THE GLANDS

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The glands are epithelial cells have specialize for secretion .

Classification

Several ways are depending in classification of glands

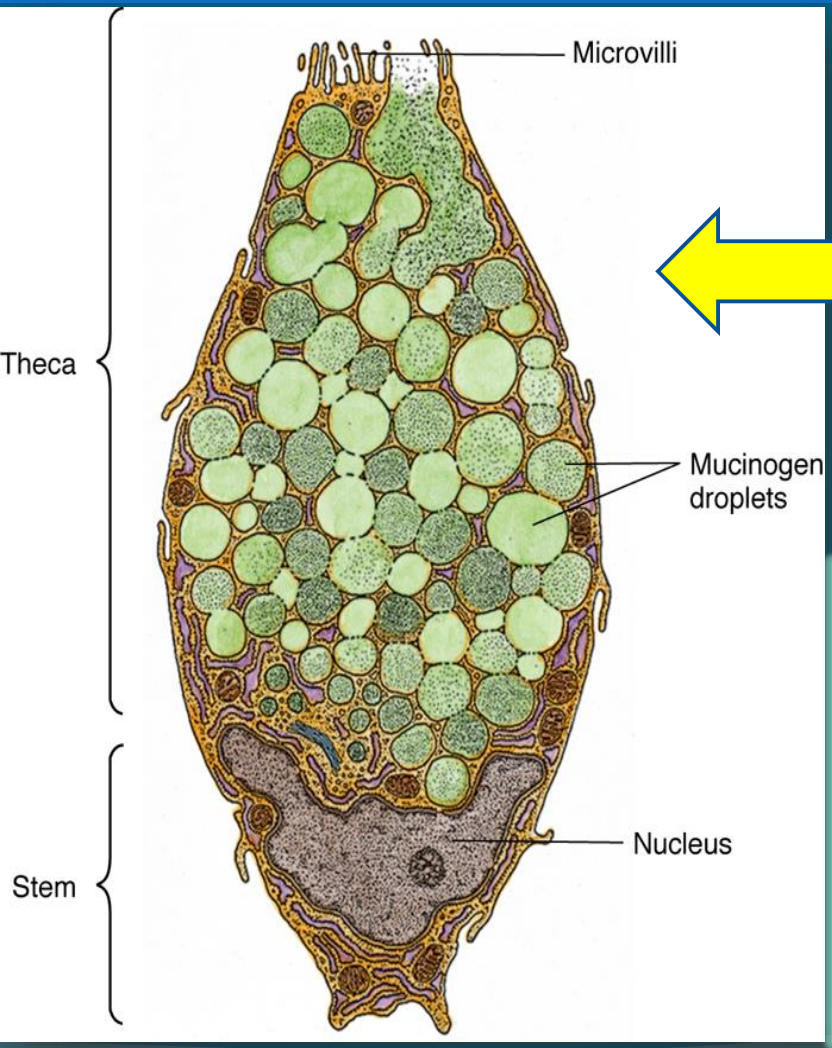
A- Method of secretory distribution:

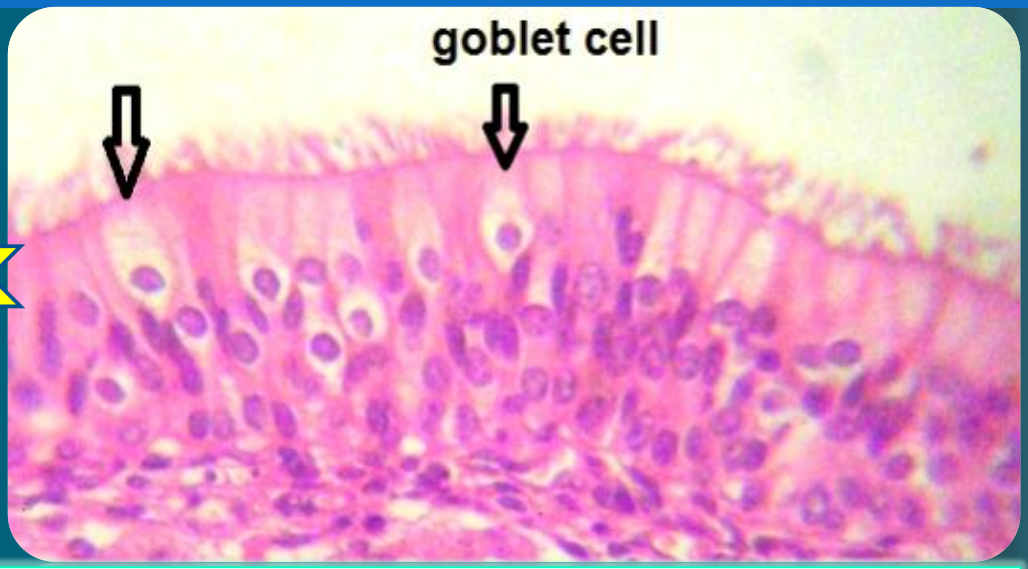
1. Exocrine :glands are secrete their products into the lumen or free surface by secretory ducts, (sweat gland).
2. Endocrine: glands which empty their products directly without secretory ducts, (pituitary glands).
3. Mixed glands: glands have both exocrine and endocrine secretory method, (pancreas)

B- Number of cells

1. Unicellular glands

glands are consist of one cell of mucus secretion scattered among columnar cells such as goblet cell.





Goblet cells derive their name from their shape, that of a goblet .

Their thin basal region sits on the basal lamina, whereas their expanded apical portion,

the theca, faces the lumen of the digestive tube or respiratory tract.

The theca is filled with membrane-bound secretory droplets, which displace the cytoplasm to the cell's periphery and the nucleus toward its base. The process of mucinogen release is regulated and stimulated by chemical irritation and parasympathetic innervation, resulting in exocytosis of the entire secretory contents of the cell, thus lubricating and protecting the epithelial sheet.

❖ Multicellular glands:

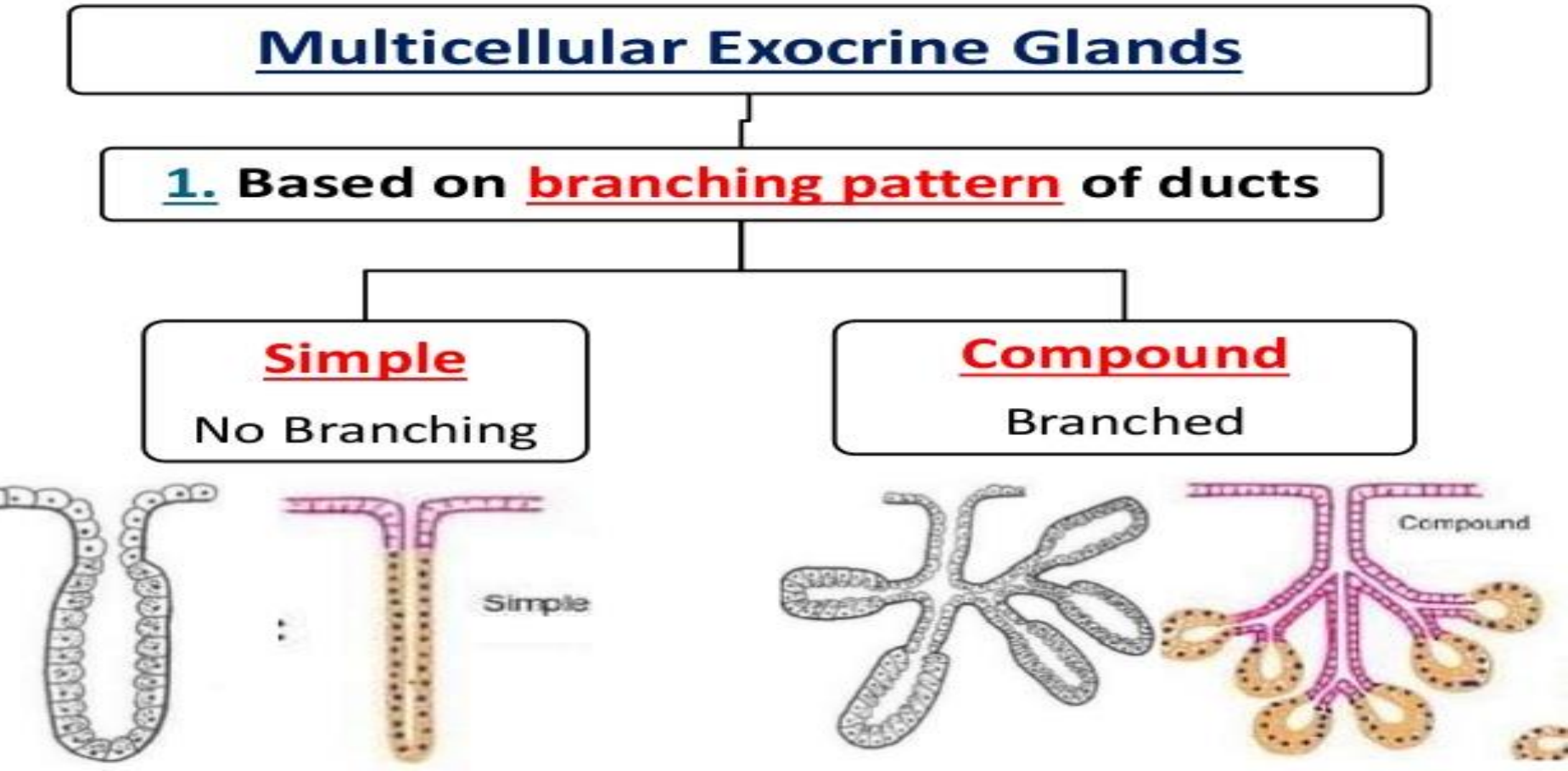
❖ Classified according to their ducts:

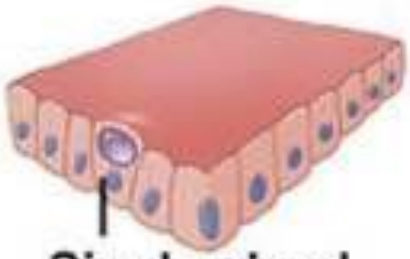
1- Simple: Their ducts do not branched .

2- Compound: Their ducts branched.

❖ Classified according to the shape of their secretory units into:

1- tubular. 2- acinar (alveolar, resembling a grape). 3- tubuloalveolar.





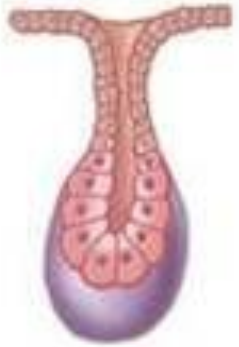
Single gland cell in epithelium

(a) Unicellular (goblet cells in large and small intestine and respiratory passages)

(b) Simple straight tubular (glands in stomach and colon)

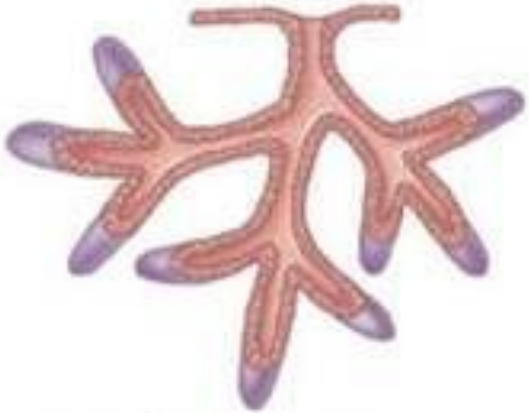
(c) Simple branched tubular (glands in lower portion of stomach)

(d) Simple coiled tubular (lower portion of stomach and small intestine)

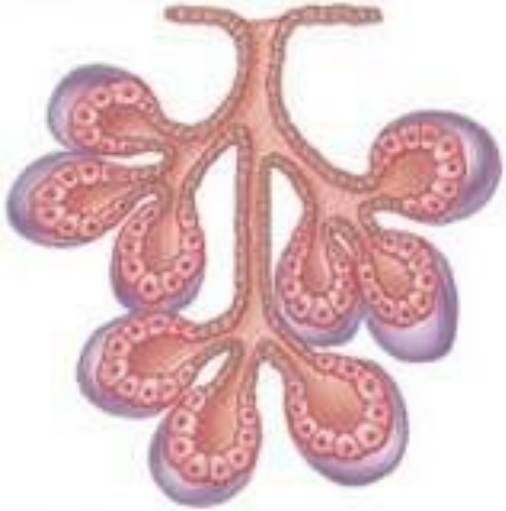


(e) Simple acinar (sebaceous glands of skin)

(f) Simple branched acinar (sebaceous glands of skin)

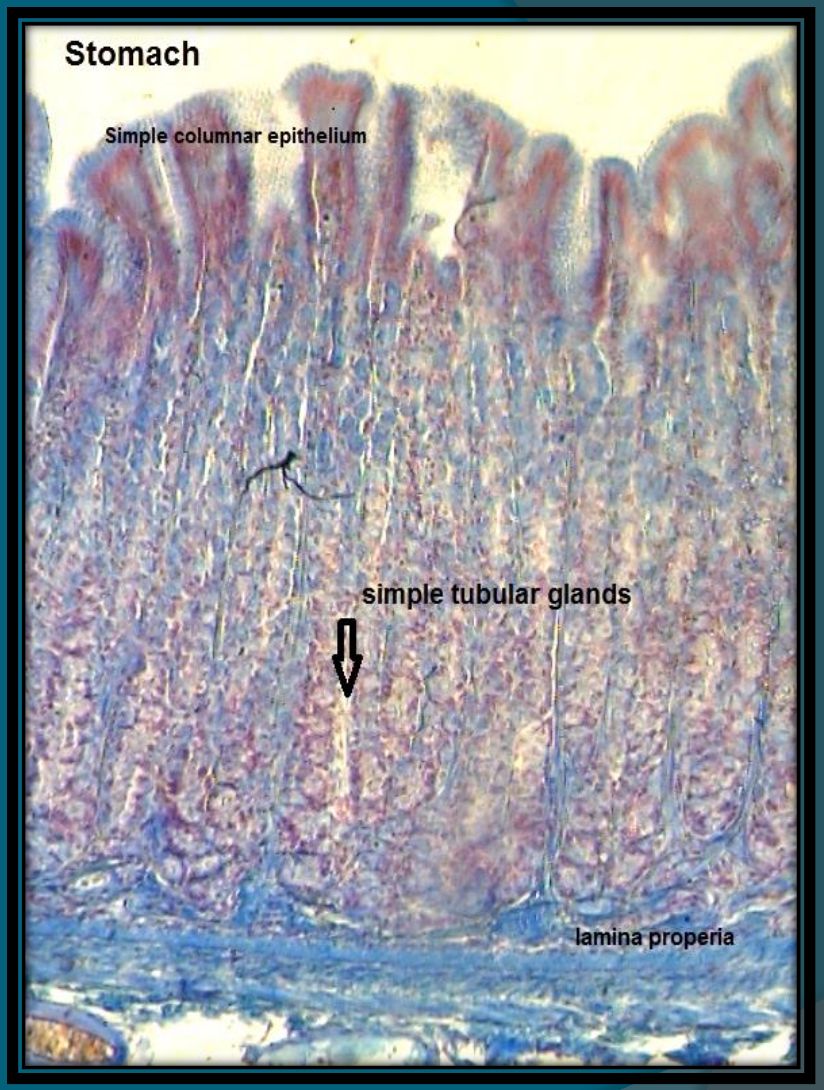


(g) Compound tubular (mucous glands of duodenum)



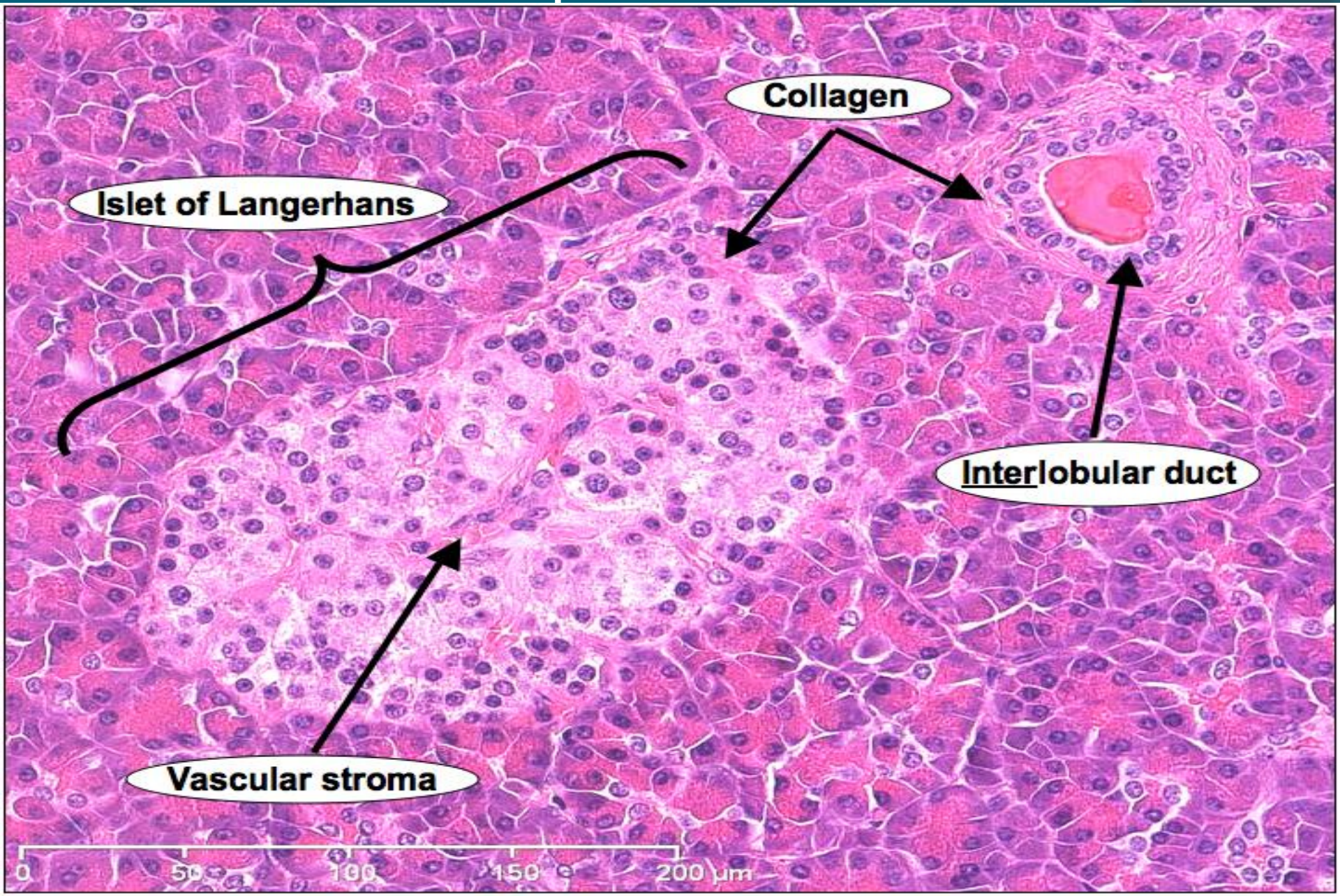
(h) Compound acinar (mammary glands)

(i) Compound tubuloacinar (pancreas)



Tubular straight such as tubular glands of stomach , colon and uterus

Pancreas: compound tubulo acinar



Sweat glands

Preview

C- Type of secretion

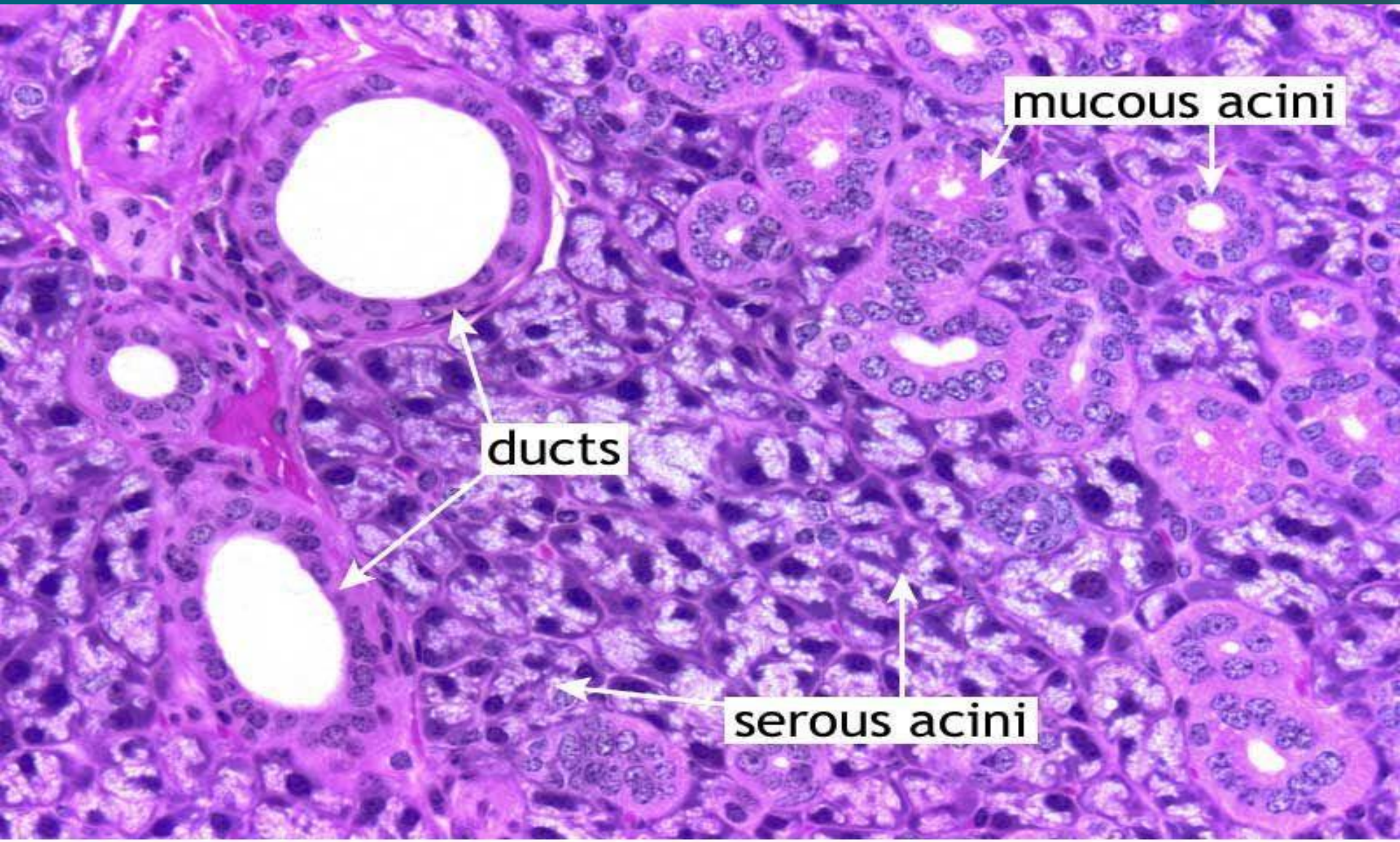
1. **Serous glands**: their product is watery fluid (salivary glands and pancreas).
2. **Mucous glands:** their product is more viscous (digestive &respiratory system).
3. **Mixed glands**: their product is a mixture of serous and mucous.

➢The serous secretary cells are overall smaller than mucous cells and have centrally positioned nuclei.

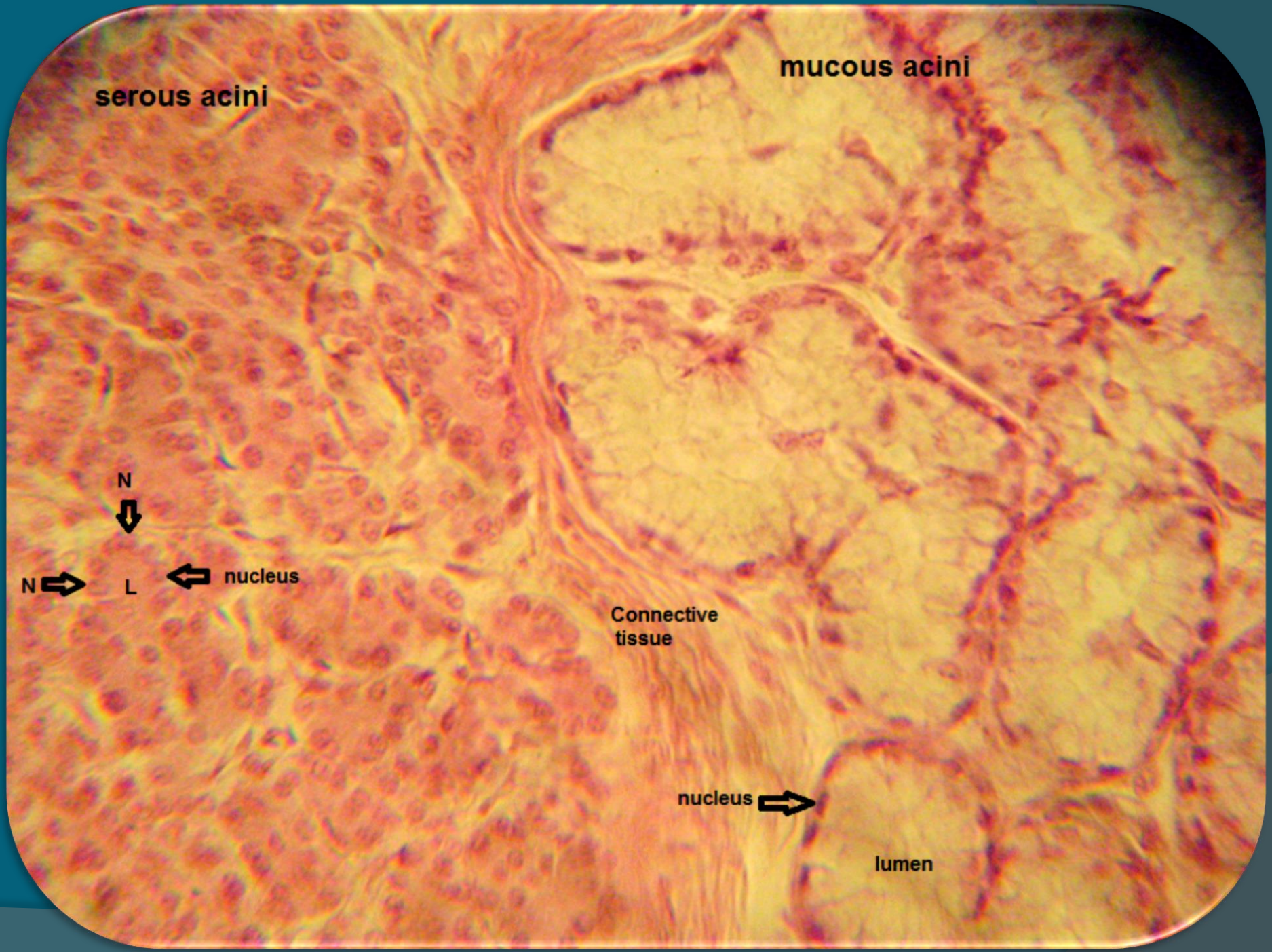
➢ The mucous cells containing mucigen granules and their nuclei are basally located.

➢The mixed type appear as demilunes (crescent-shaped bodies of serous cells) lie outside the mucous cells .

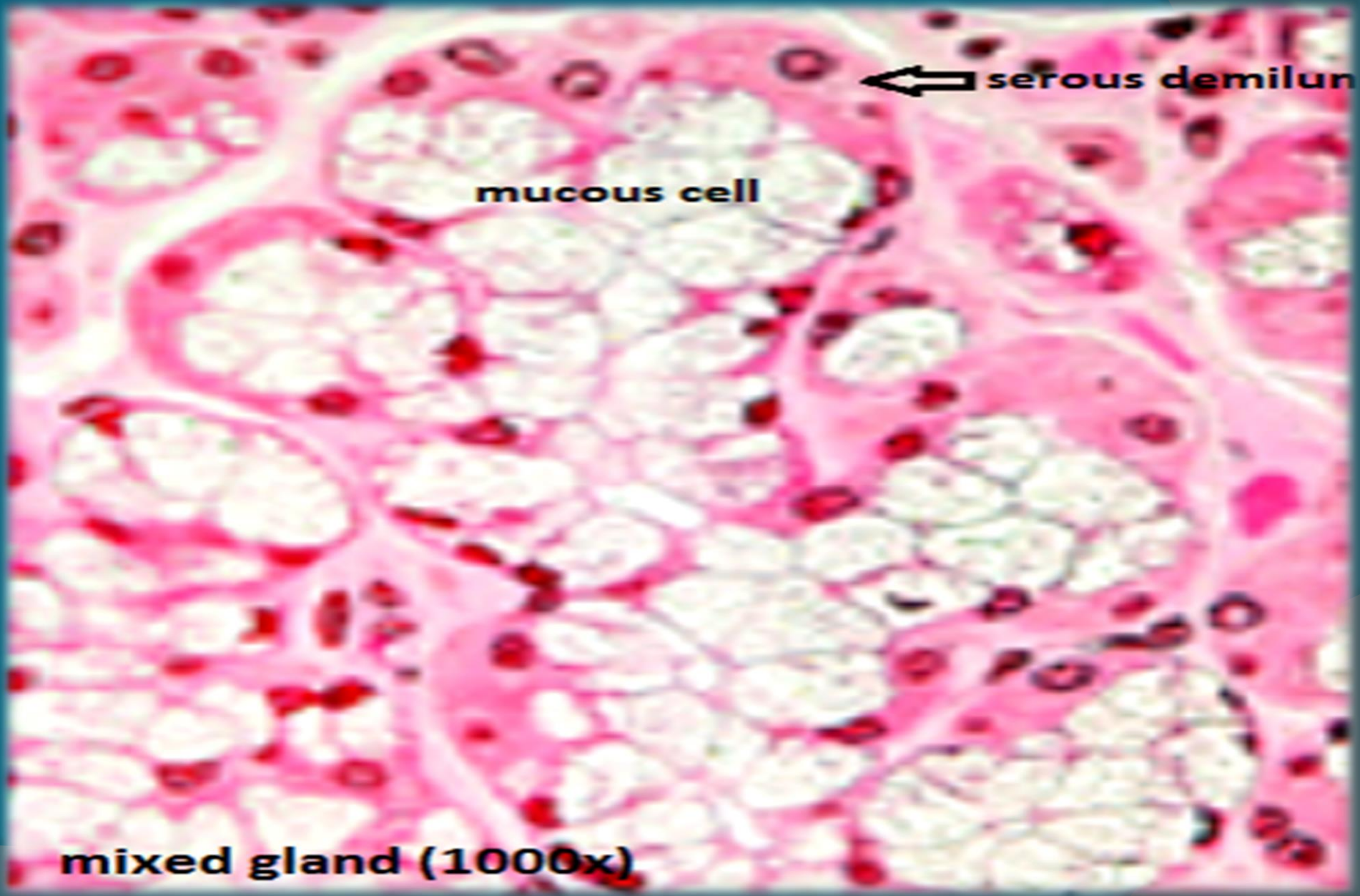
Serous and mucous acini:



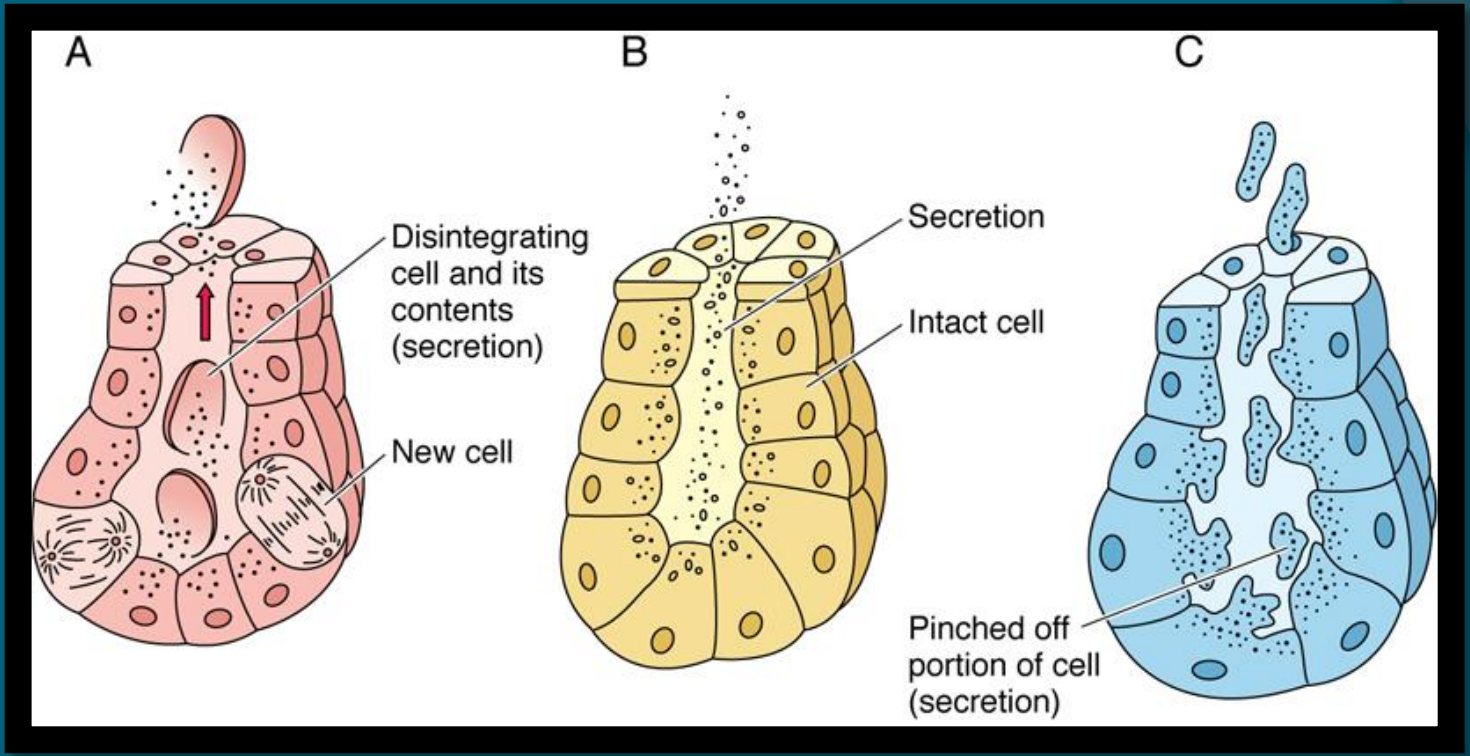

serous & mucous acini of glands
duct
mucous acini
duct
serous acini


serous acini
mucous acini
N
N
L
nucleus
Connective tissue
nucleus
lumen

Mixed gland:



Glands – Modes of secretion



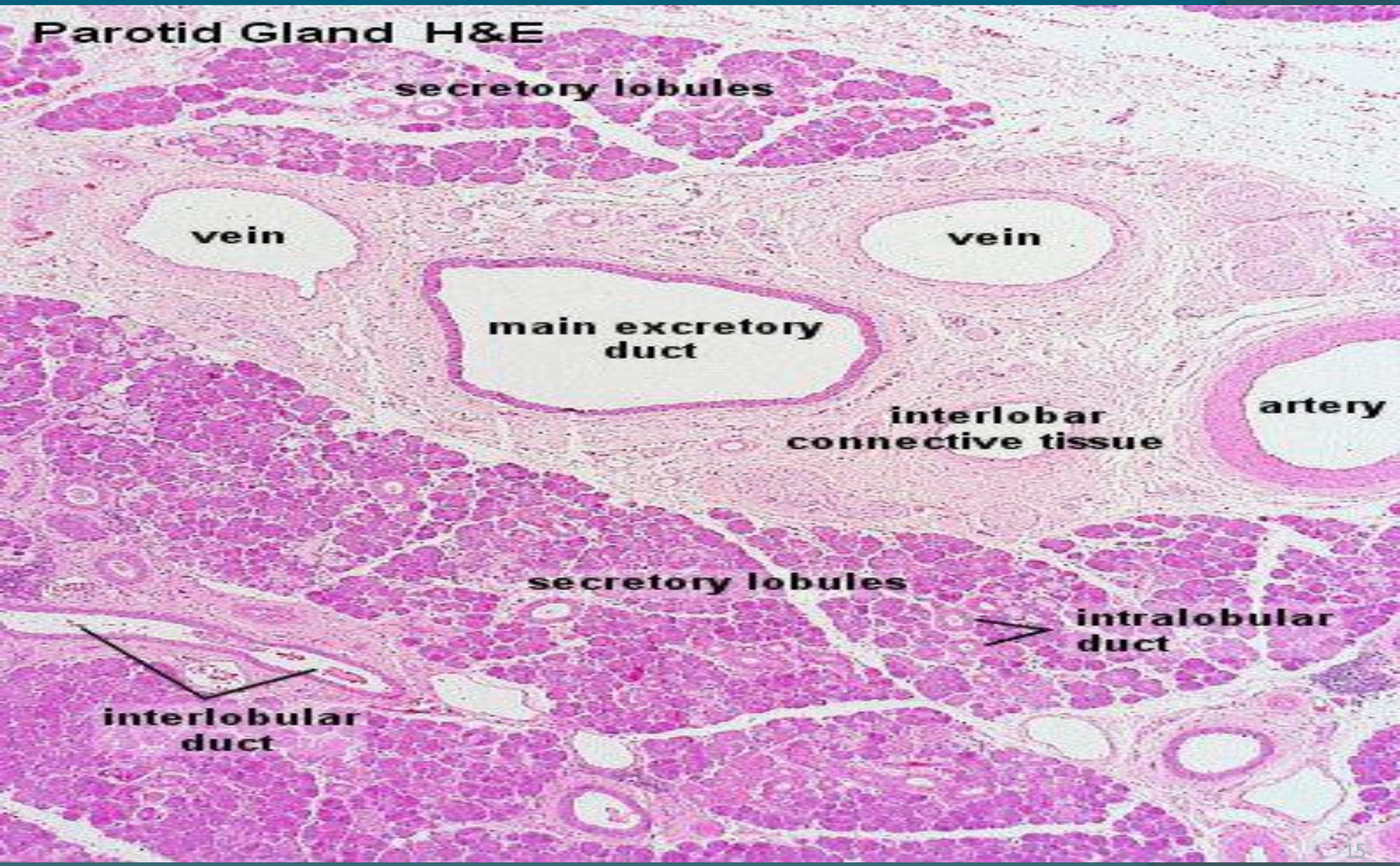
Cells of exocrine glands exhibit three different mechanisms for releasing their secretions) (A)apocrine, (B) merocrine, and (C) holocrine :

A. in **apocrine glands** (Lactating mammary gland), a small portion of the apical cytoplasm is released along with the secretory product.

B. In **merocrine glands** (parotid gland) occurs via exocytosis; as a result, neither cell membrane nor cytoplasm becomes a part of the secretion.

C. In **holocrine glands** (Sebaceous gland), as a secretory cell matures, it dies and becomes the secretory product.

Merocrine gland: parotid gland



Thank you