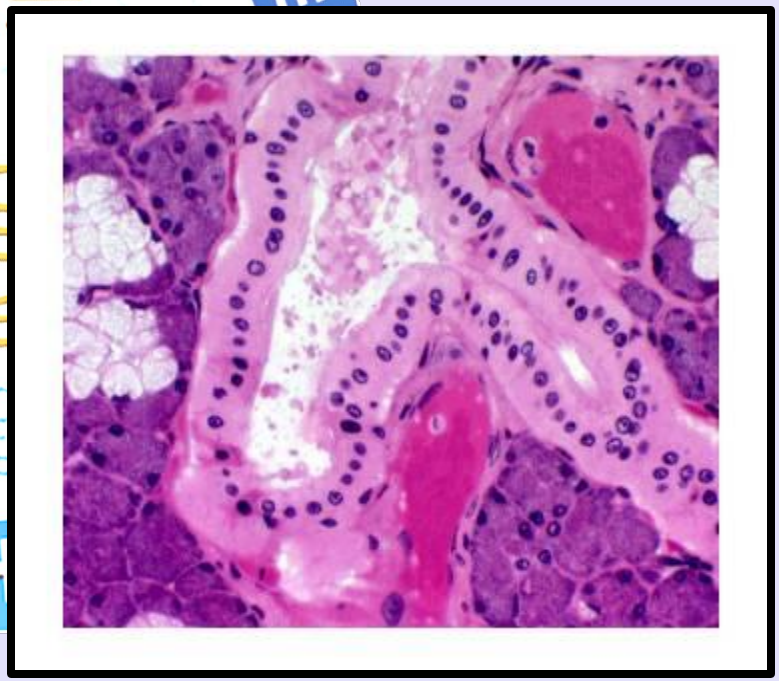


MICROSCOPIC PICTURES OF SOME GLANDS

Mucus secreting exocrine gland

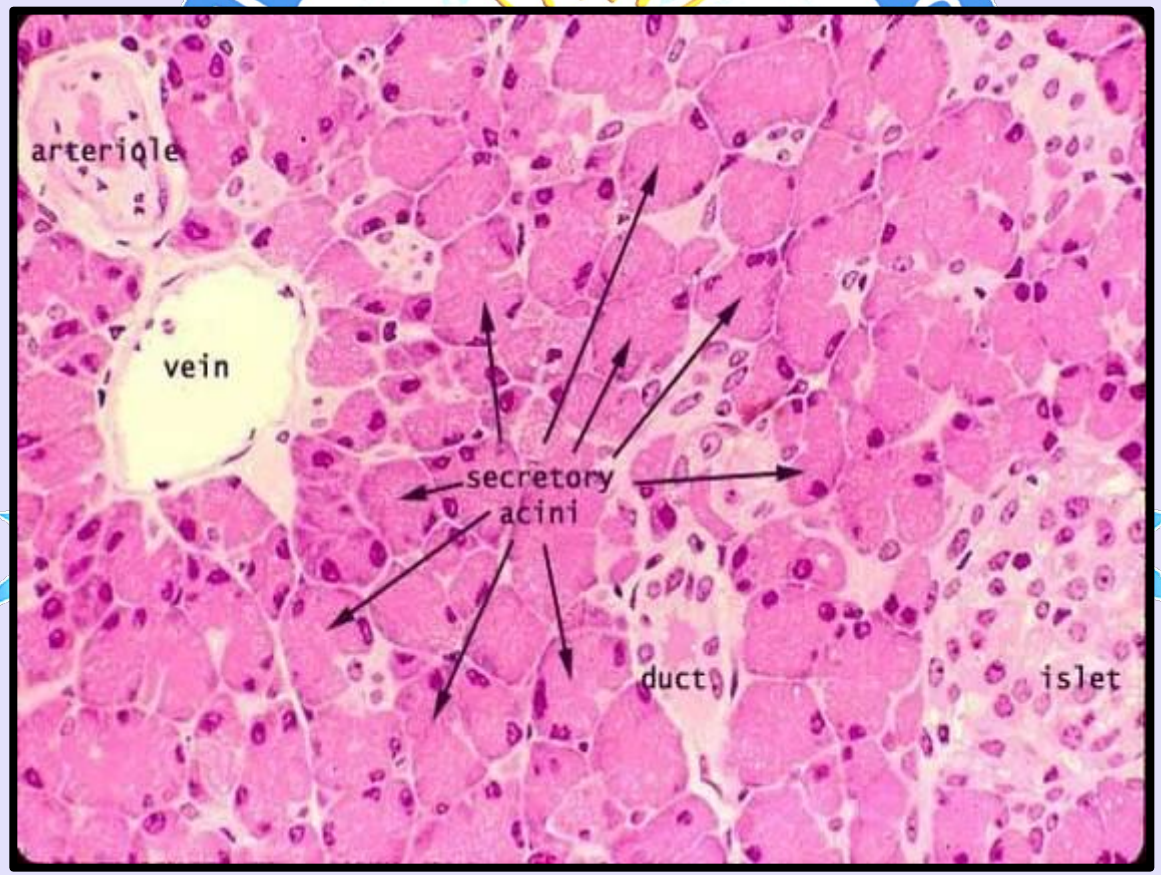


Compound alveolar gland



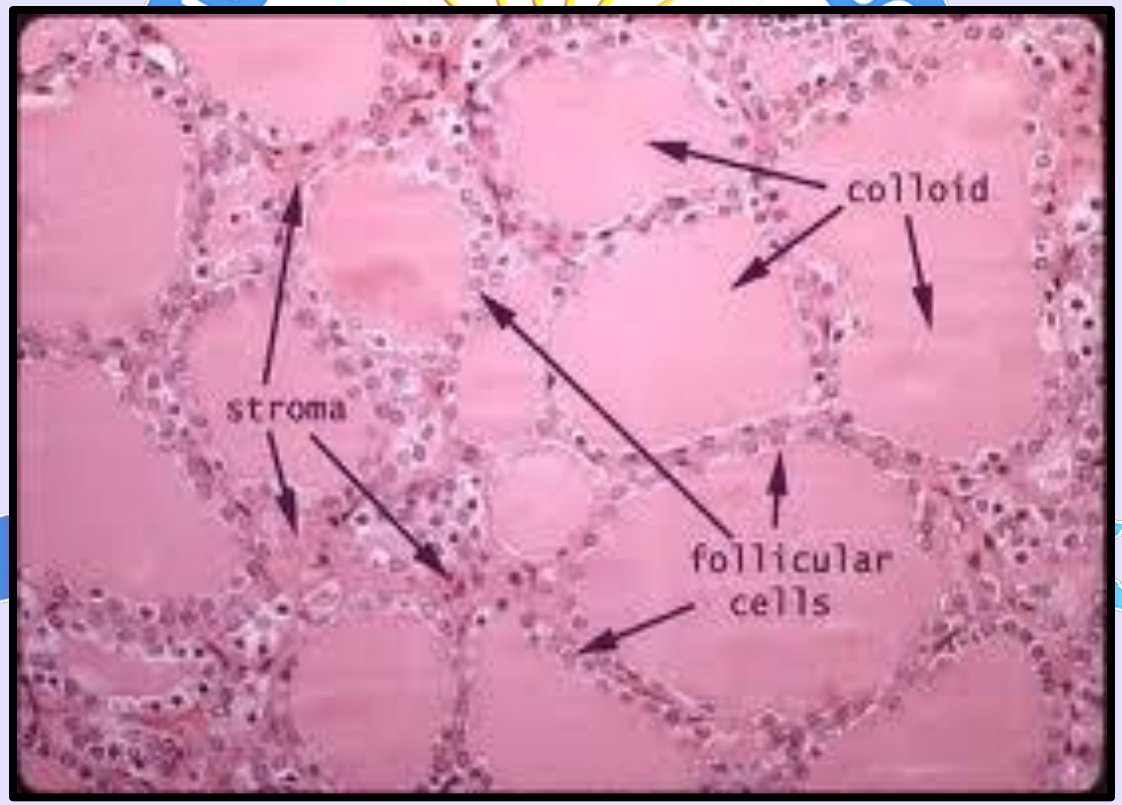
MICROSCOPIC PICTURES OF SOME GLANDS

Pancreatic exocrine serous acinar gland



MICROSCOPIC PICTURES OF SOME GLANDS

Endocrine glands – thyroid follicular cells



SUMMARY; GLANDS

Broadly the glands can be classified as,

- **ENDOCRINE GLANDS** - via bloodstream.
- **EXOCRINE GLANDS** – via system of ducts.

Further classification ;

- According to number of cells (unicellular/multicellular)
- According to structure (simple/ compound/ tubular /acinar)
- According to method of secretion (apocrine /merocrine / holocrine)
- According to product secreted (serous/mucus /mixed/ sebaceous)

REFERENCE

BASIC HISTOLOGY BY JUNQUEIRA

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