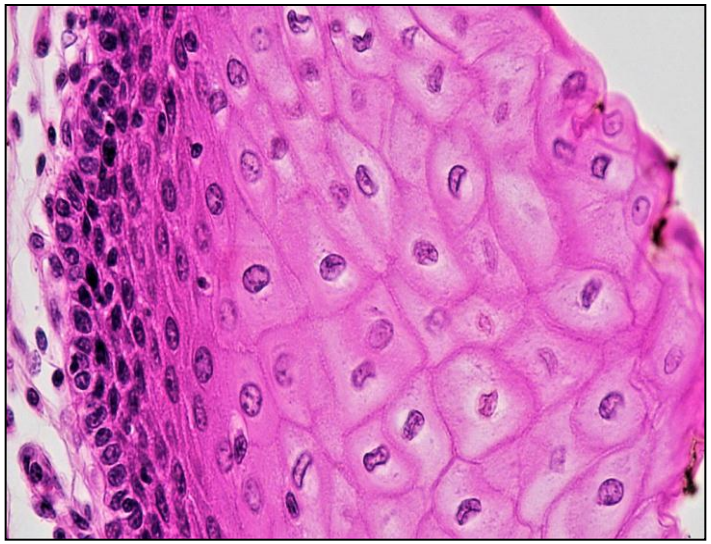
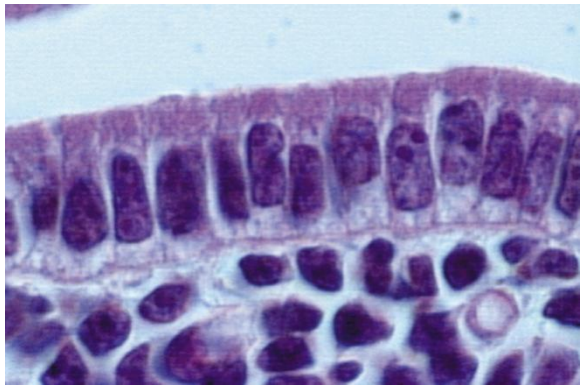
Epithelium
(Lab)



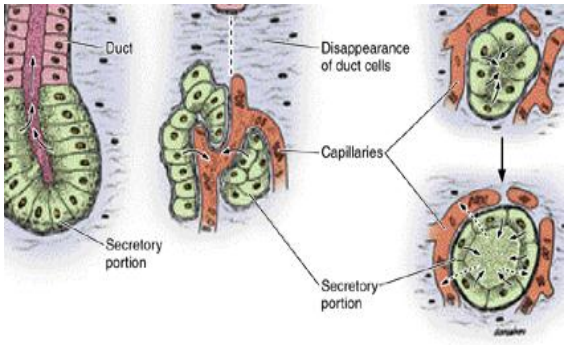
By
Dr. Heba Sharaf Eldin
Associate Professor of Histology & Cell Biology

Types of Epithelium

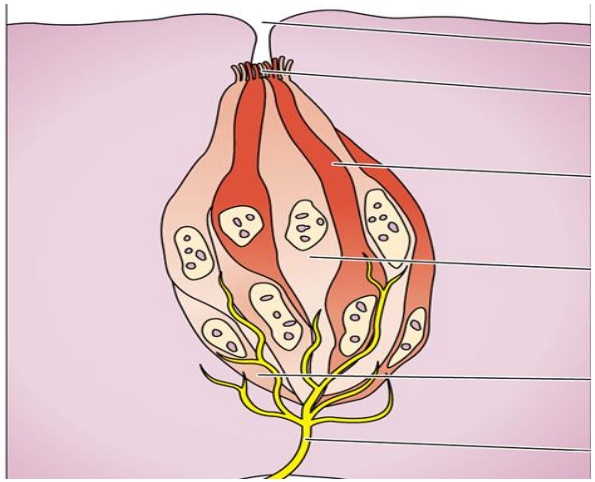
I- covering& lining.



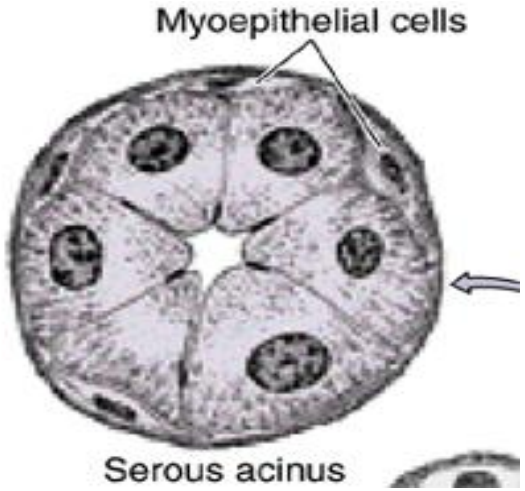
II- Glandular.



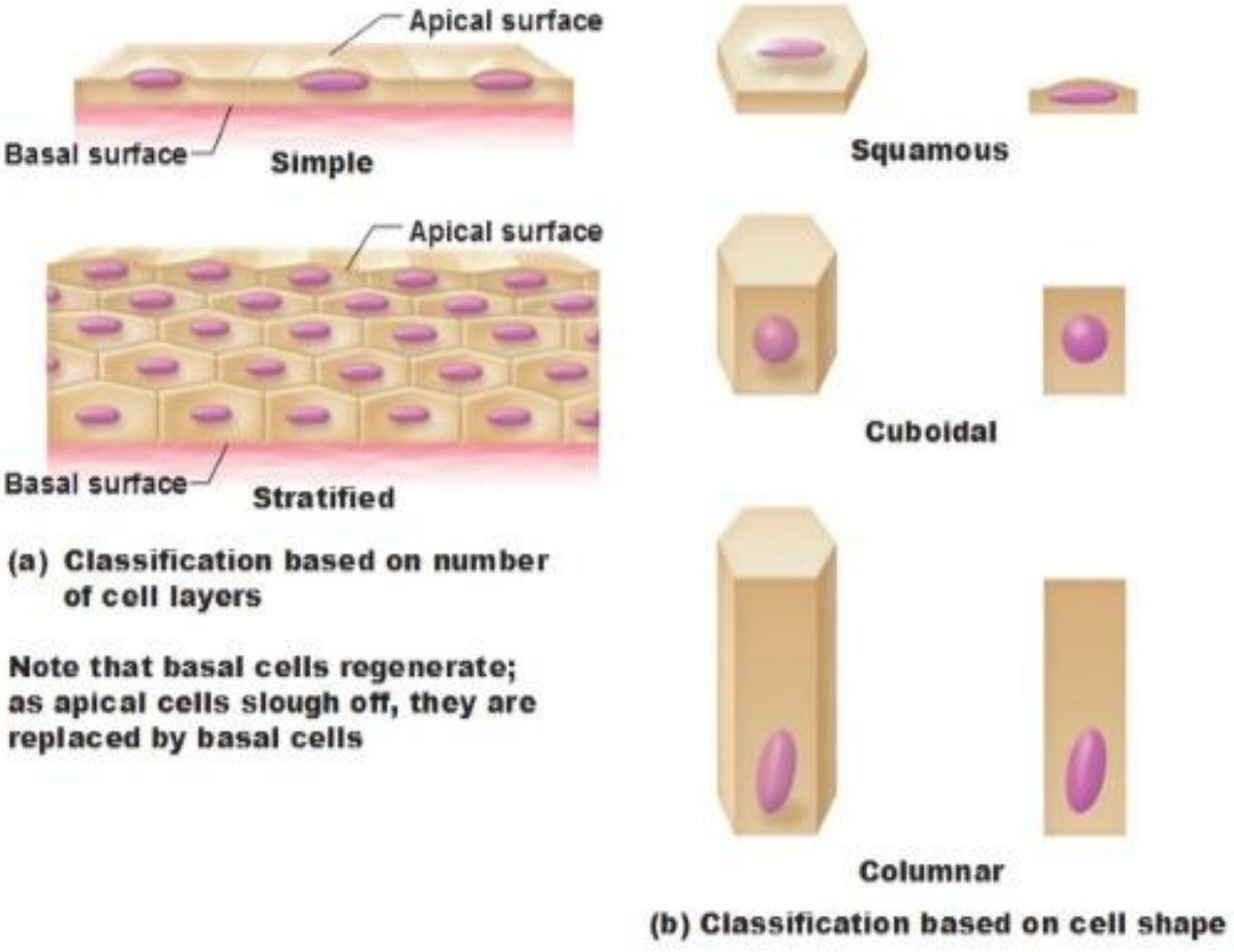
III-Neuroepithelium.



IV-Myoepithelium.



Classifications of Epithelia



(a) Classification based on number of cell layers

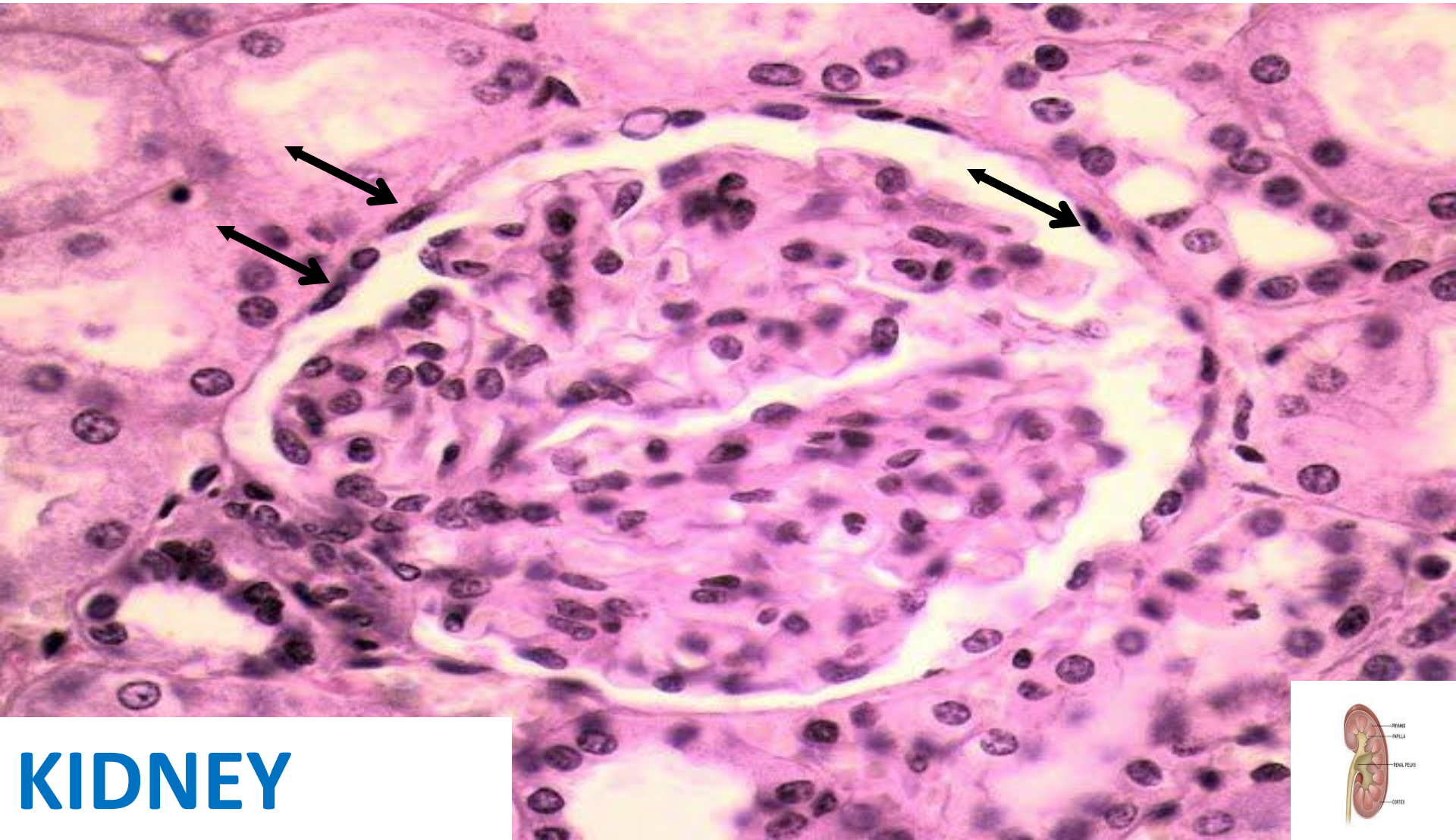
Note that basal cells regenerate; as apical cells slough off, they are replaced by basal cells

(b) Classification based on cell shape

Simple epithelium

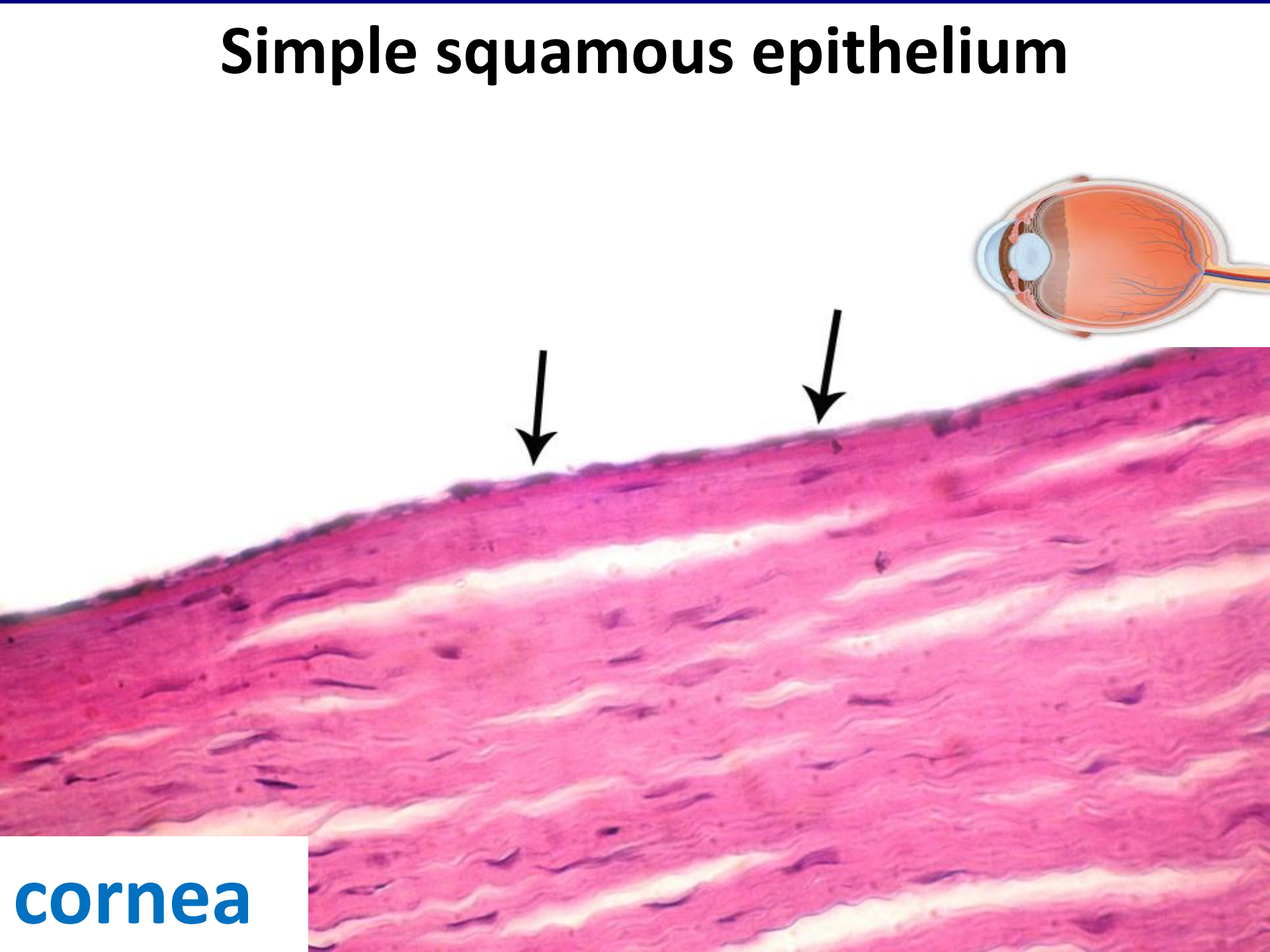
Simple squamous epithelium

(Bowman's capsule)



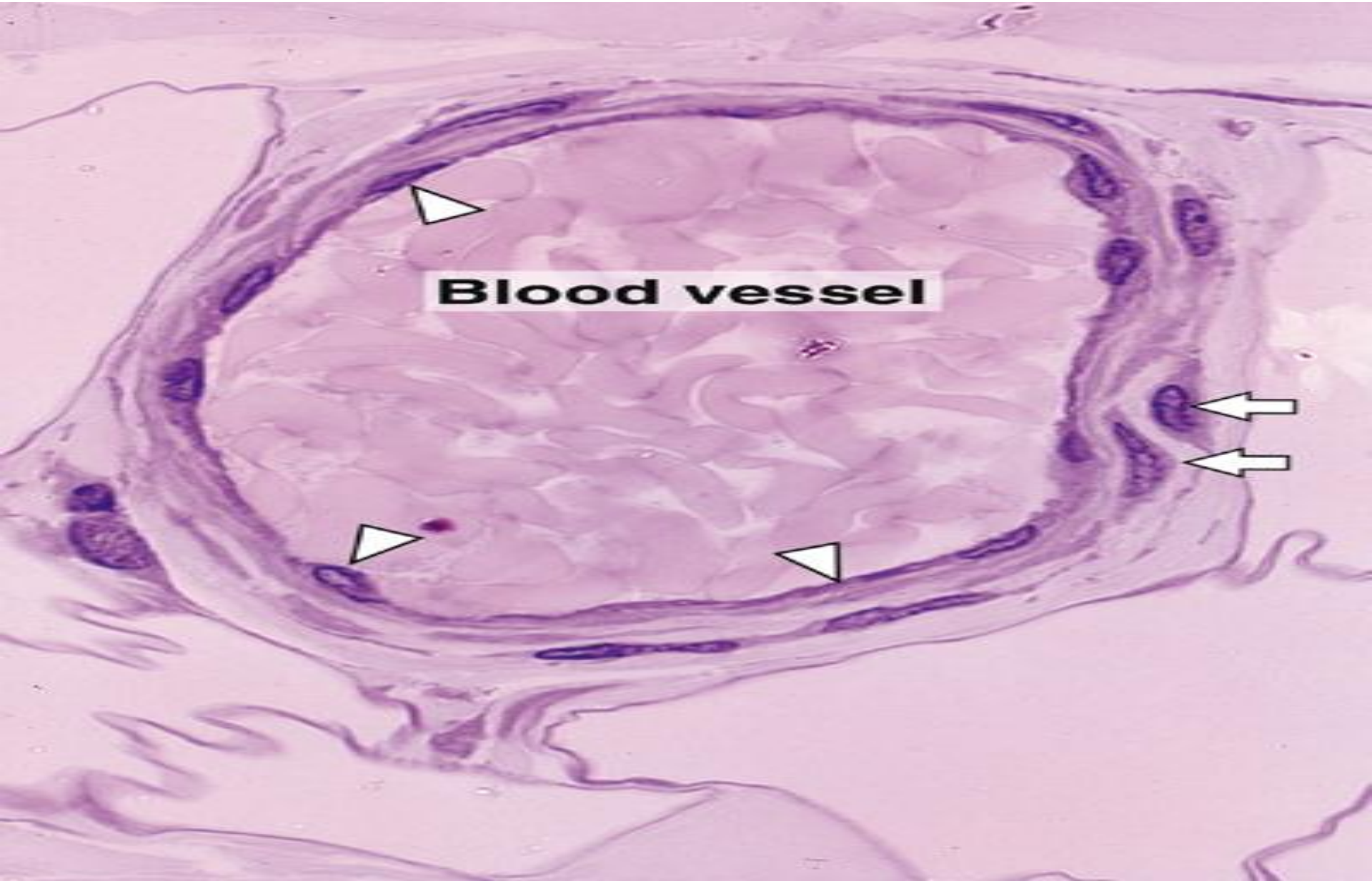
KIDNEY

Simple squamous epithelium

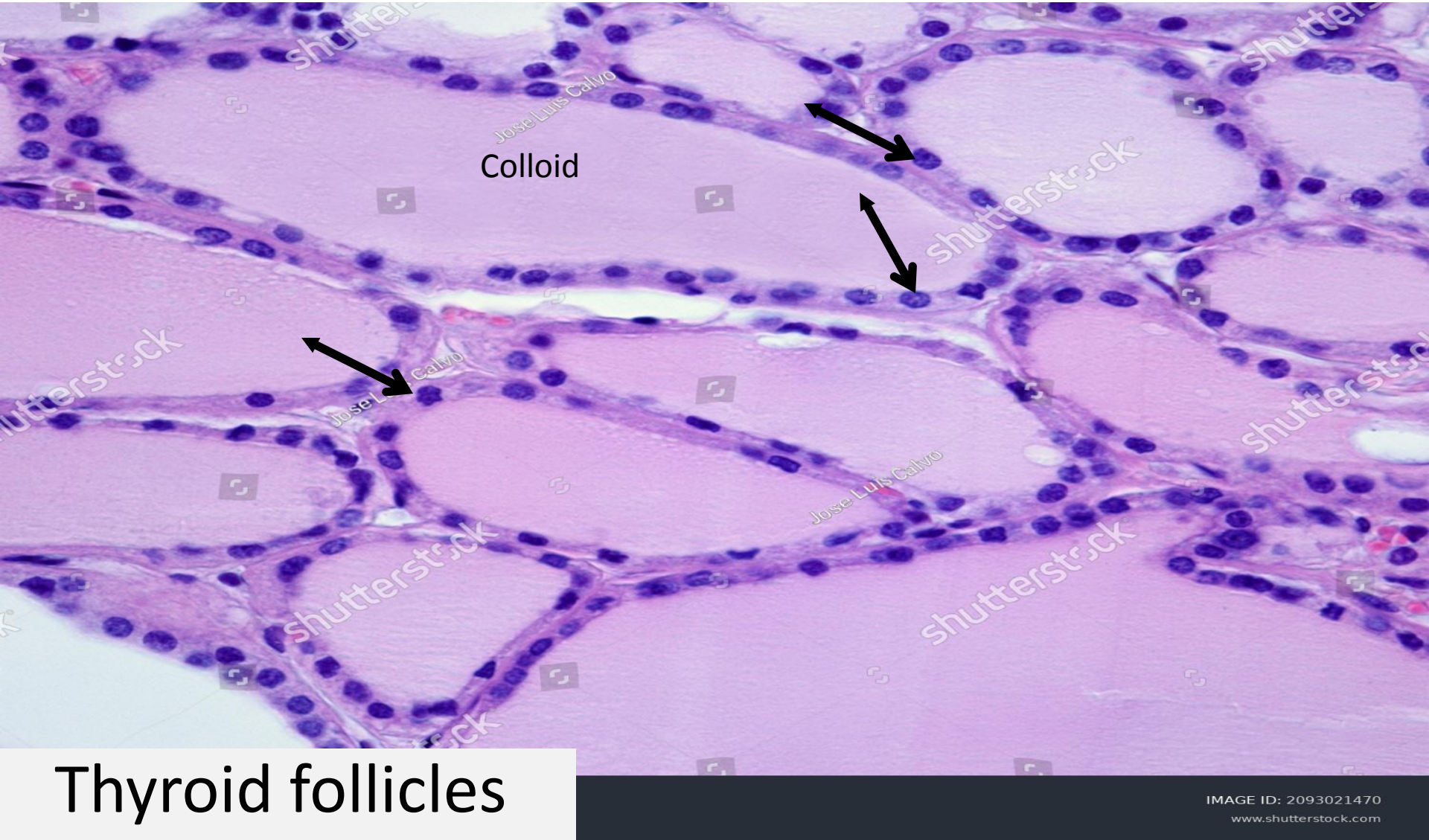


cornea

Simple squamous epithelium

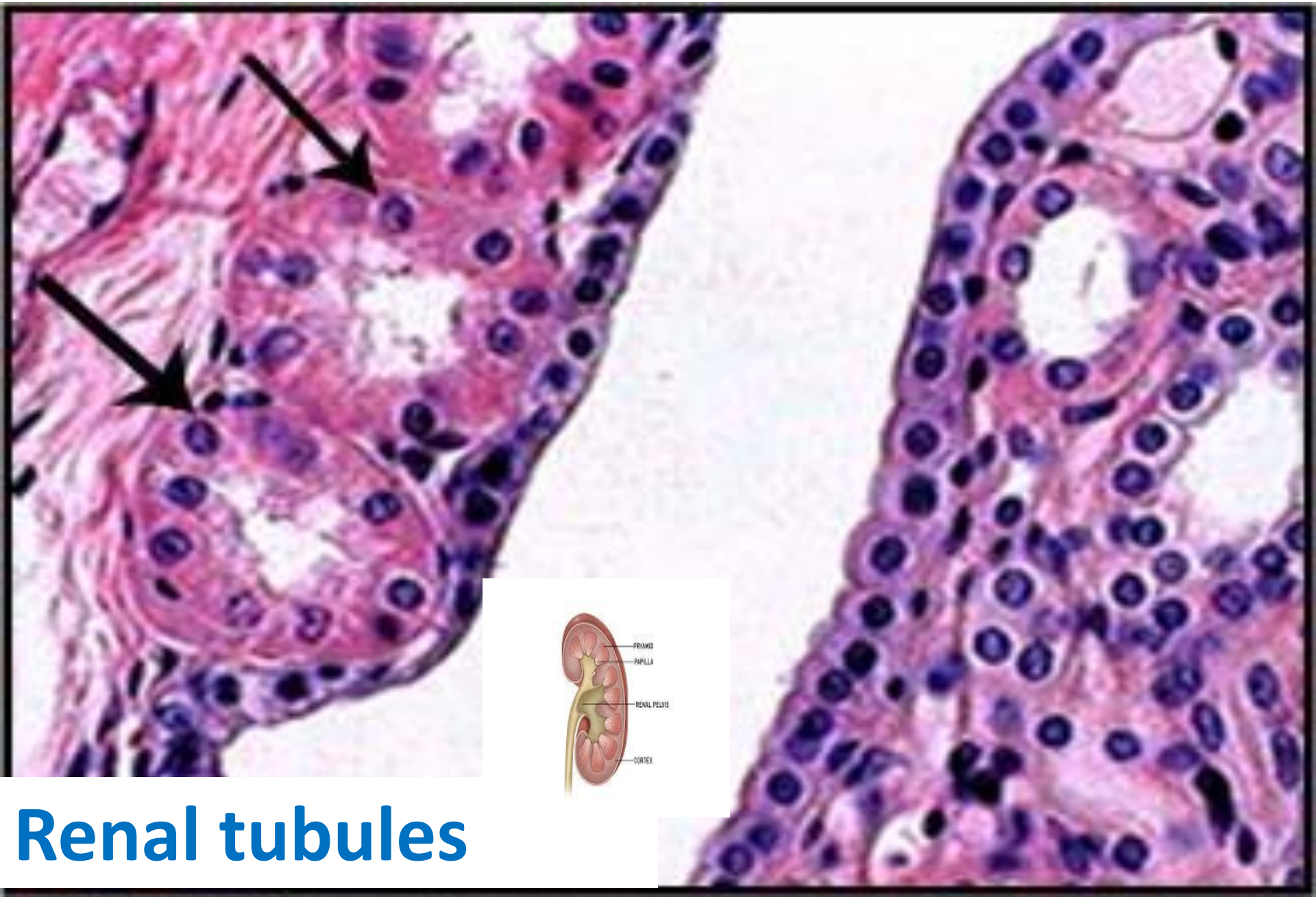


Simple cubical epithelium



Thyroid follicles

Simple cuboidal epithelium



Renal tubules

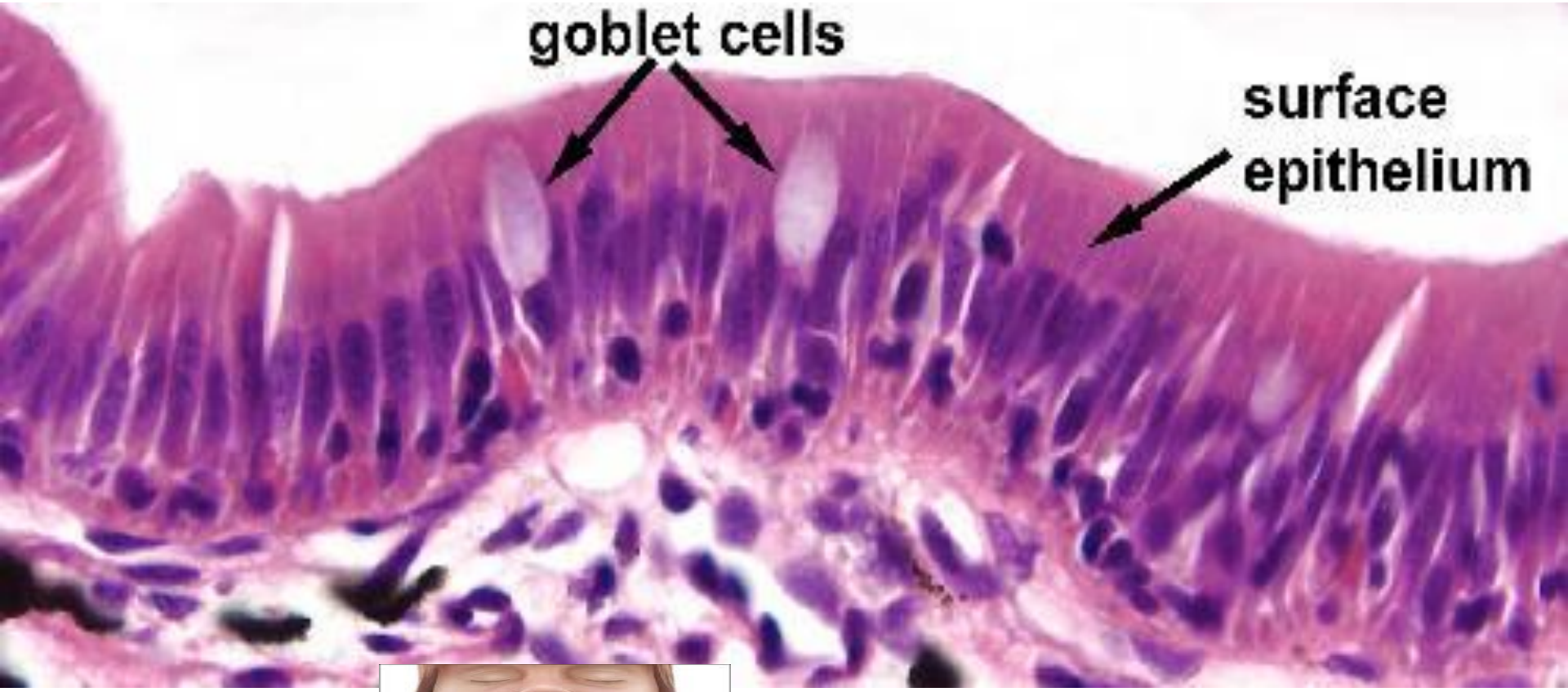
Simple columnar epithelium

Intestine

Simple columnar epithelium

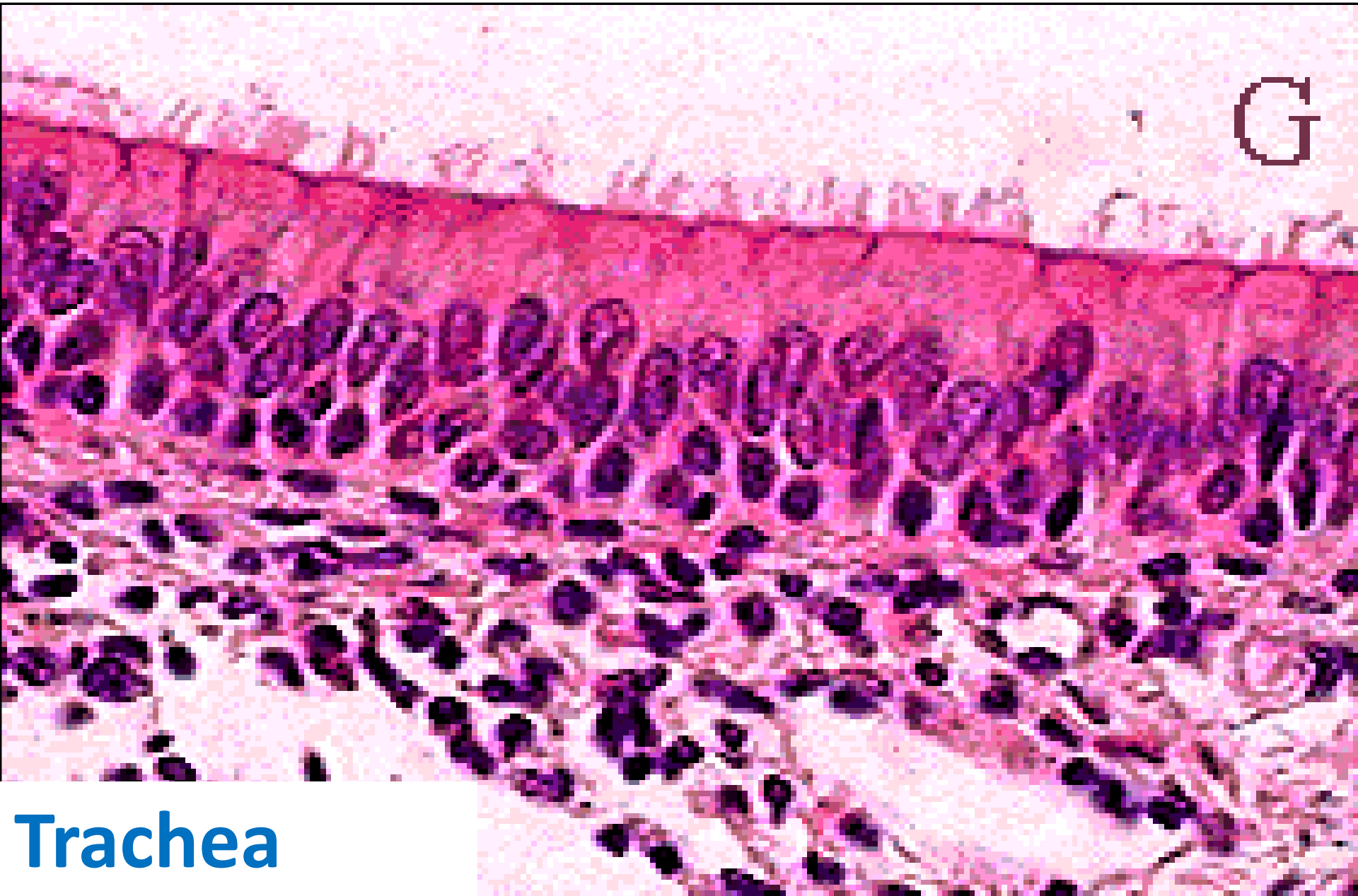
Gall bladder

Pseudostratified columnar epithelium with goblet cells



Trachea

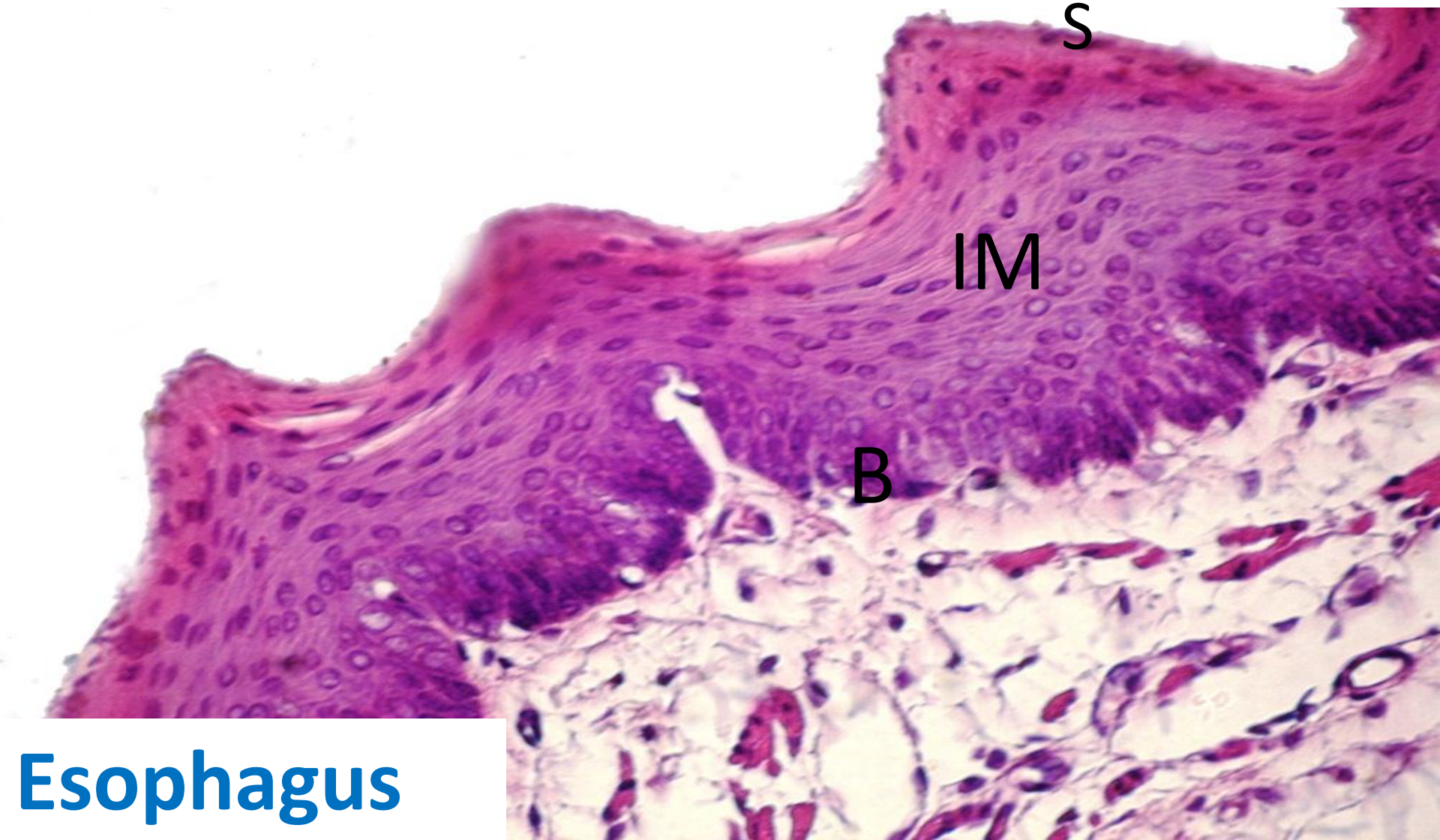
Pseudostratified columnar epithelium



Trachea

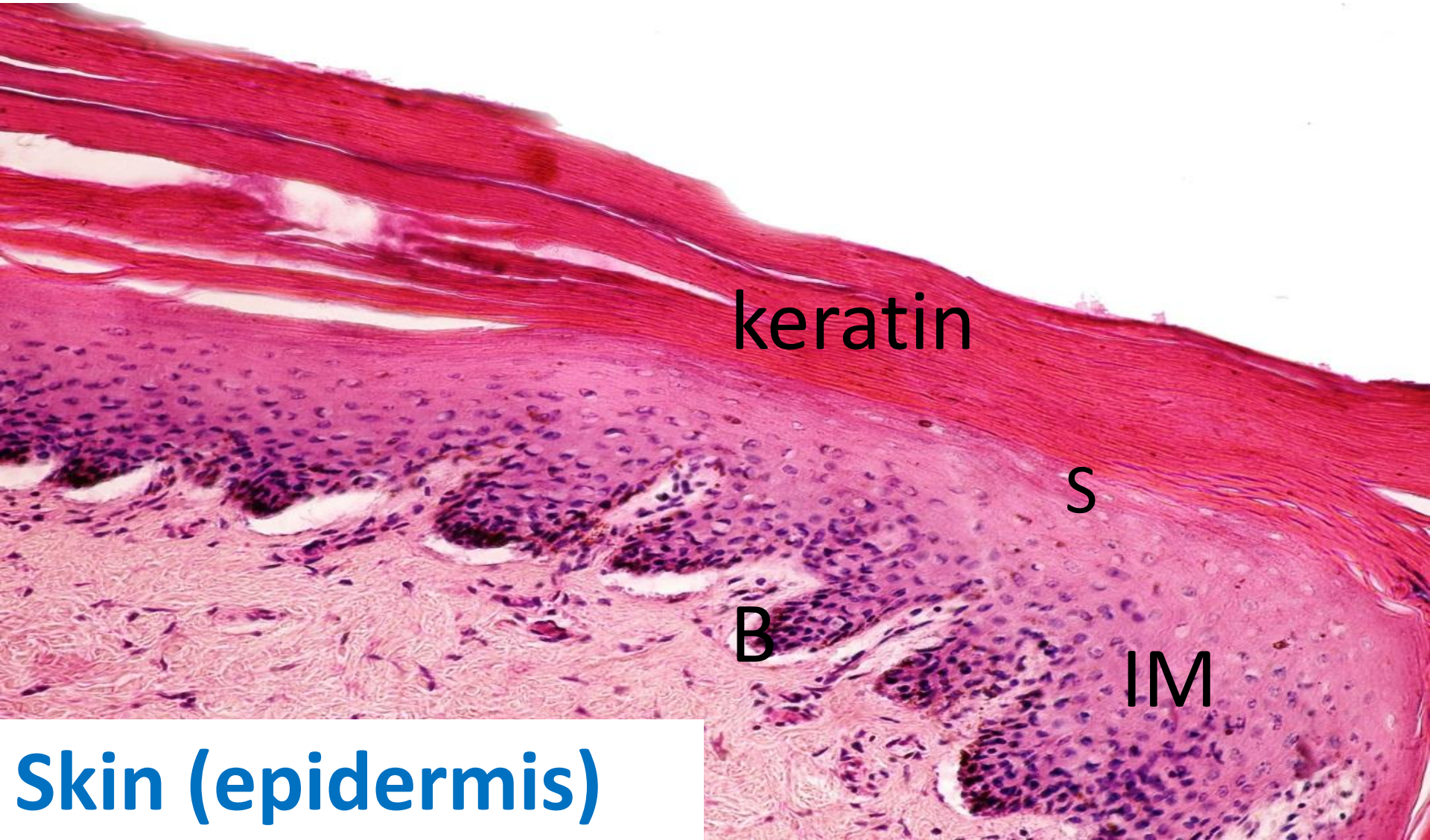
Stratified epithelium

Stratified squamous non keratinized



Esophagus

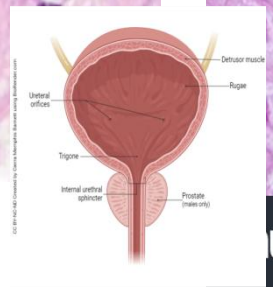
Stratified squamous keratinized Epithelium



Skin (epidermis)

Transitional epithelium

Empty

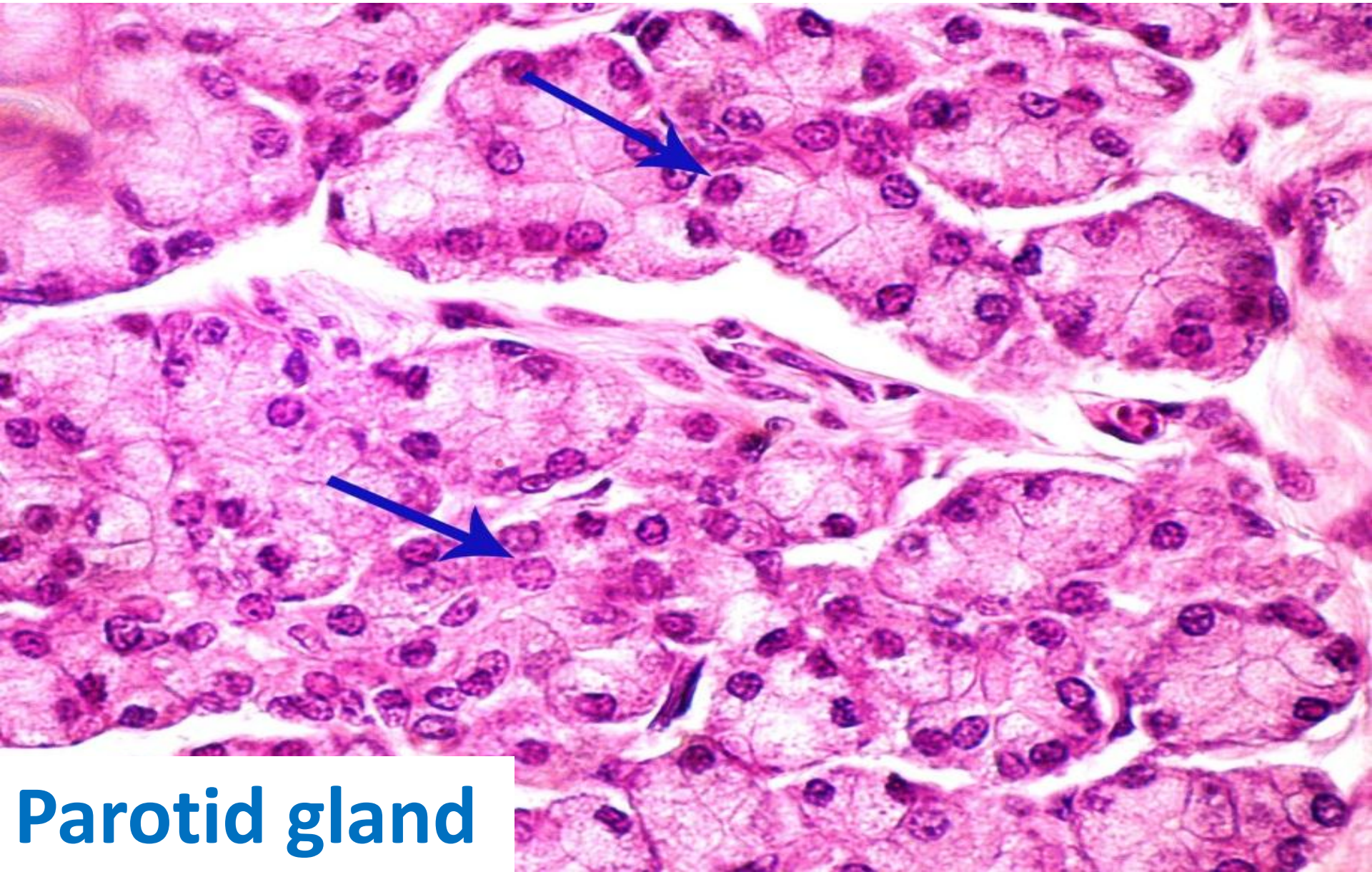


Full

Urinary bladder

Glandular epithelium

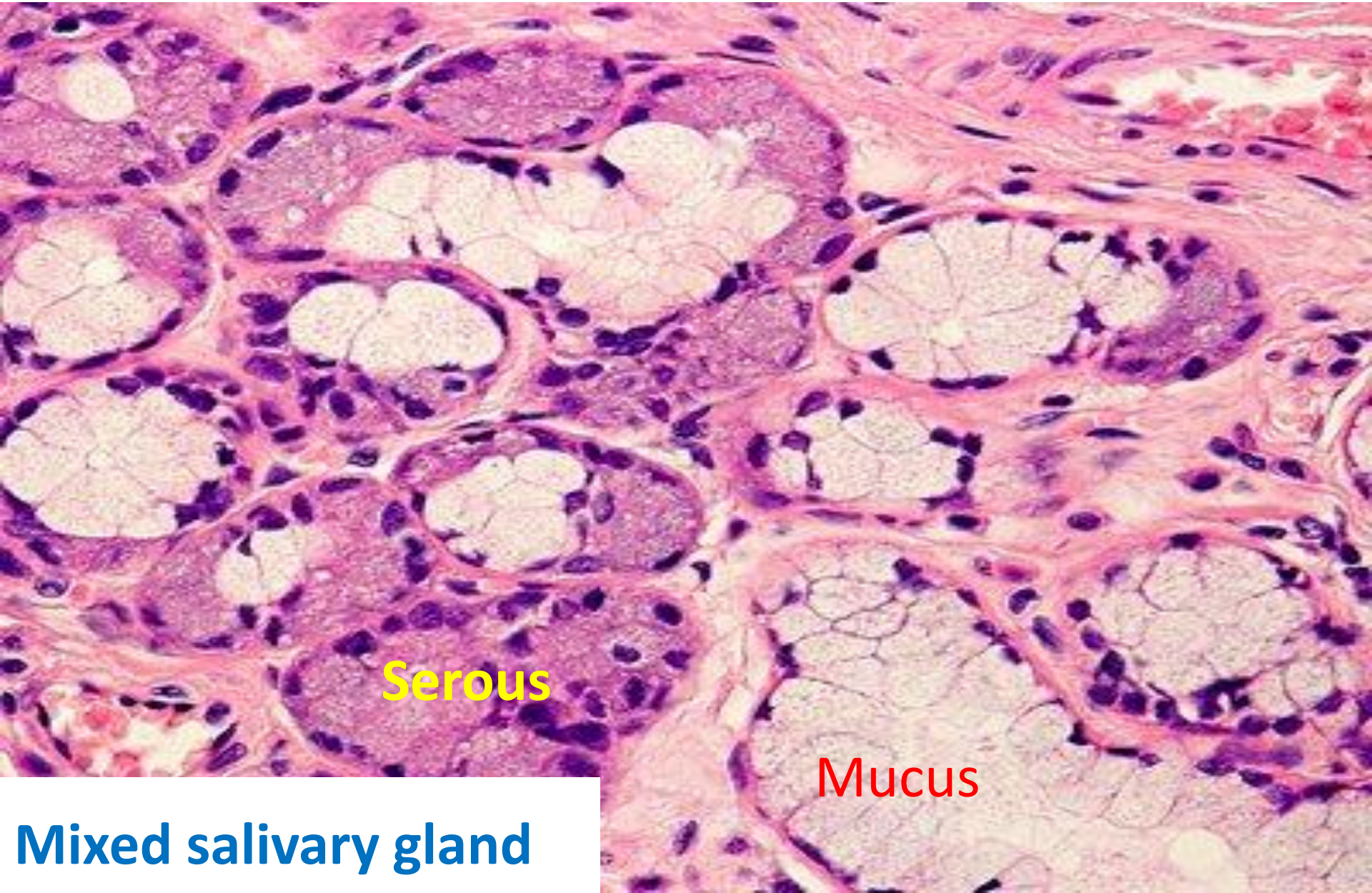
Serous acini



Parotid gland

Mucus acini

Mixed acini

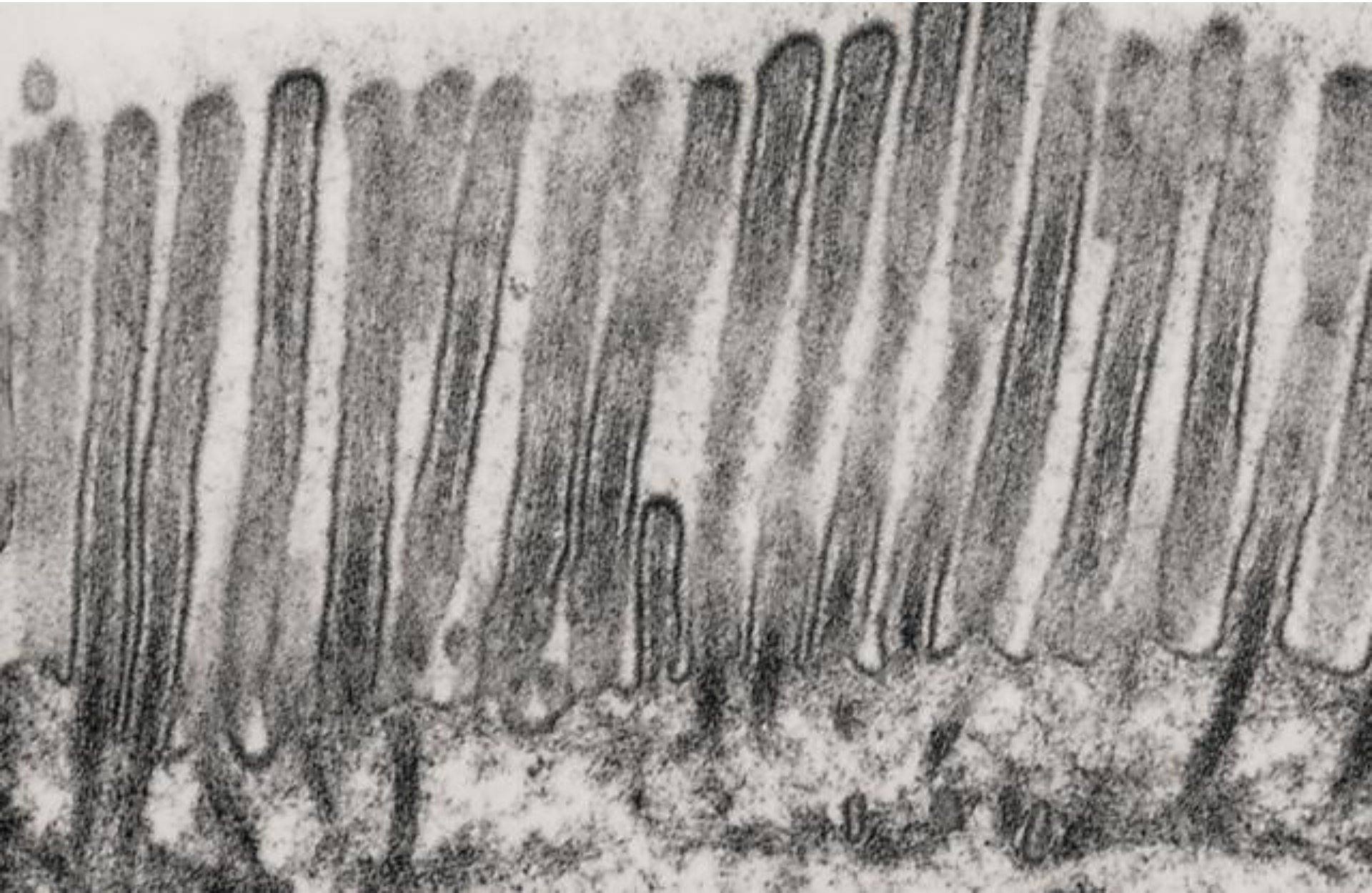


Mixed salivary gland

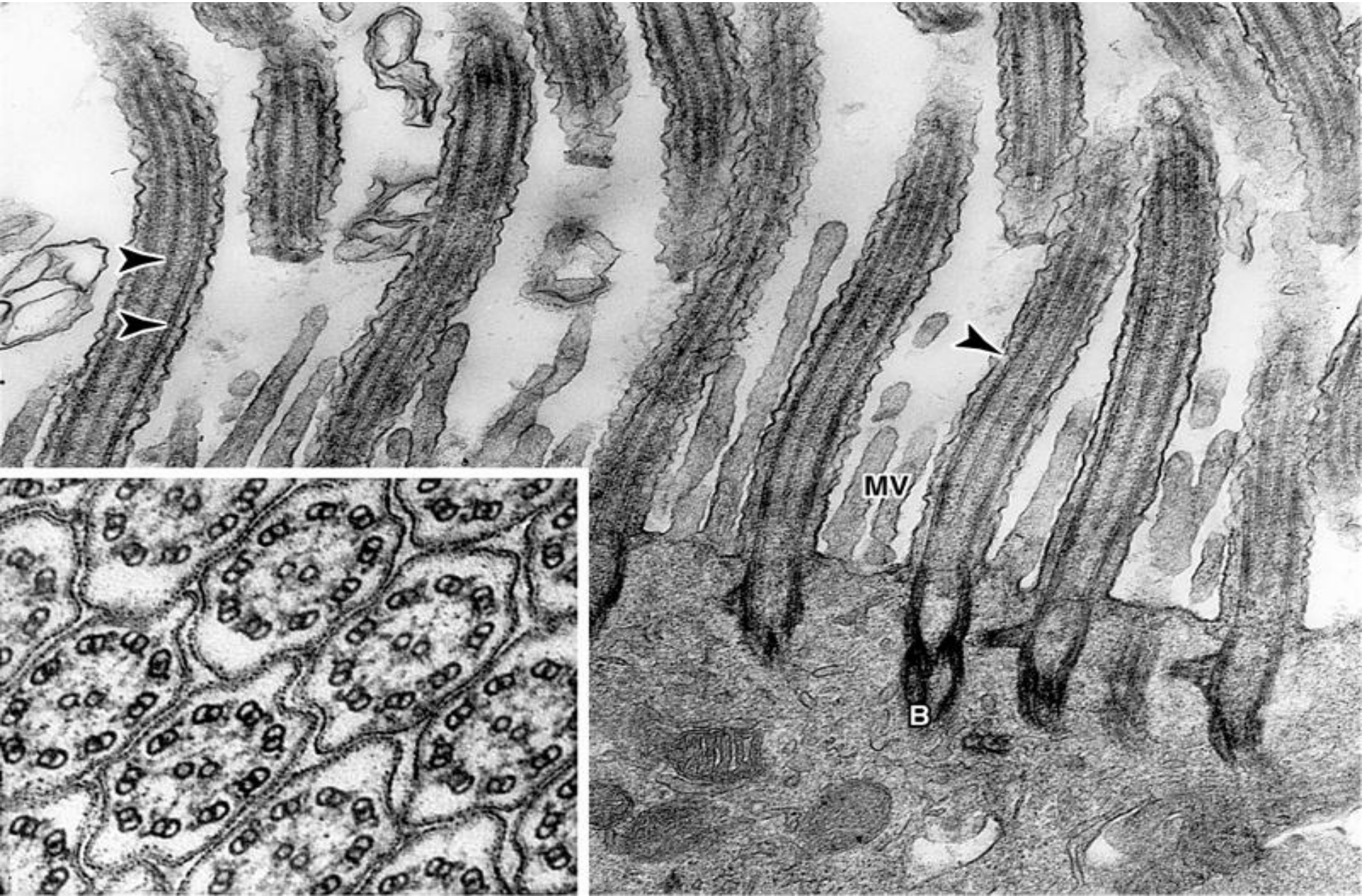
Specialization of the Cell surface

A- Apical specializations	B- Lateral specializations	C- Basal specializations
1) Microvilli	1) Impermeable junctions	1) Hemidesmosome
2) Stereocilia	2) Adhering junctions	2) Basement membrane & basal lamina
3) Cilia	3) Communicating junction	3) Basal Infoldings
4) Flagella	4) Lateral interdigitations	

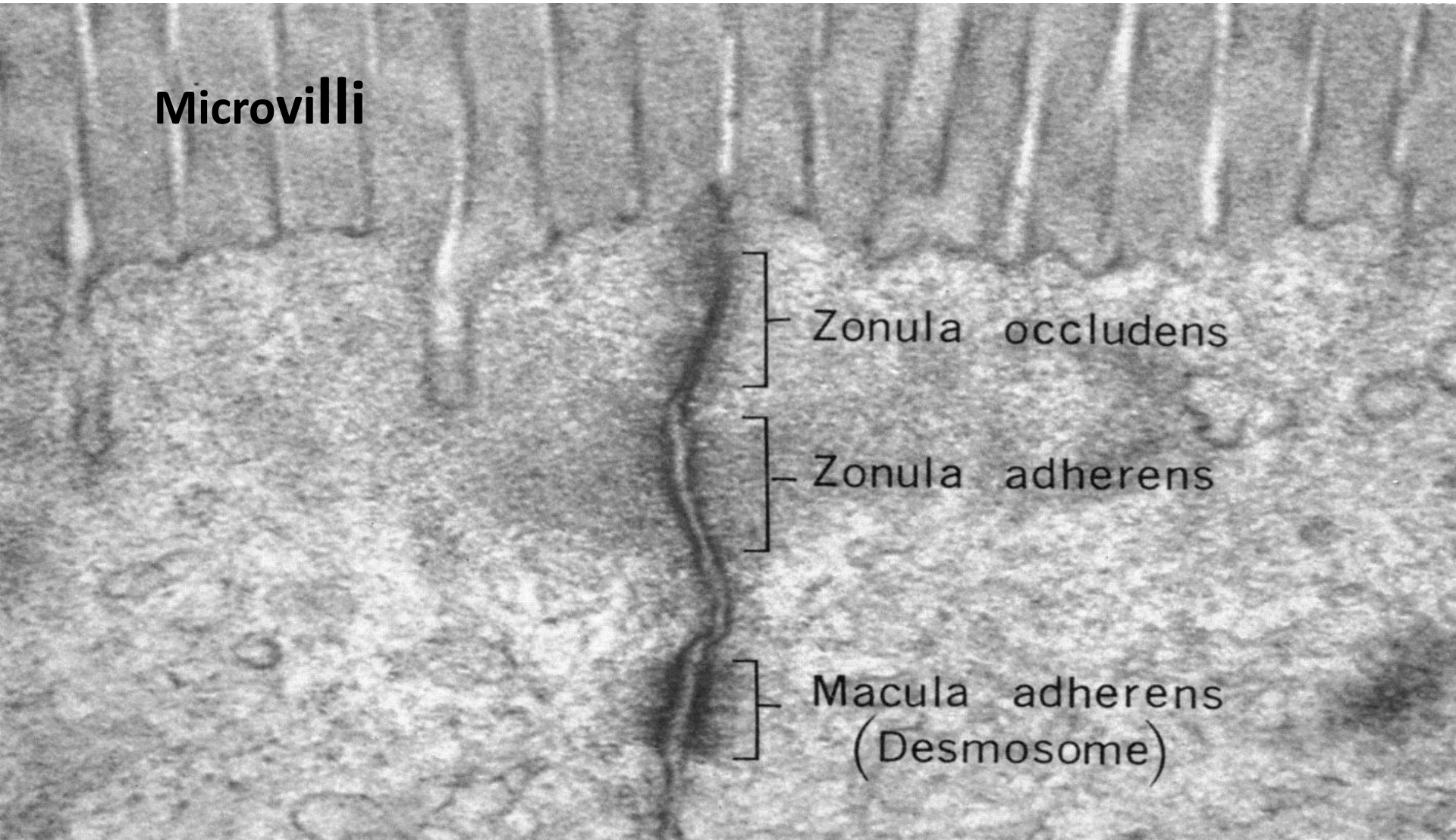
Microvilli



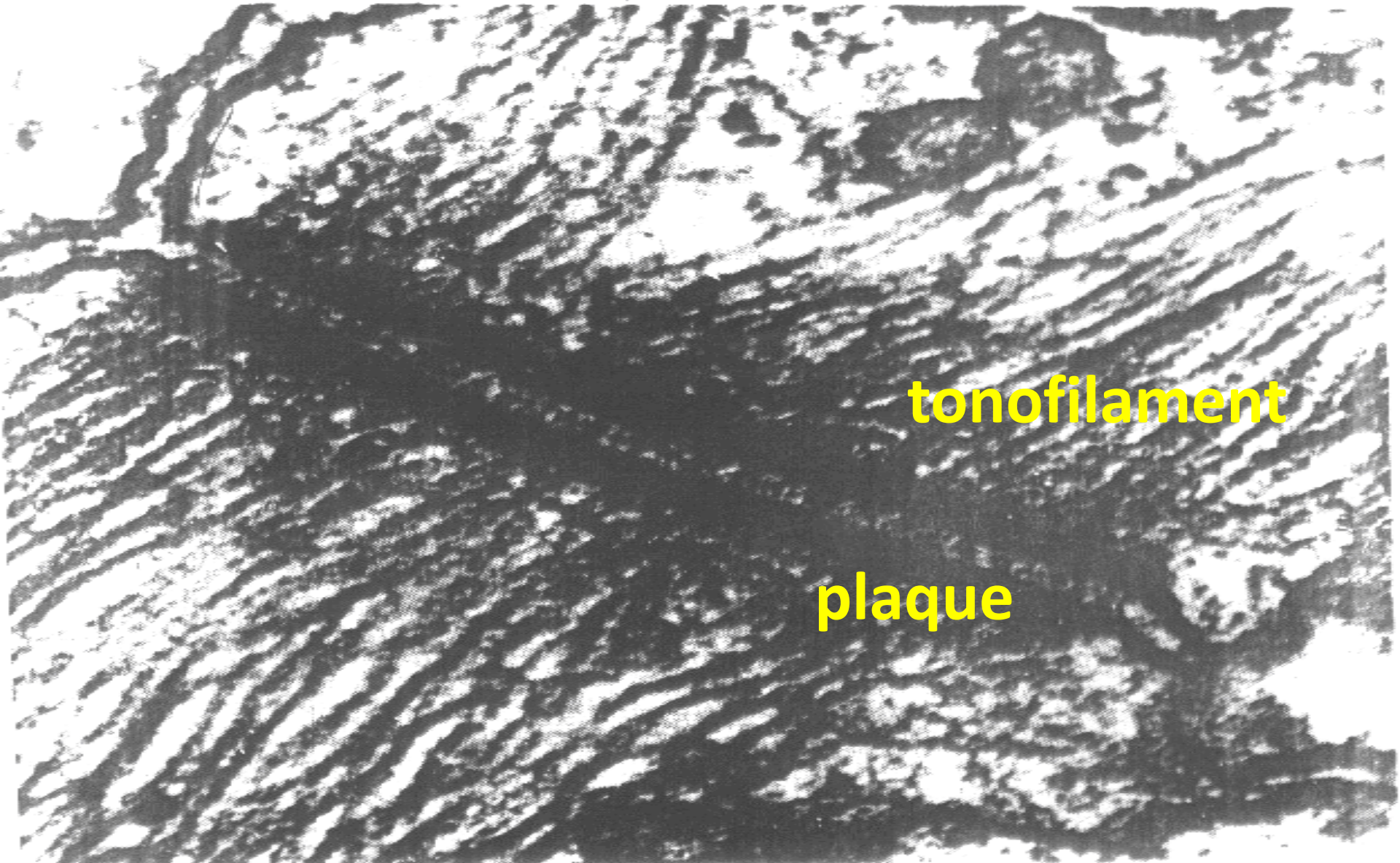
Cilia



Lateral specialization (cell junction)



Desmosome



Hemidesmosome

Biology of epithelial cells

- **Cells transport ions.**
- **Protein synthesizing cells.**
- **Diffuse neuroendocrine system (DNES)**
- **Mucus secreting cells.**
- **Steroid secreting cells.**

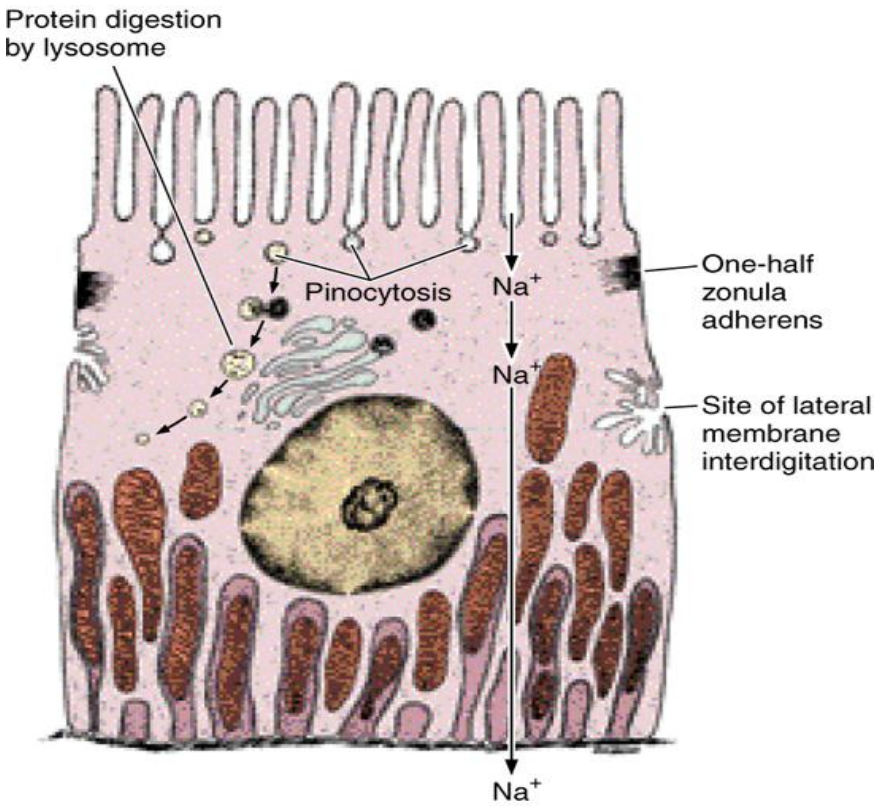
Ions transport cells

***Site*:** renal tubules.

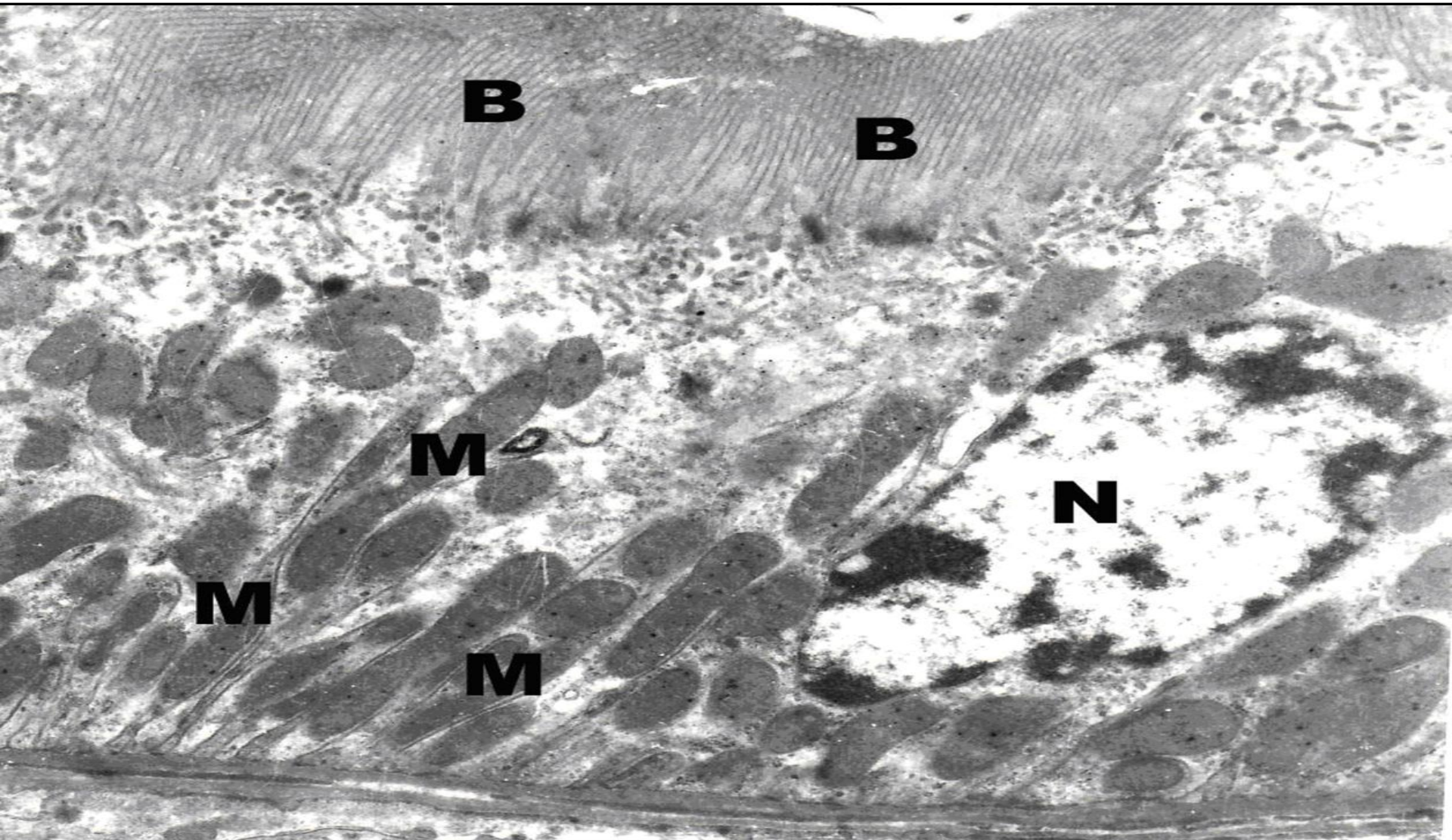
E/M:

1-Apical MV and tight junction.

2-Basal folds with mitochondria inbetween



Ions transport cells

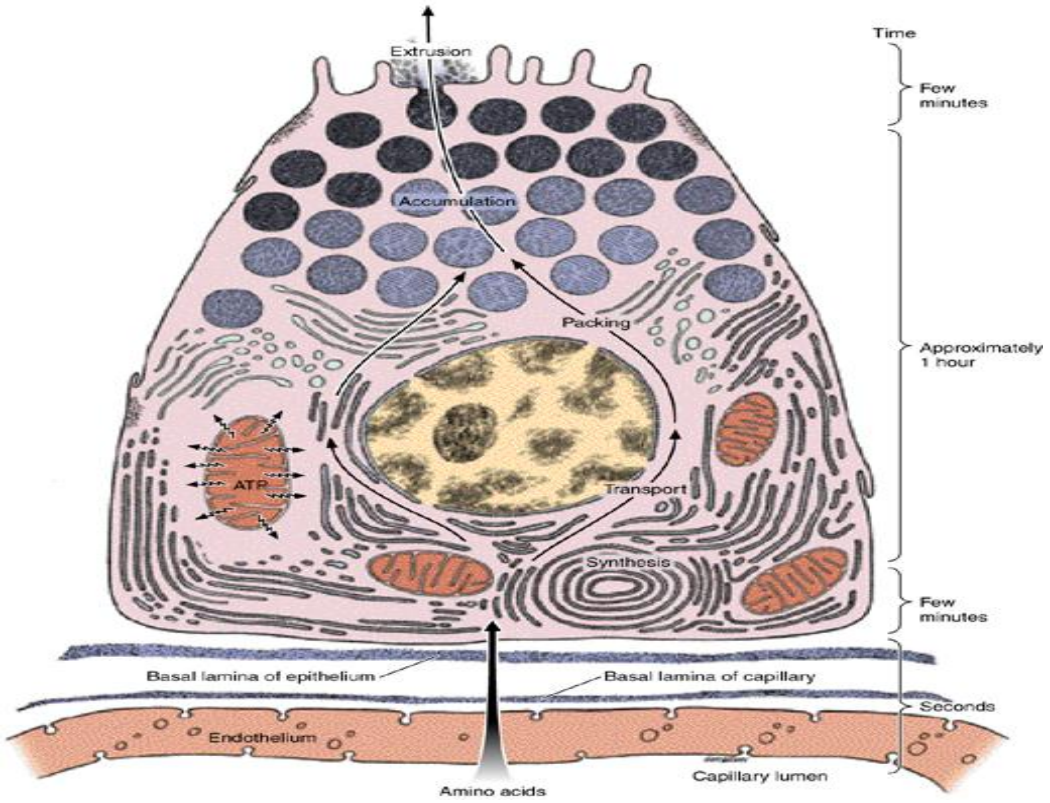


Protein synthesizing cells

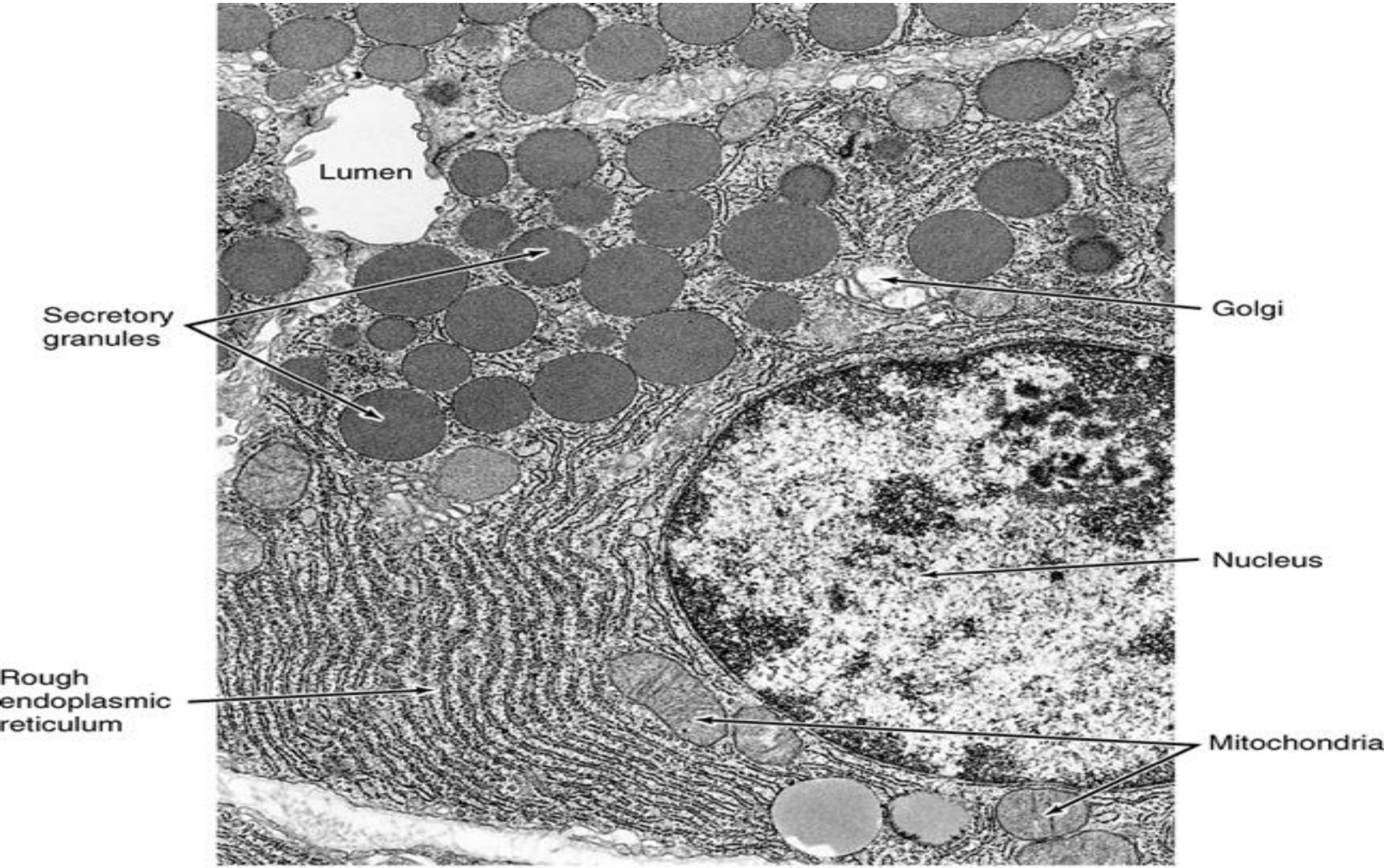
EM: (e.g.pancreatic acinar cell):

- In the basal region: rER, ribosomes and mitochondria

- In the apical region: Golgi complex and membrane-bound secretory granules.



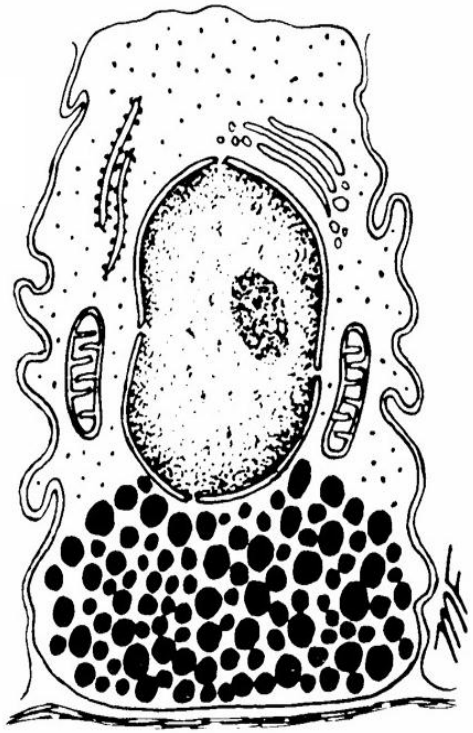
Protein synthesizing cells



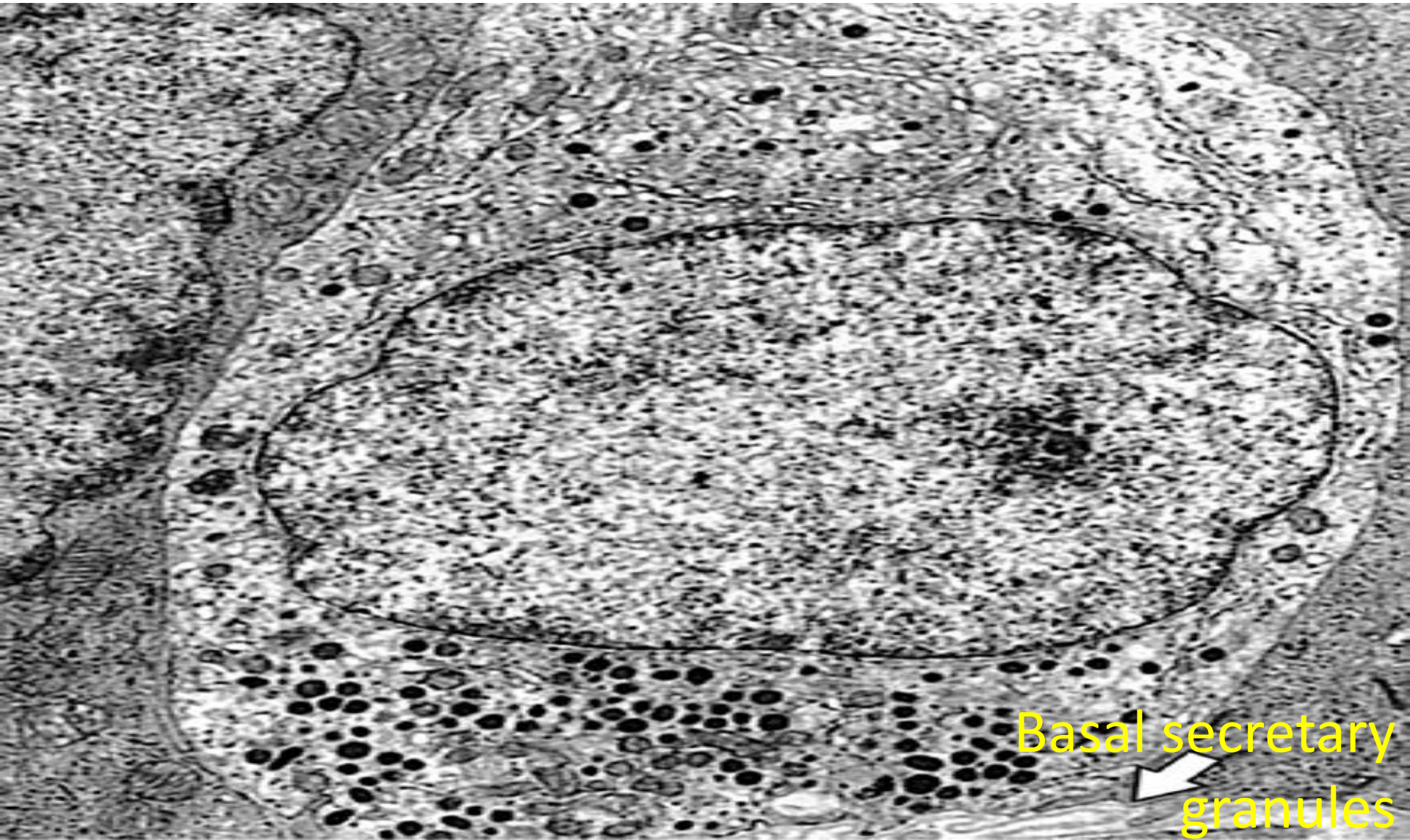
Chemical - messenger producing cells

EM : DNES cell (e.g.in gastrointestinal system):

- Basal secretory granules.
- Small amount of rER.
- Supranuclear Golgi.



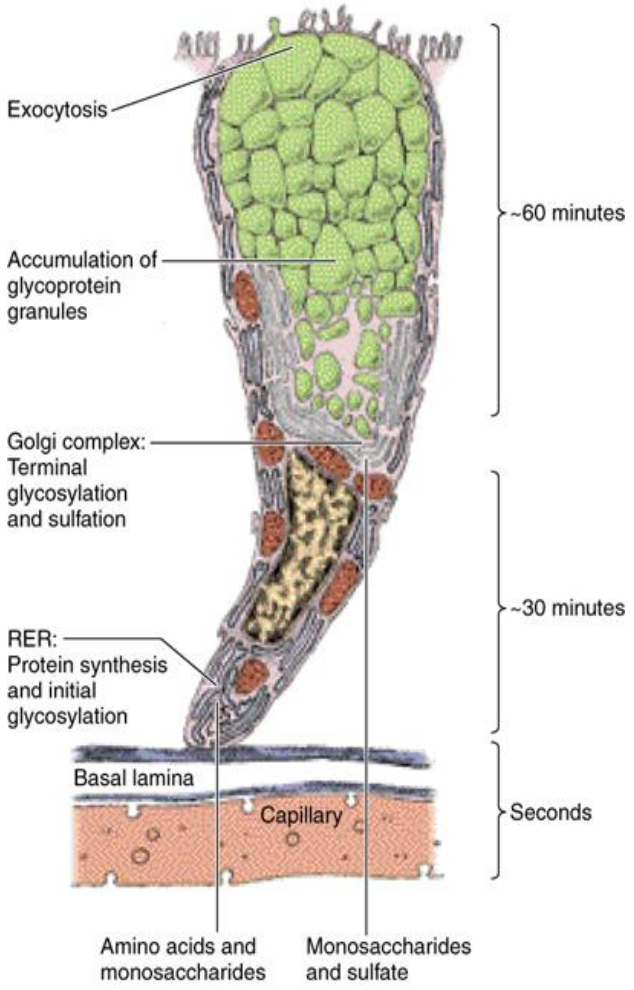
DNES



Mucus secreting cells.

EM: Well developed supranuclear Golgi (G)

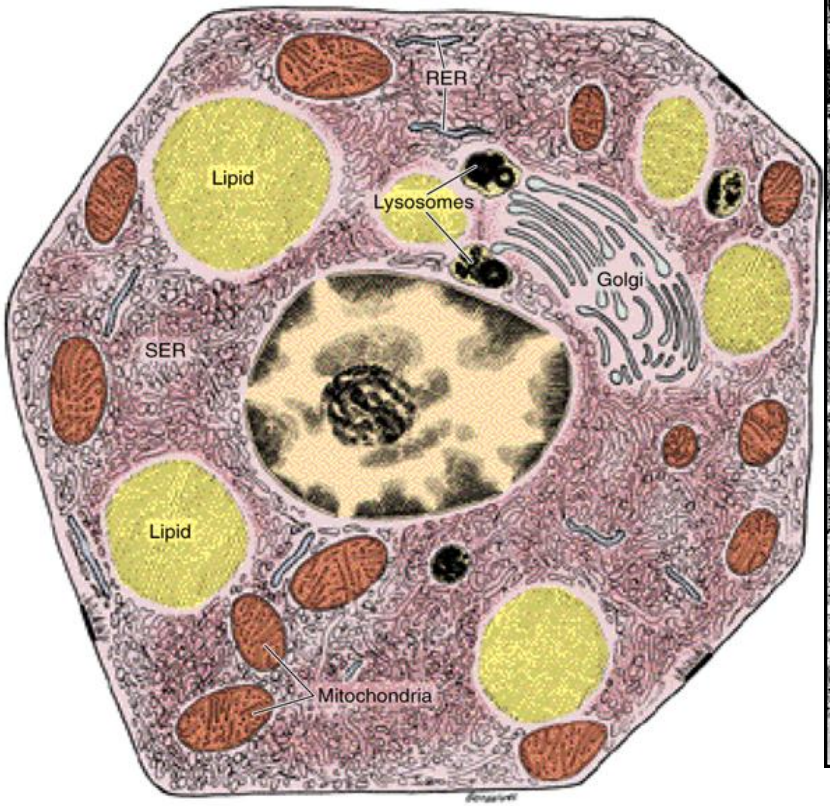
- Numerous lightly stained secretory granules (SG)
  - Basal rER.
  - Basal nucleus

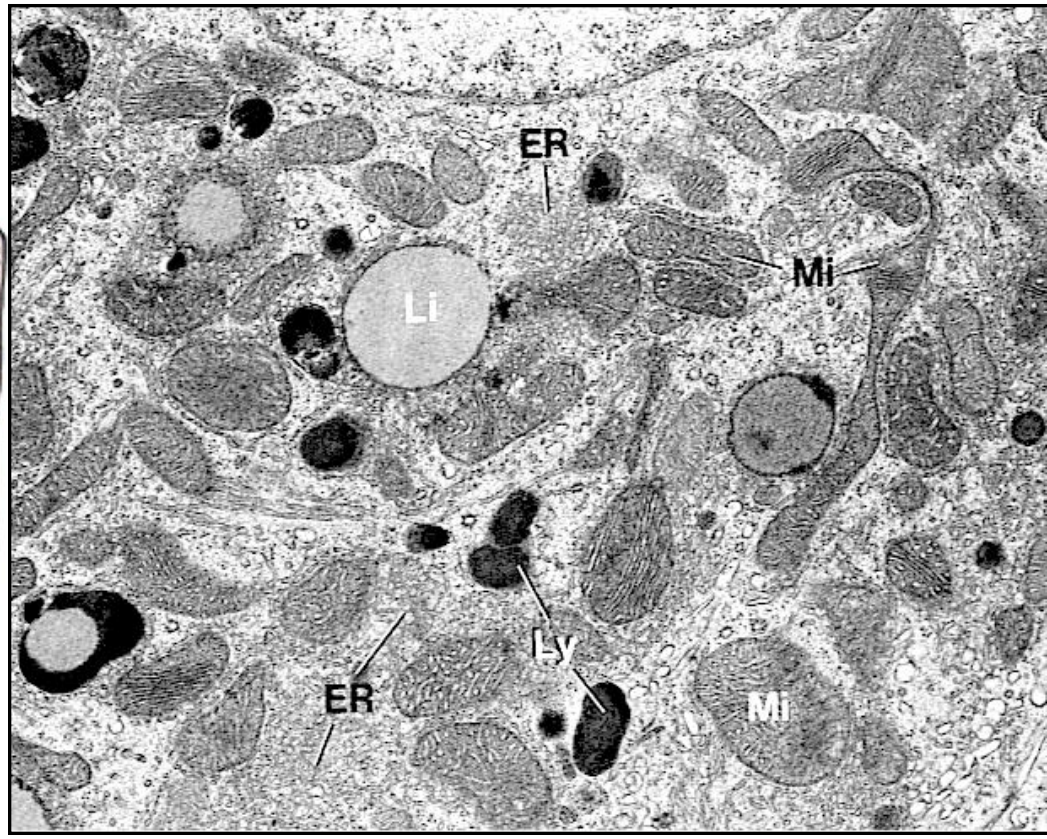


Goblet cell

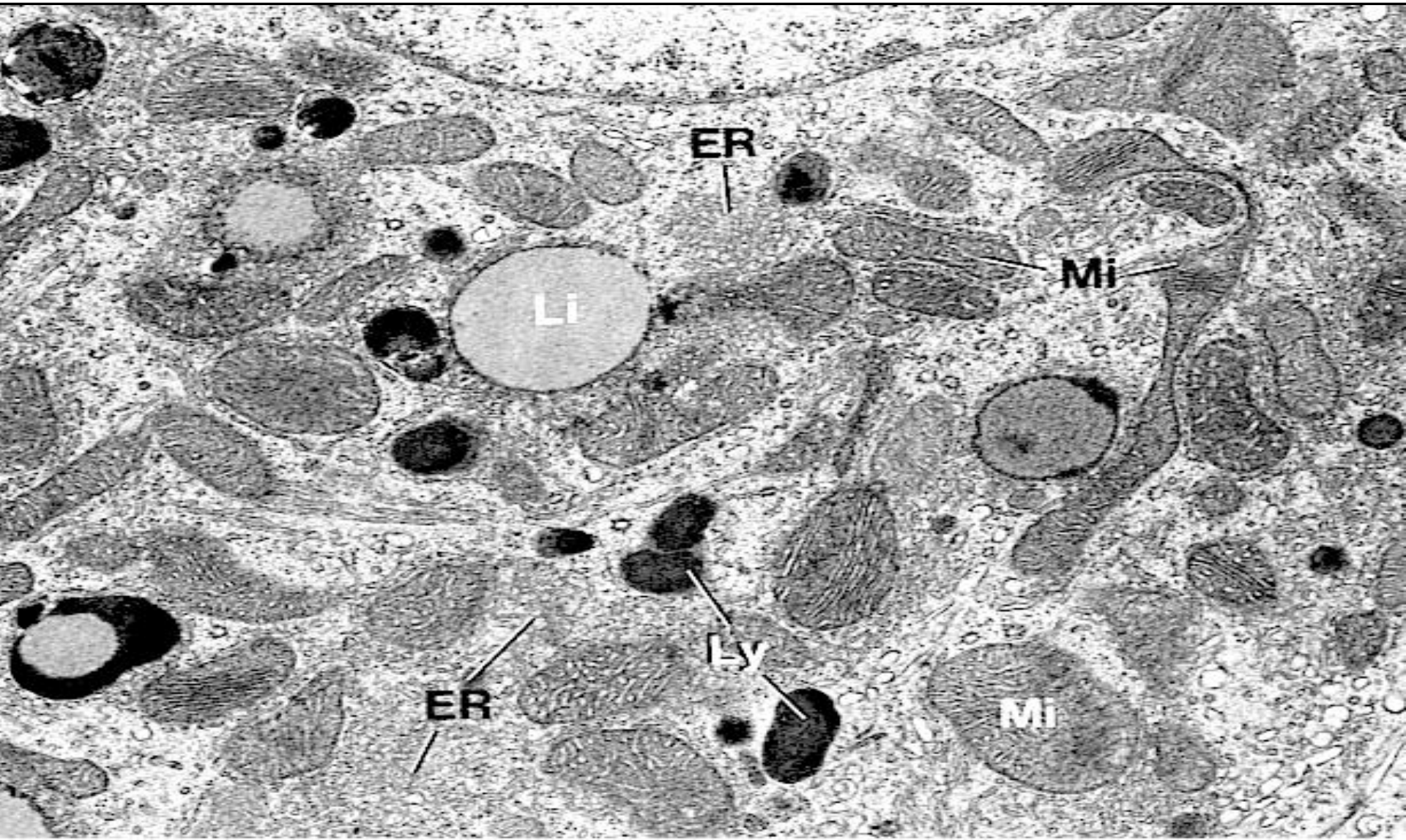
Steroid hormone secreting cells

EM (adrenal cortex):
-Rich in sER (ER)
-Spherical mitochondria with tubular cristae (Mi).
-Lipid droplets (Li)





Steroid hormone secreting cells




THANK
YOU