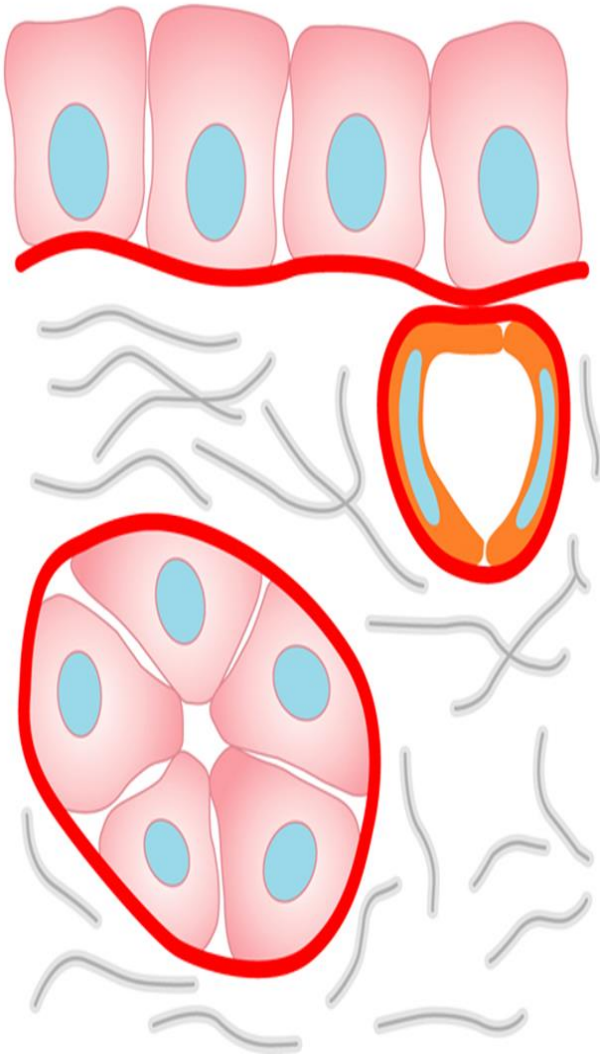
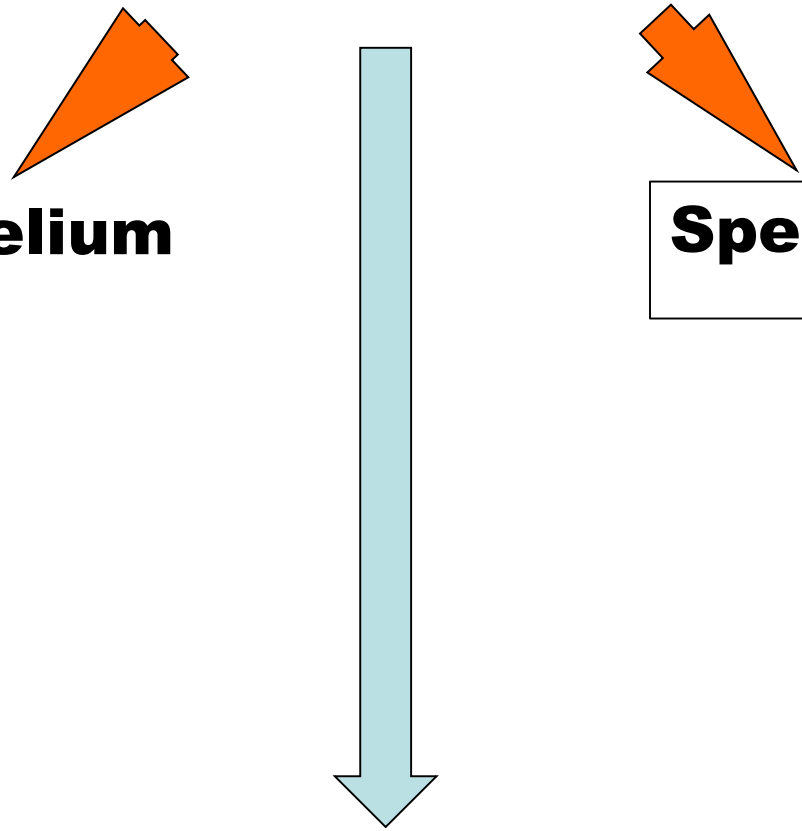
General features of Epithelium

1. Cells are laying close to each other
2. Little intercellular material
3. Tend to form junctions
4. Rest on a basement membrane
5. Lack vessels
6. Line surfaces and cavities or form glands
7. Can be derivate of all three germ layers
8. Mitotically active
9. Cells show polarity



Classification of epithelium



Covering epithelium

Special types

Glandular (secretory) epithelium

Classification of covering epithelium

Number of cell layers

- **Simple**

  One layer of cells

- **Stratified**

  More than one layer

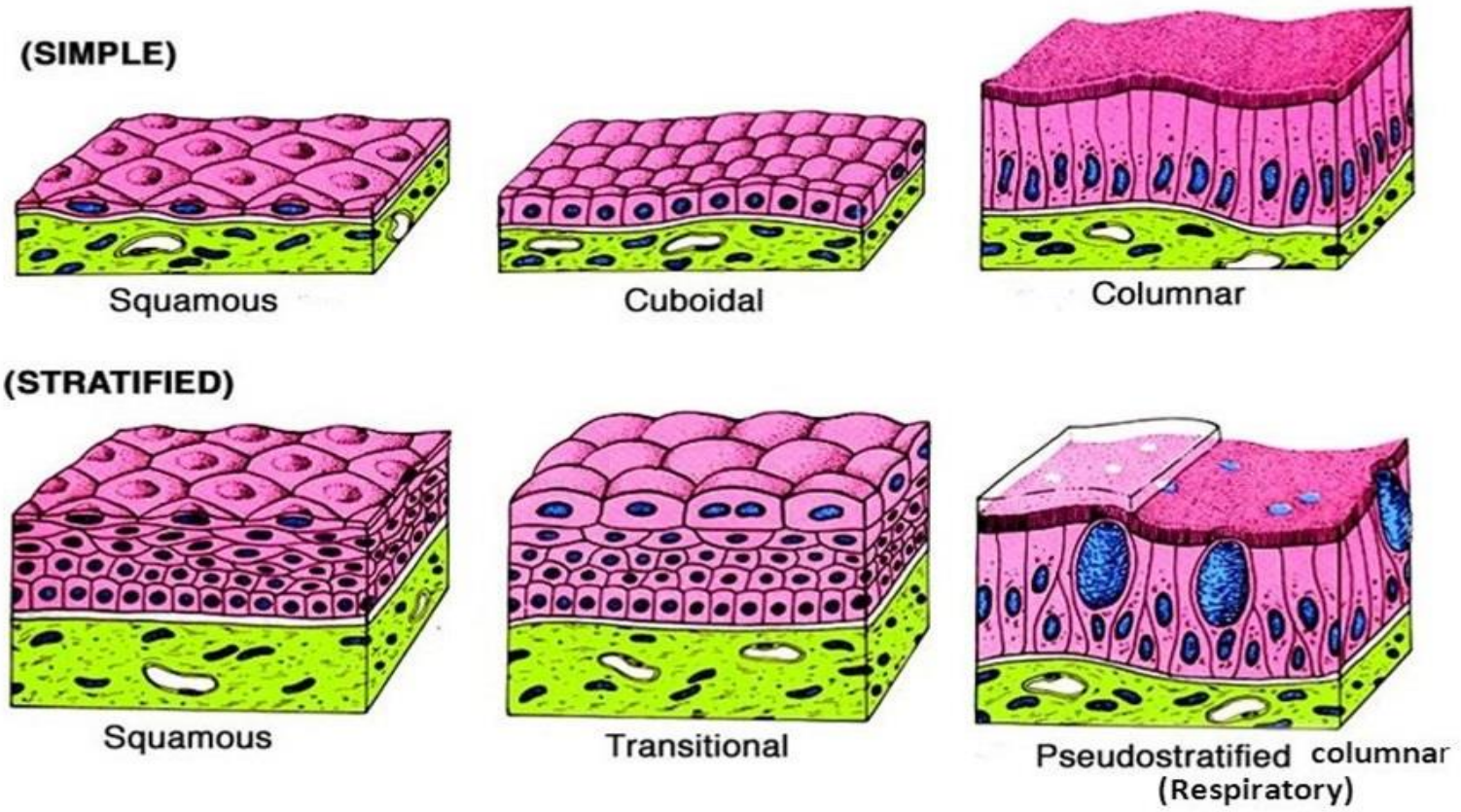
- **Pseudostratified**– one layer of cells of variable size and shape, with nuclei at a different level

Shape of cells

Shape of the cell

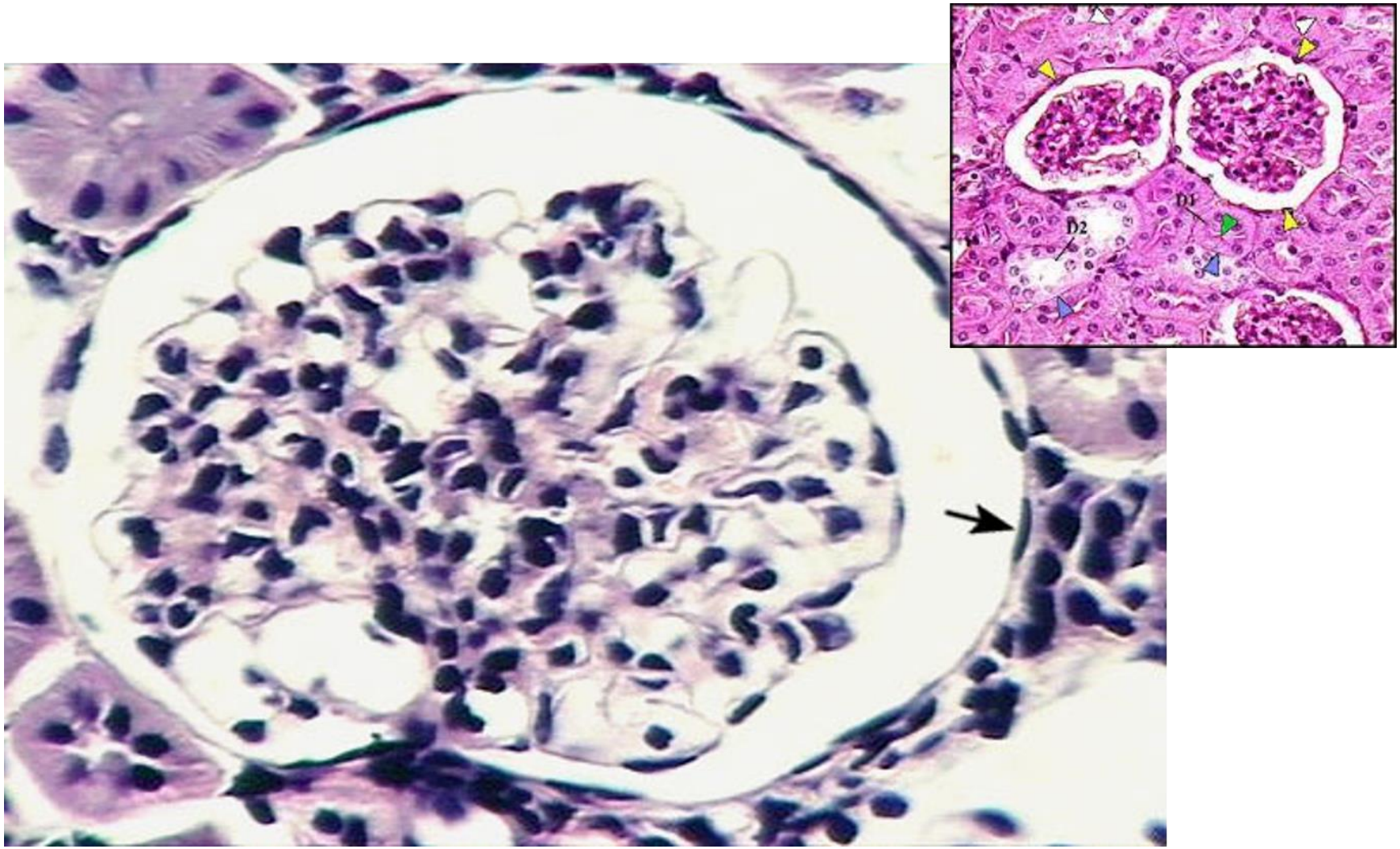
- Squamous
- Cuboidal
- Columnar

Covering epithelium

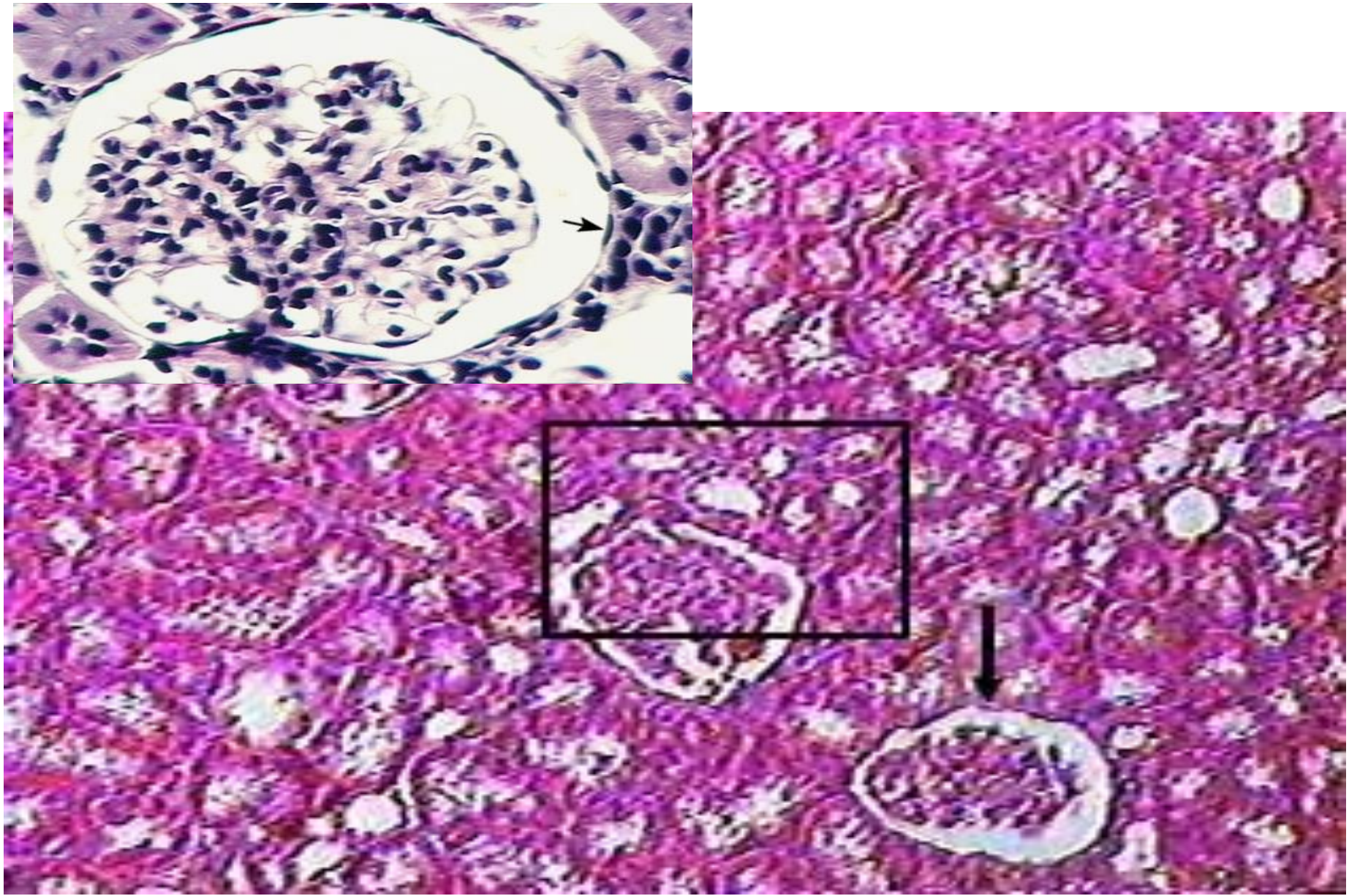


Simple epithelium

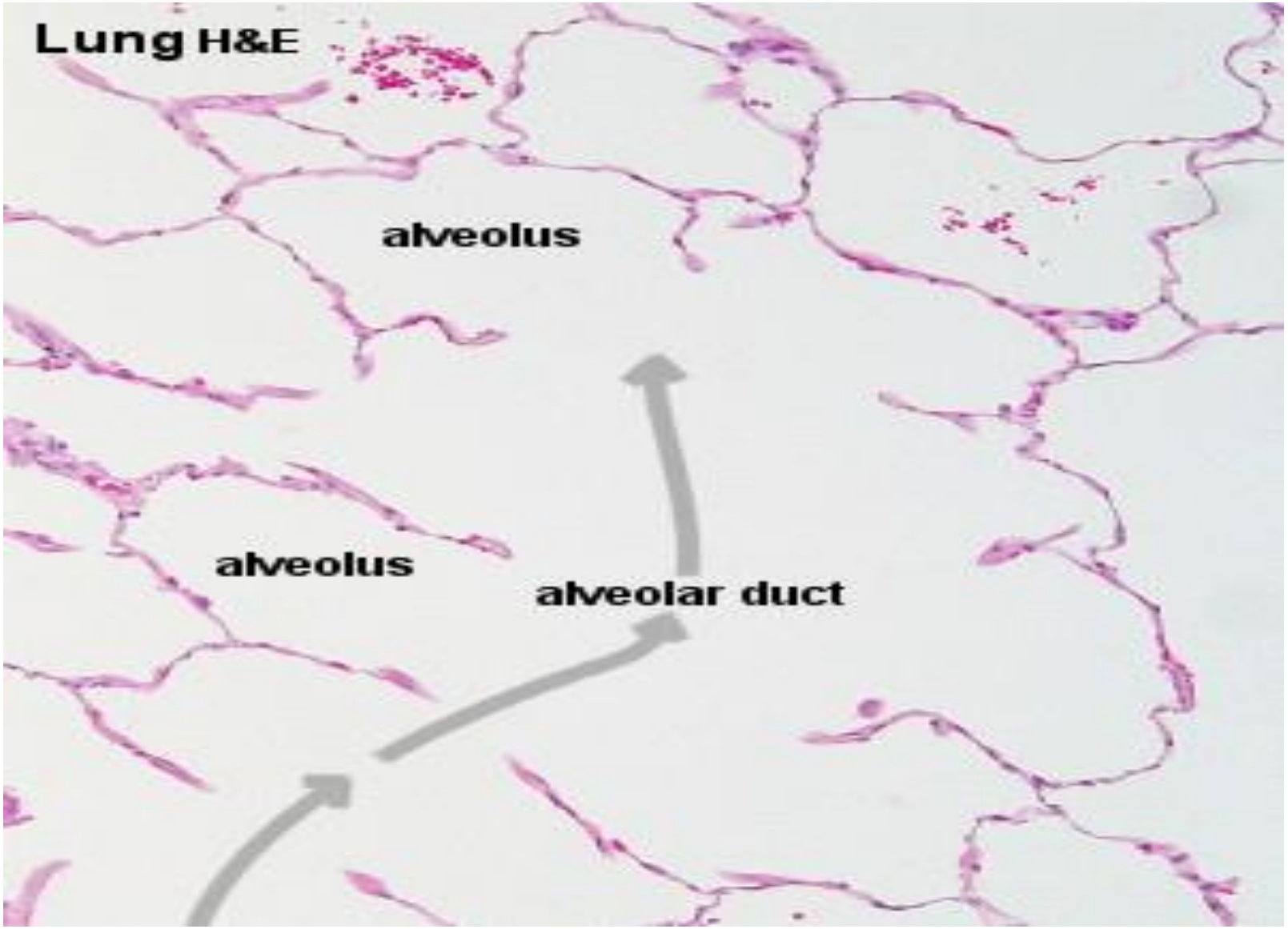
Simple squamous = Bowman's capsule



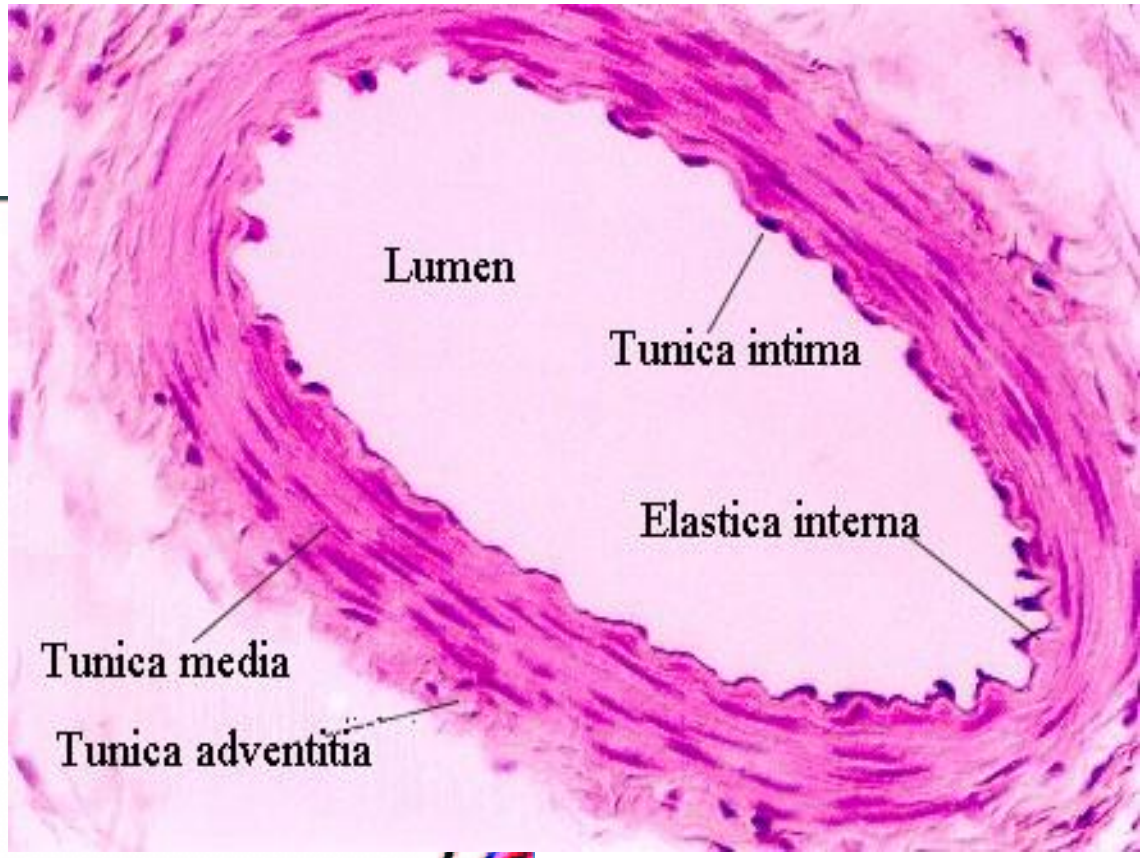
Simple squamous = Bowman’s capsule

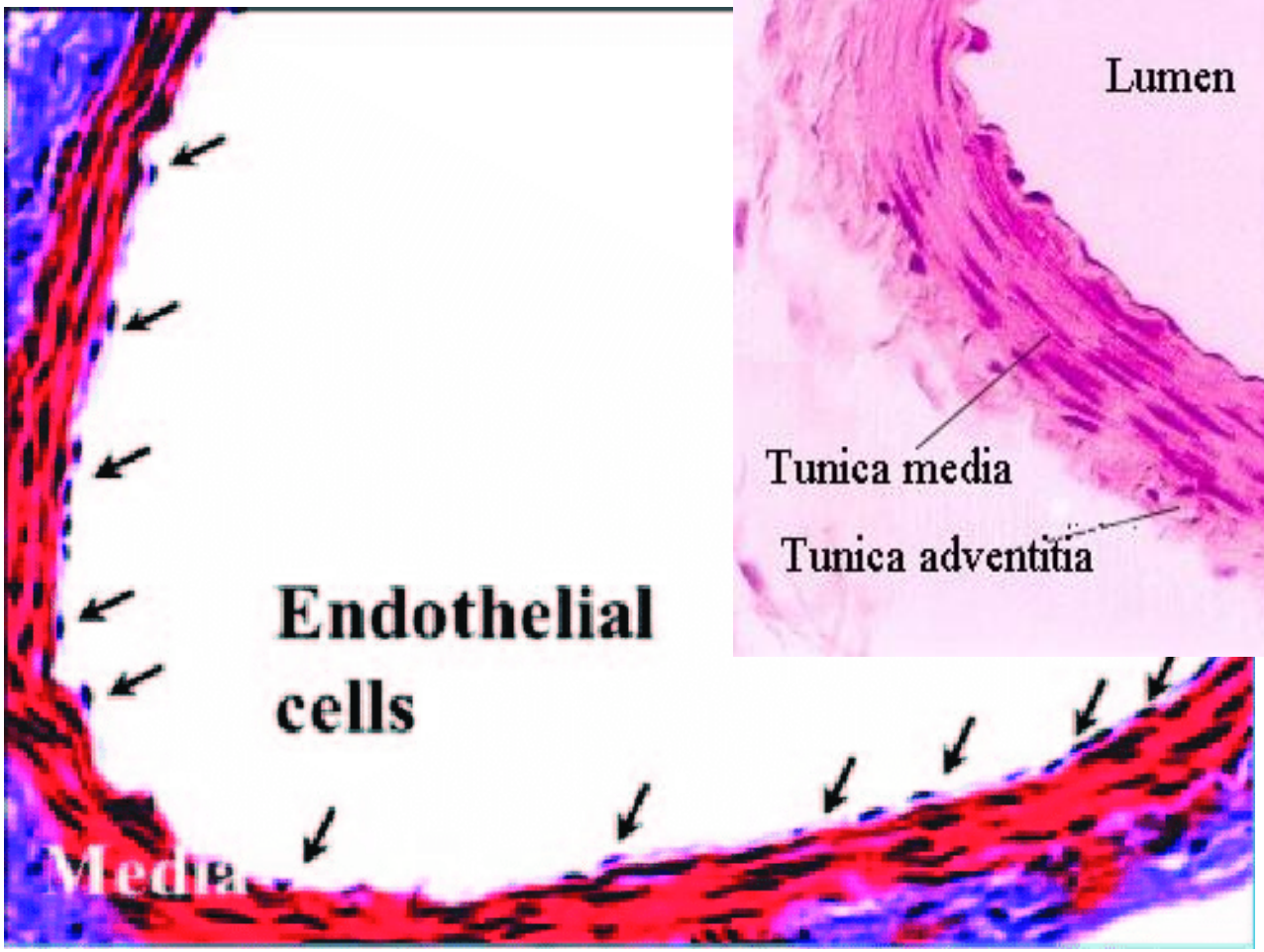


Lung alveoli



Endothelium

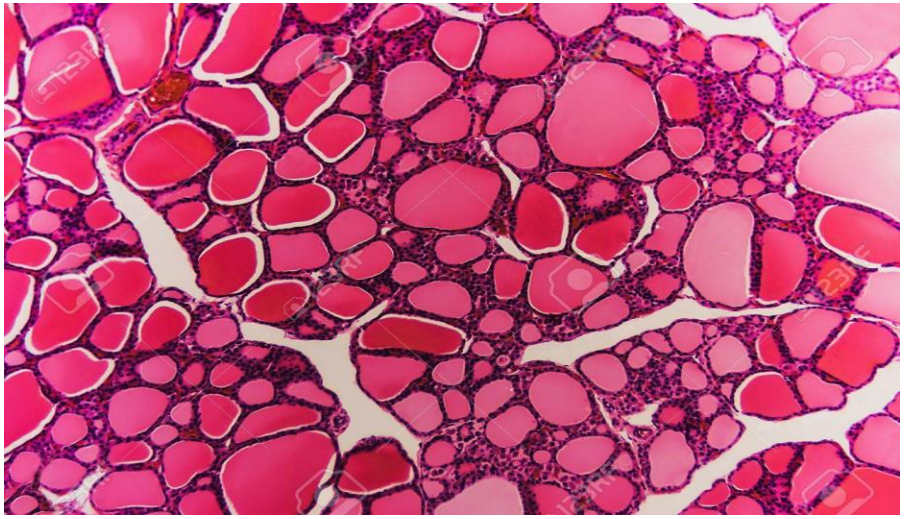




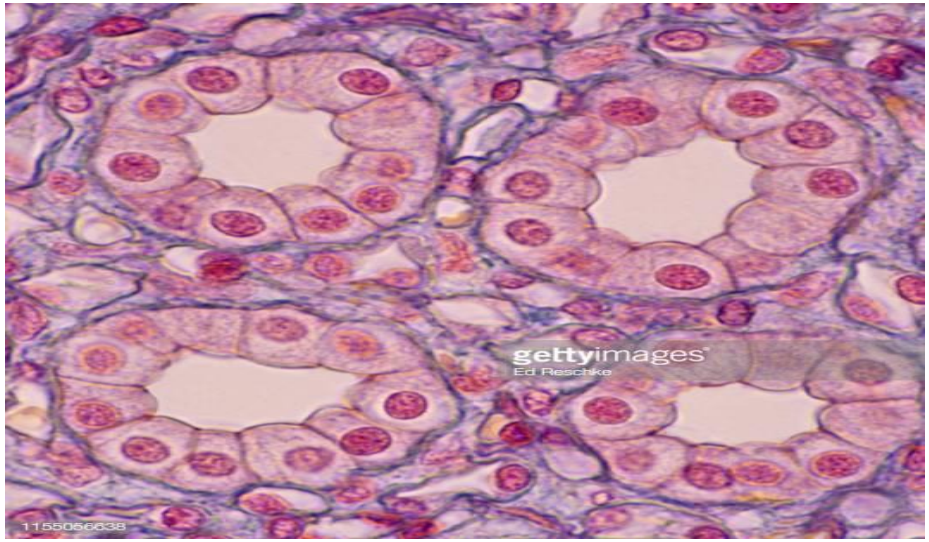
Mesothelium → Pericardium, pleura, peritoneum

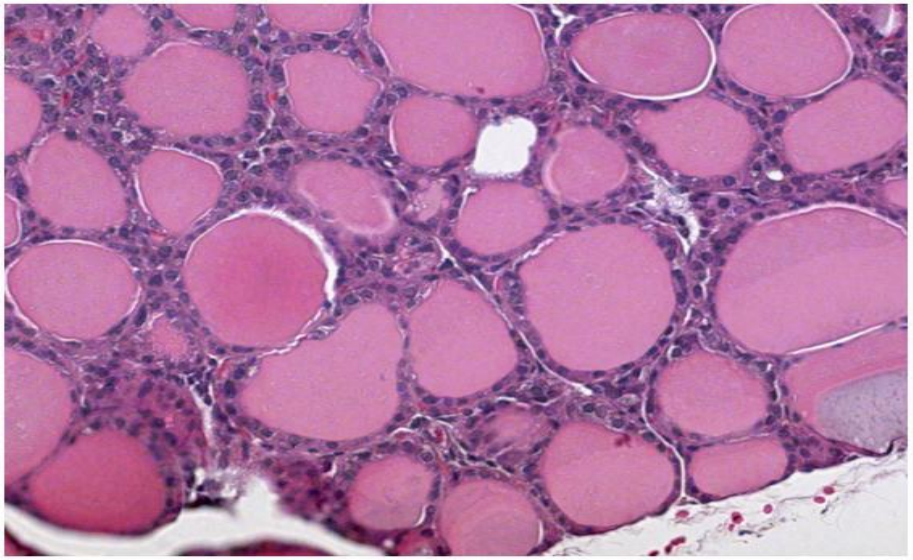
Simple cuboidal

Thyroid gland



kidney tubules





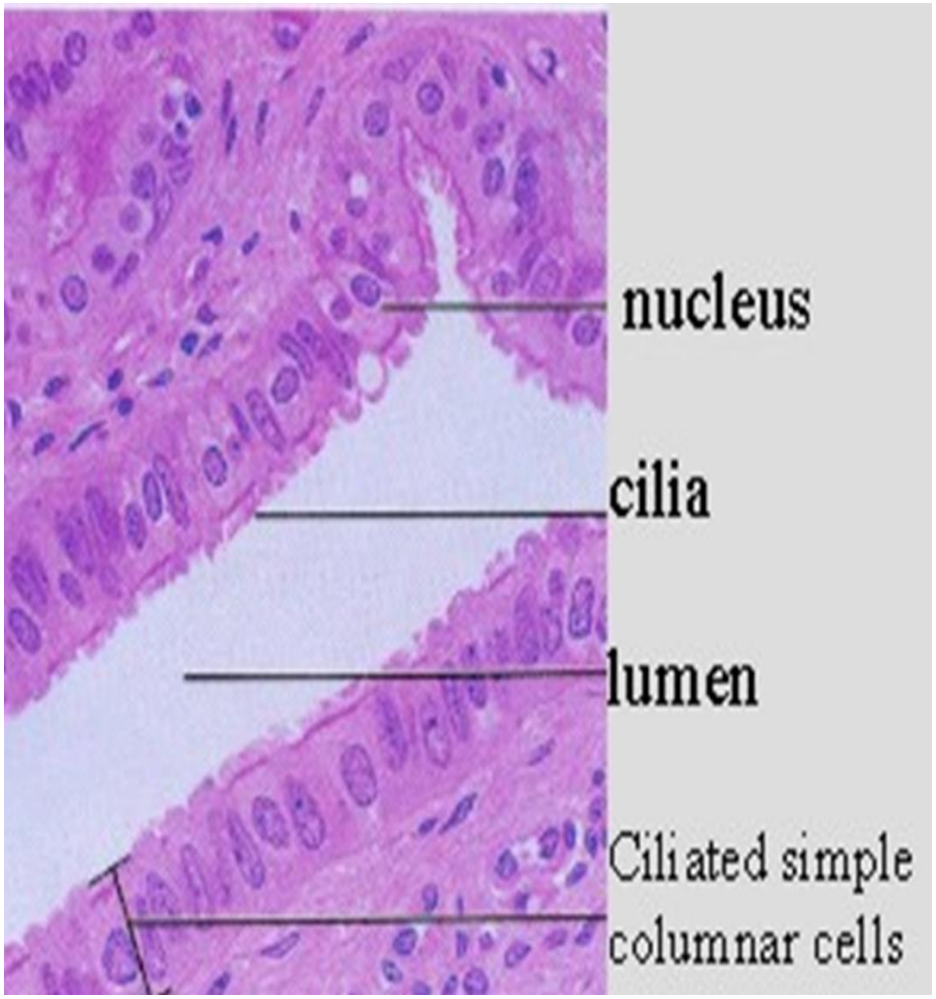
Site:

Thyroid gland = secretion

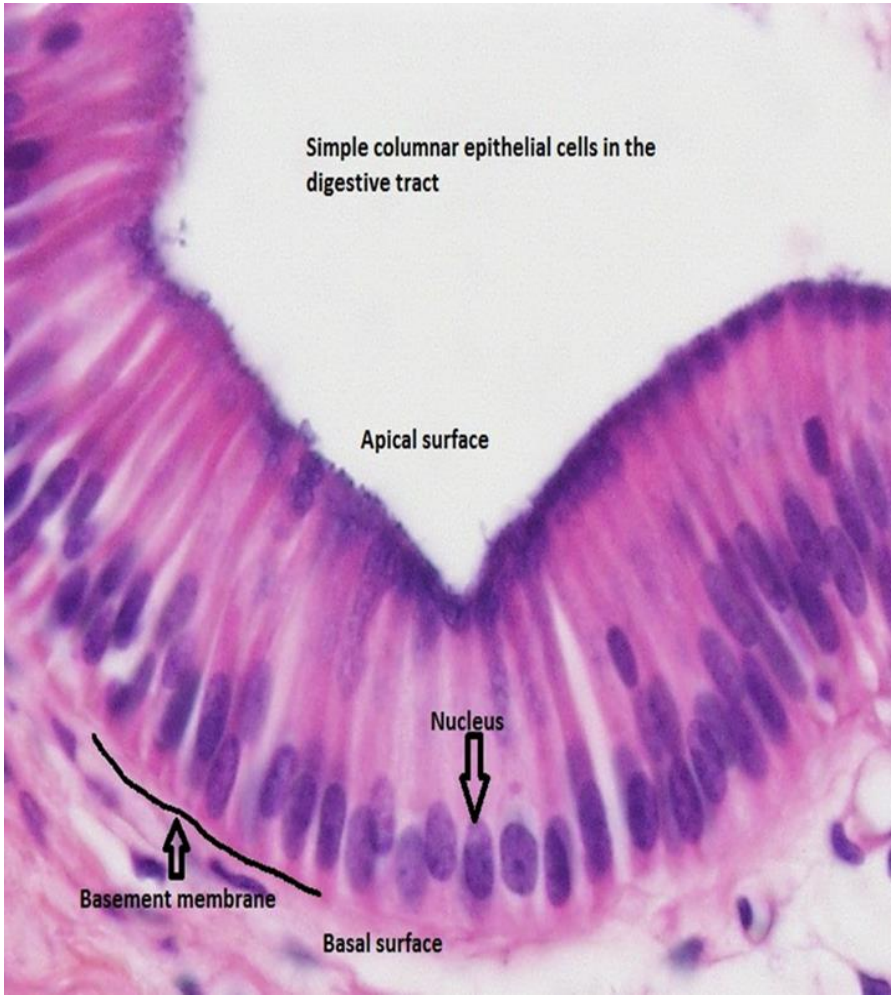
kidney tubules = ion exchange

Simple columnar

ciliated

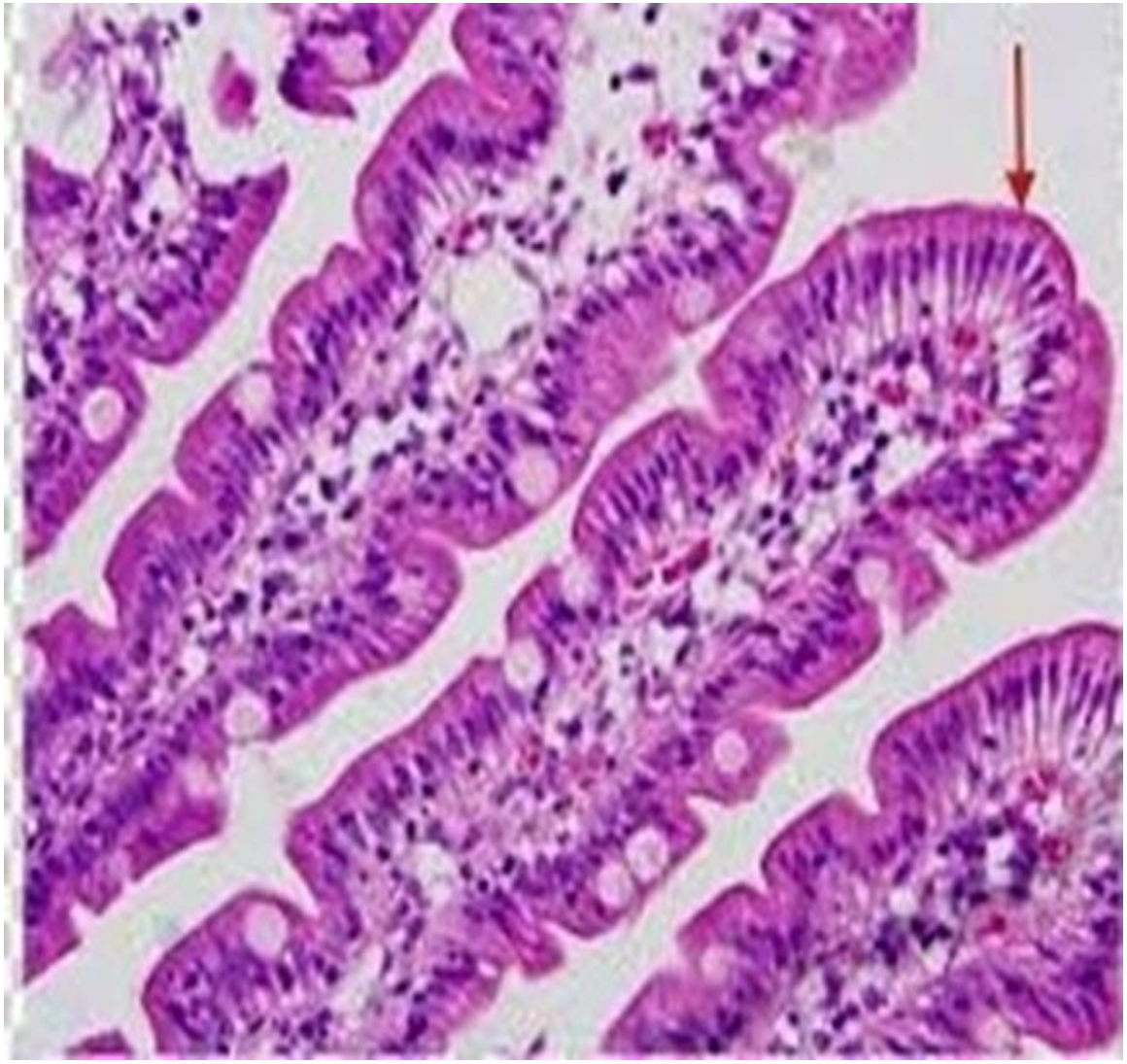


non ciliated



Simple columnar

Non ciliated



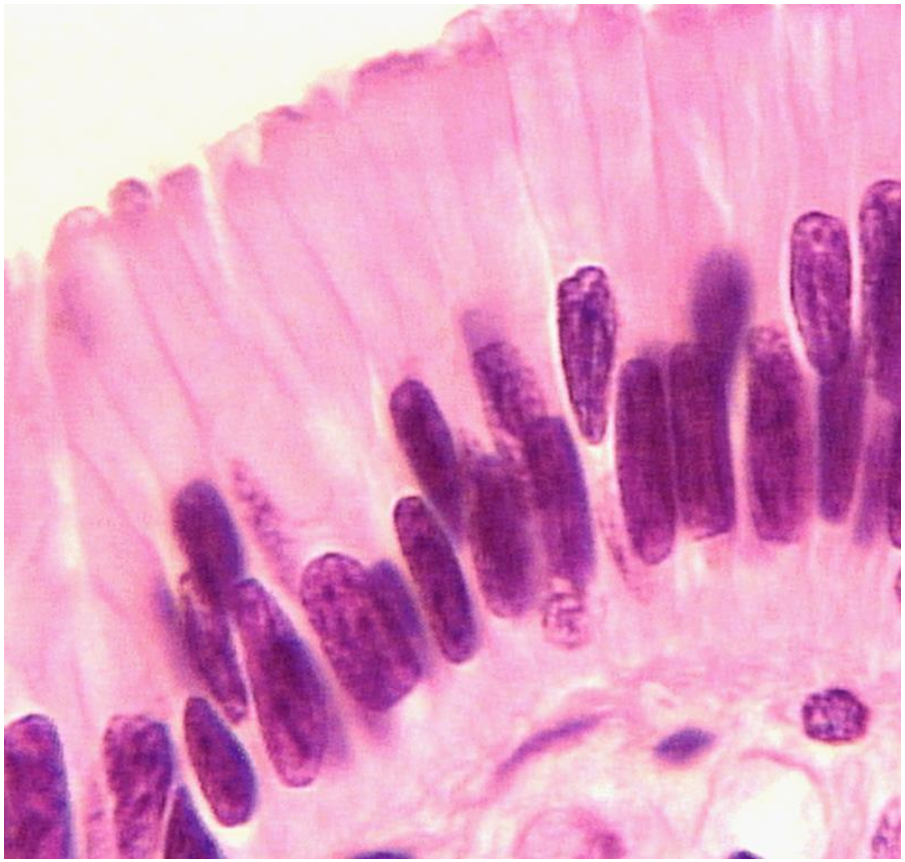
Simple columnar

Non ciliated

- **Sites: digestive tract : absorption**

Pseudostratified columnar

non ciliated



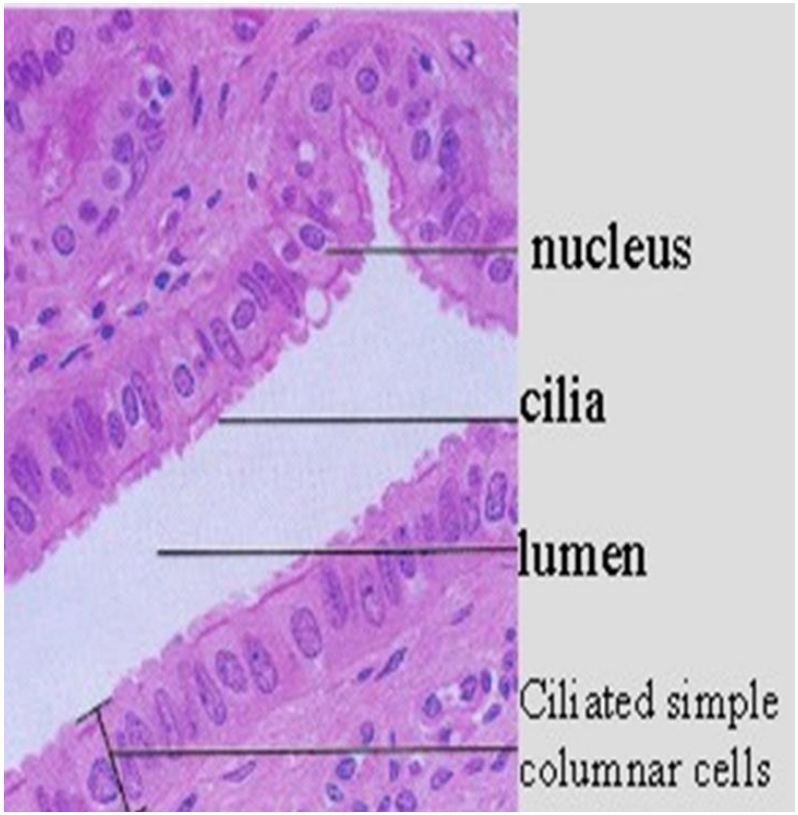
Sites: Male genital tract – large ducts of glands: (secretion)

Ciliated
= Respiratory epith

Sites: Nose- Trachea

Simple columnar

columnar ciliated



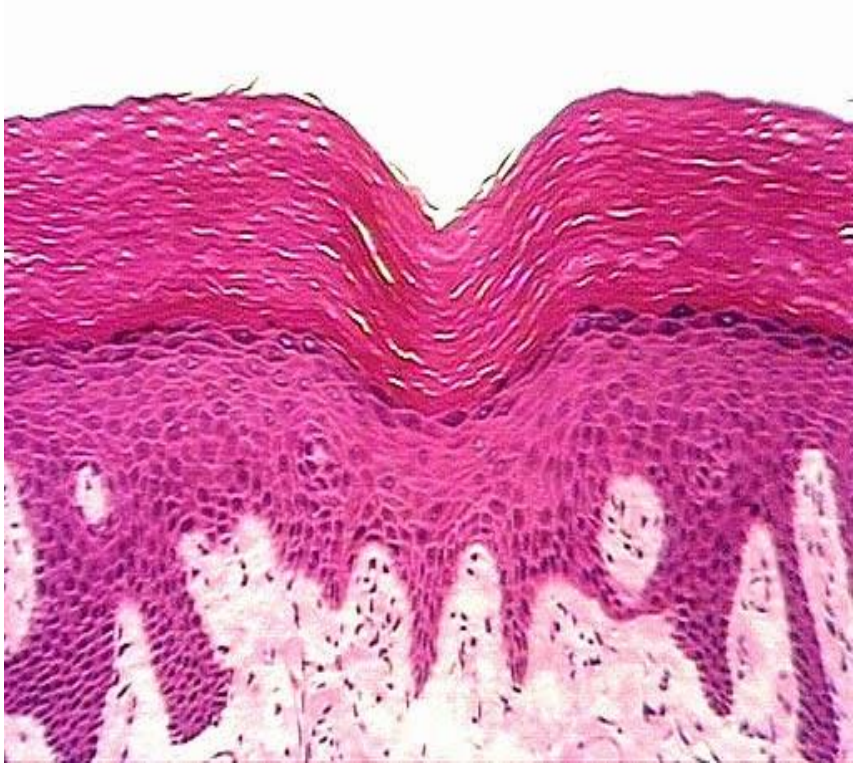
Pseudostratified columnar

Sites: uterus, oviduct & bronchiole of the lung

(movement of luminal contents)

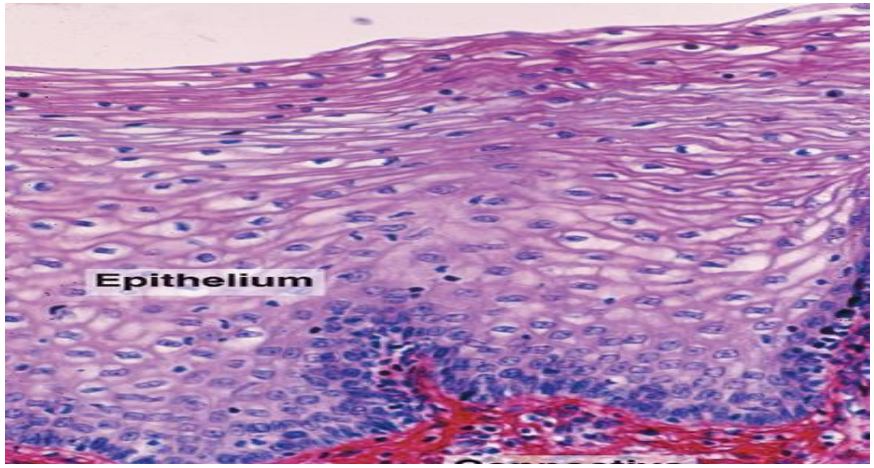
Stratified squamous

Keratinized



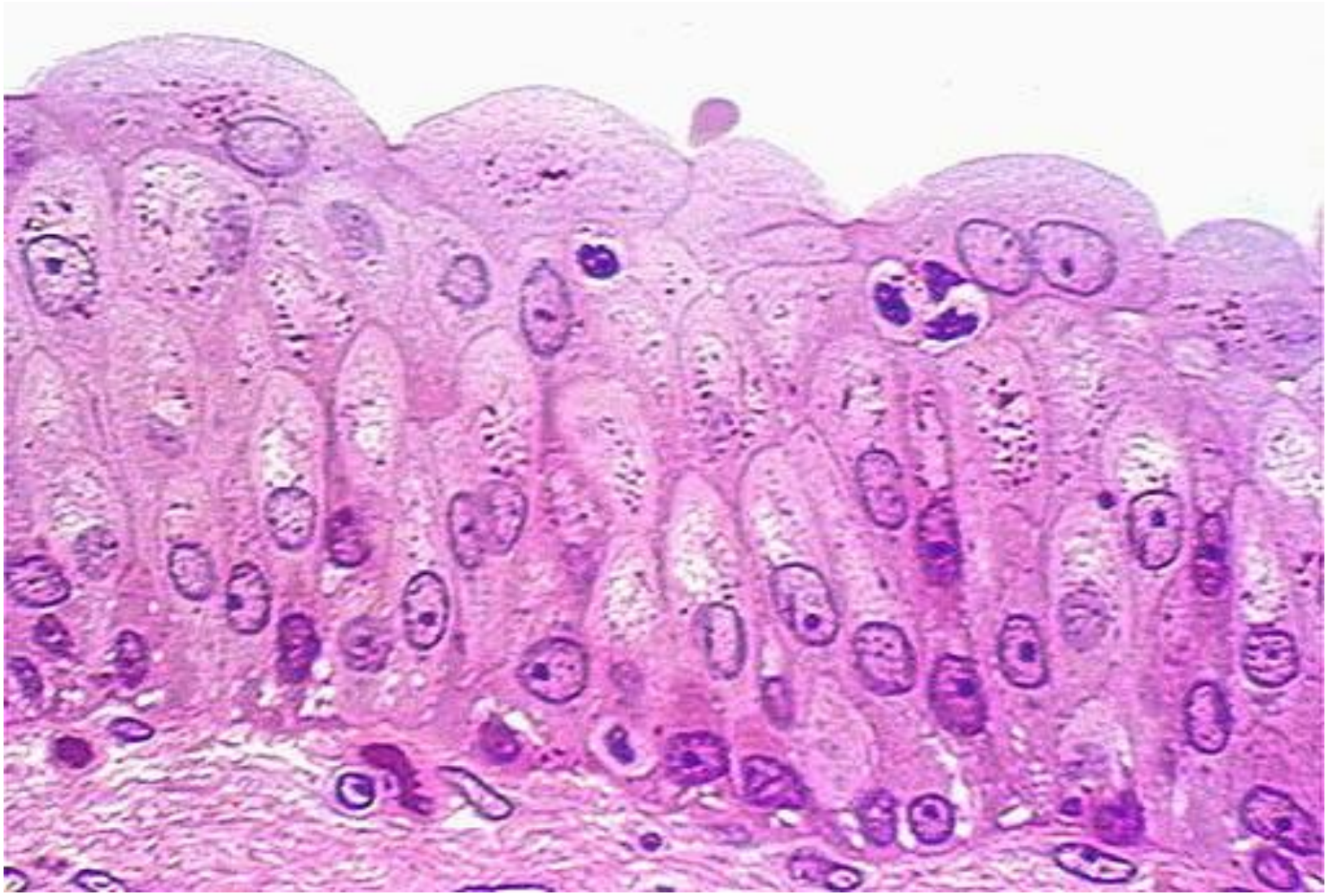
skin

Non Keratinized



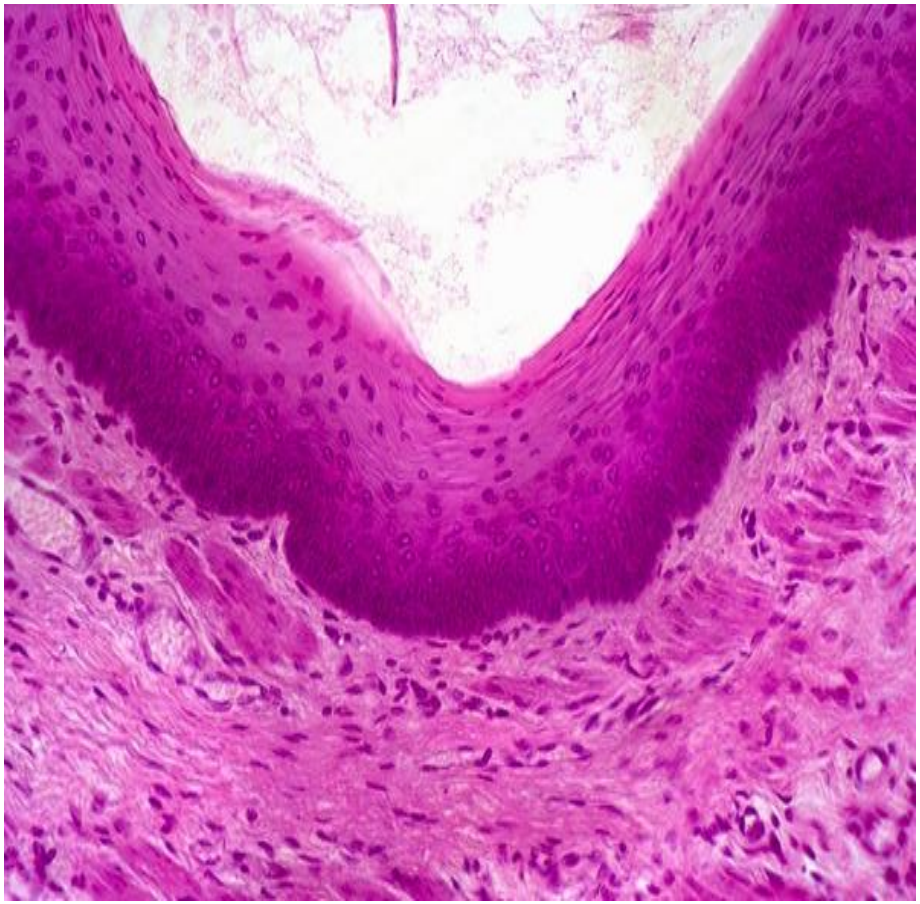
Oesophagus- vagina

Transitional epithelium
= Urothelium

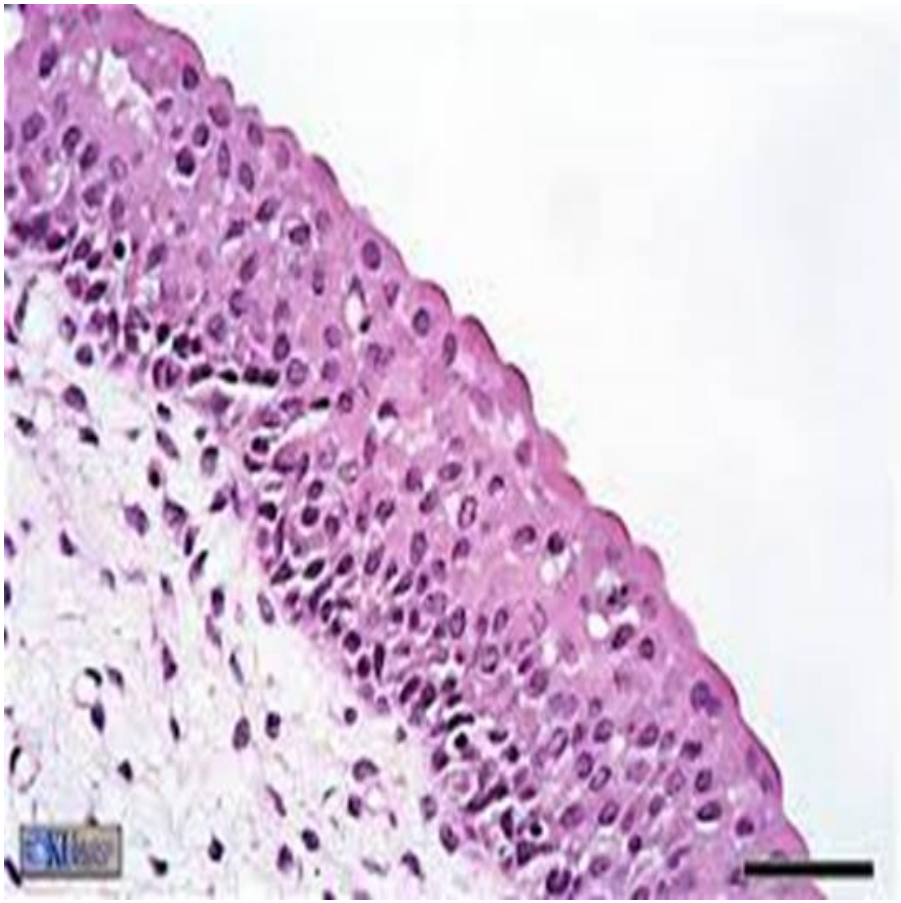


(urinary bladder - empty)

Non Keratinized stratified squ

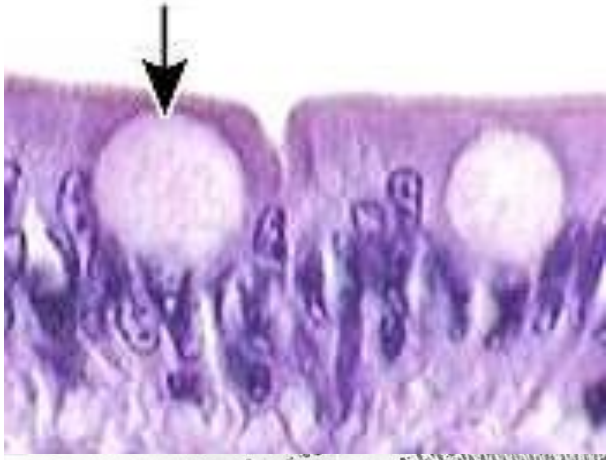


Transitional epithelium



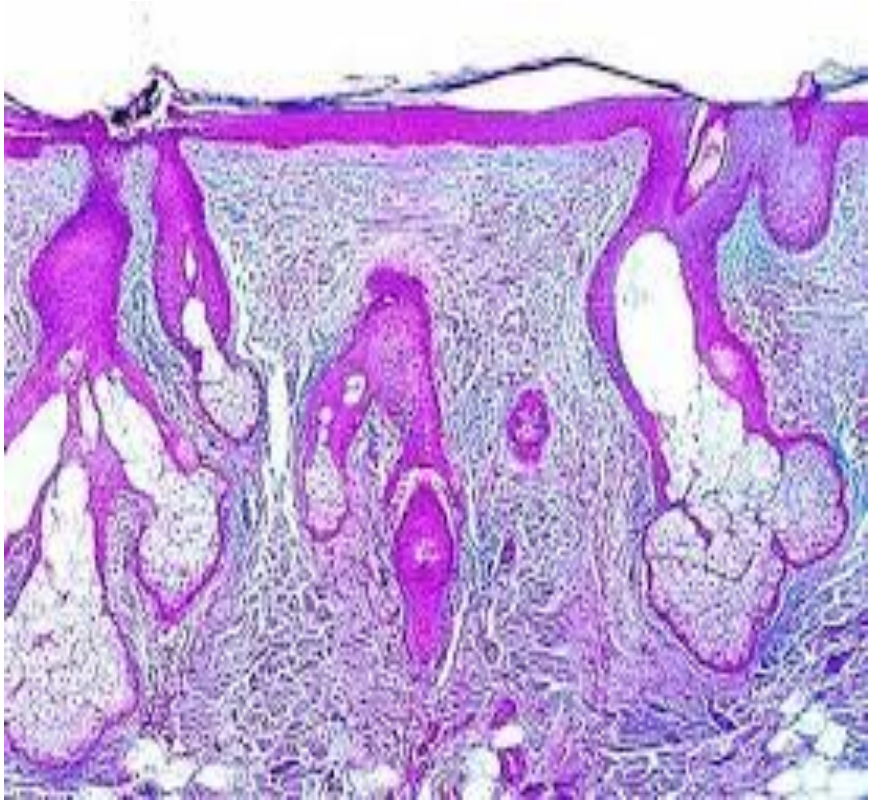
Glandular epithelium
Goblet cells

- Unicellular
- Exocrine
- Shape of the cell : flask shape with basal nuclei
- **Mode** of secretion: Merocrine
- **Nature** of secretion : Mucus
- **Site** : Respiratory system , GIT

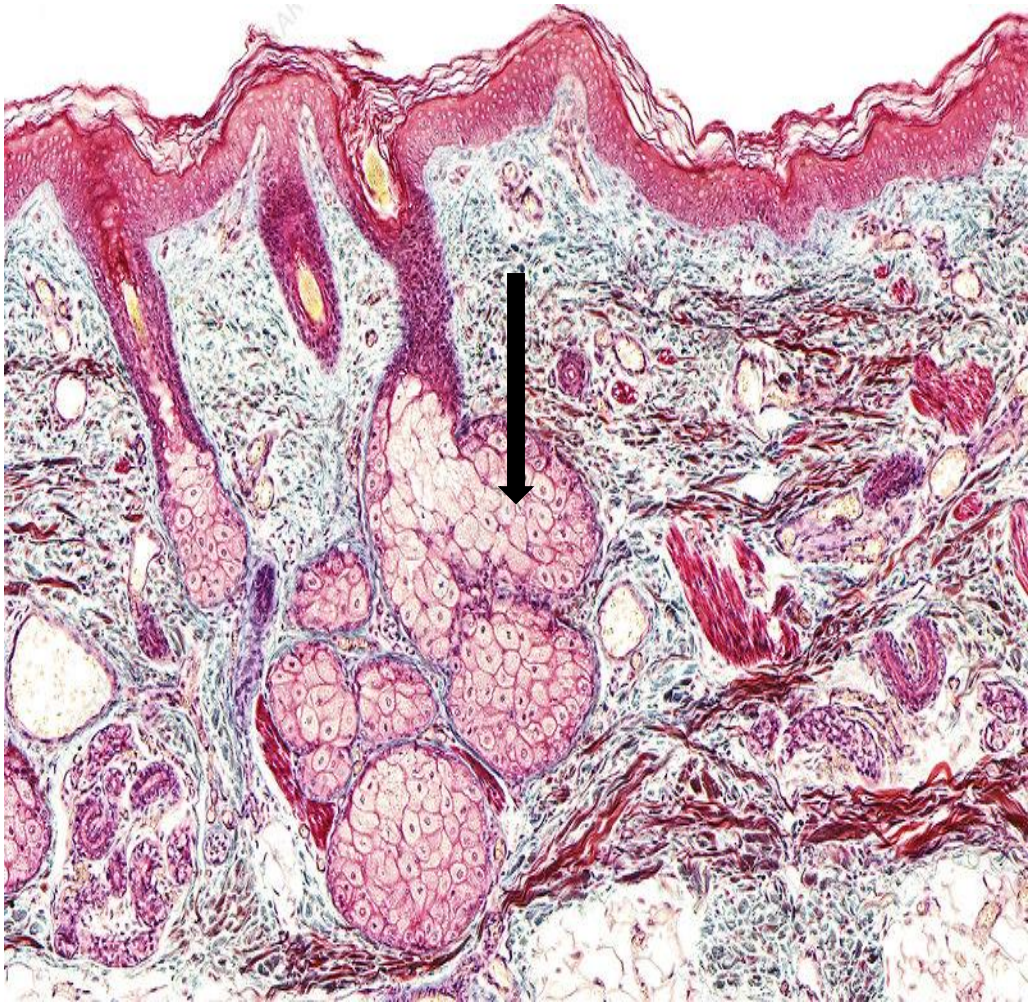


Sebaceous gland

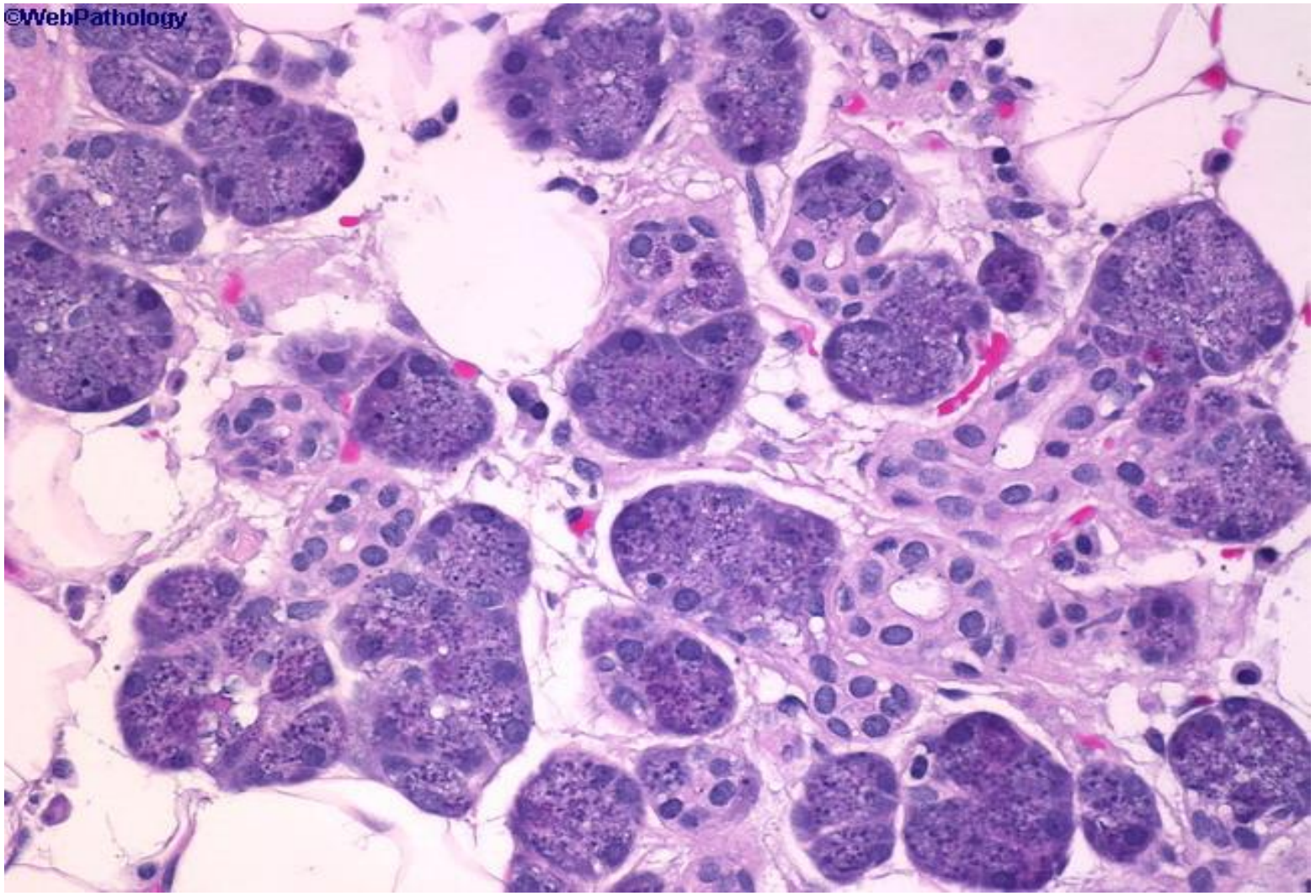
- Exocrine
- Mode : Holocrine
- Nature : (oily secretion)
- Shape of secretory units : Branched alveolar
- Site : Related to hair follicles
- Activity of the gland increase at the age of puberty
- Obstruction of the duct by thick secretion & keratin → Acne



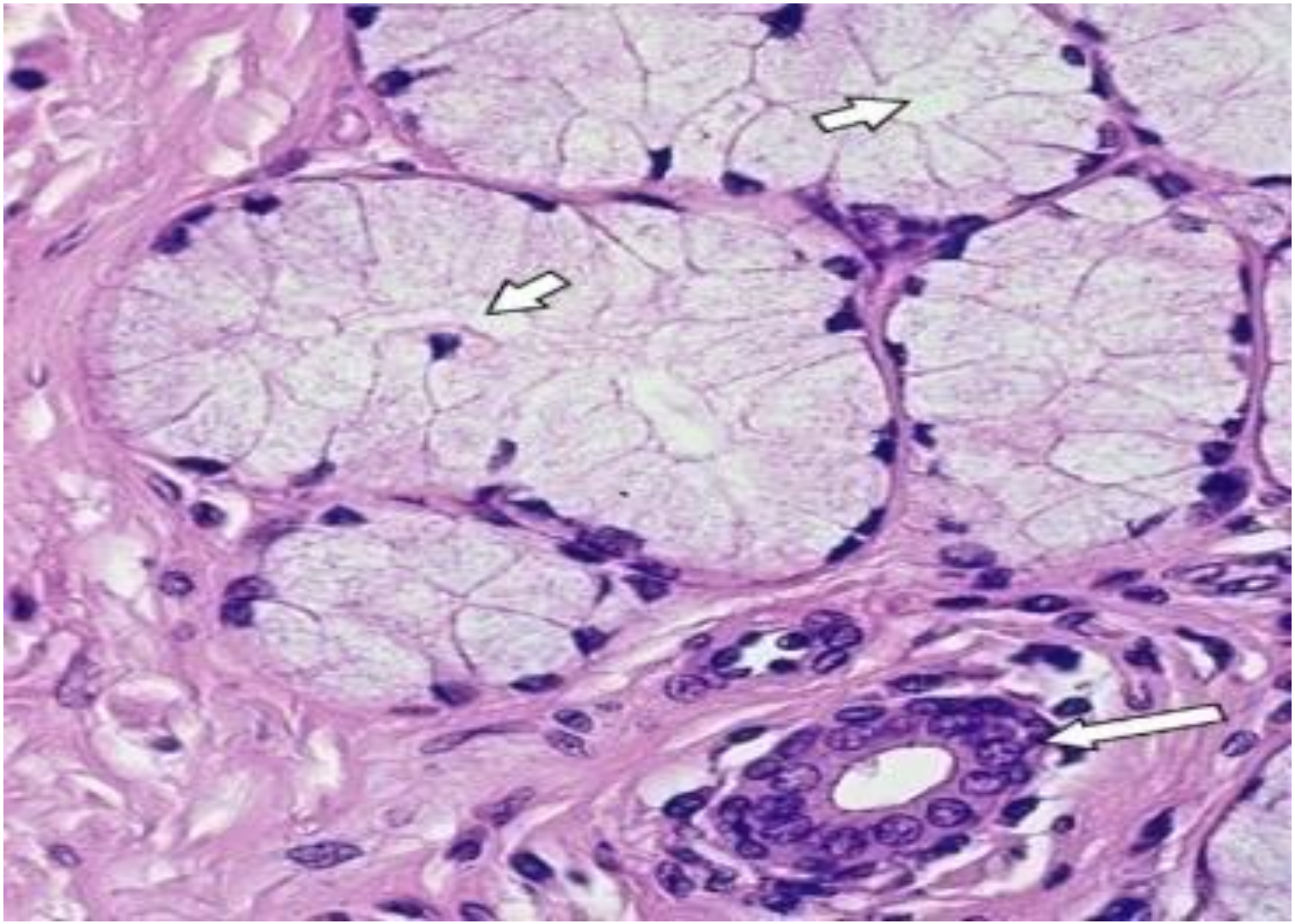
Sebaceous gland



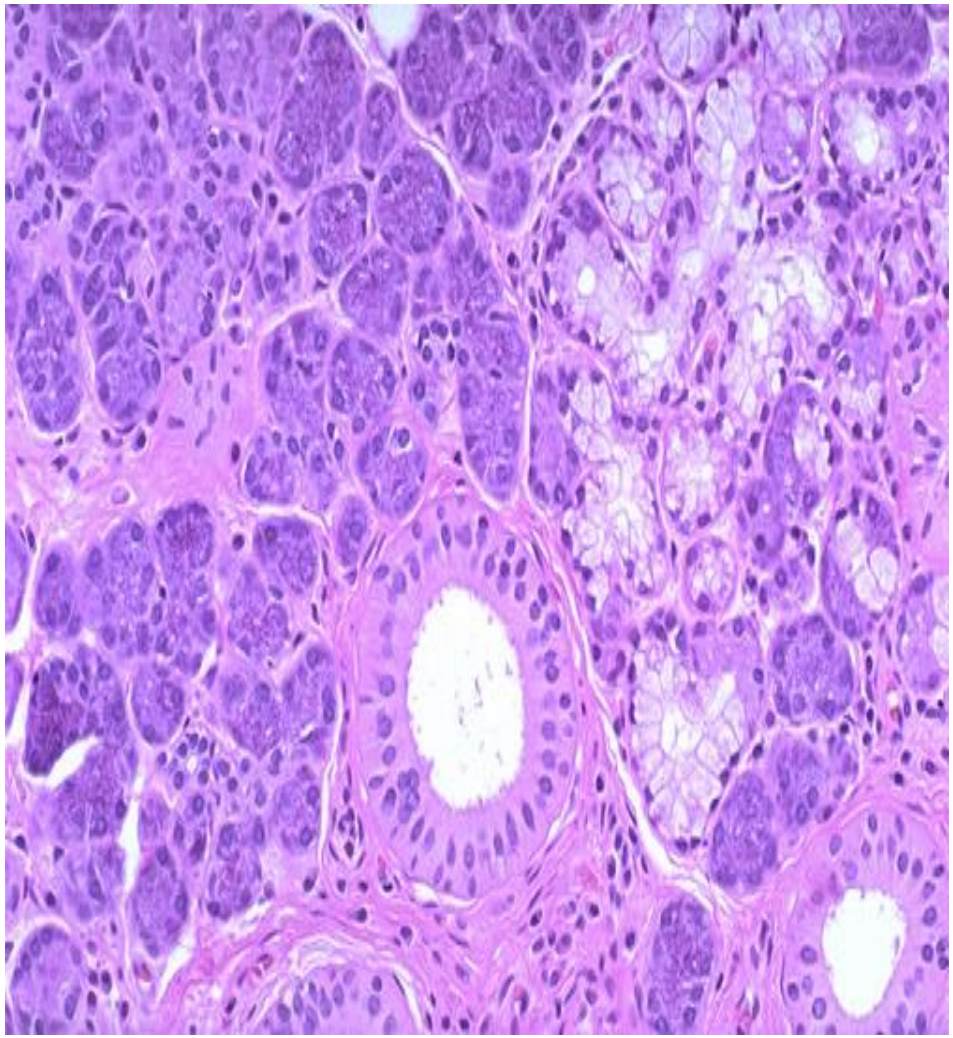
Serous glands, which secrete a watery secretion rich in enzymes e.g. parotid salivary gland.

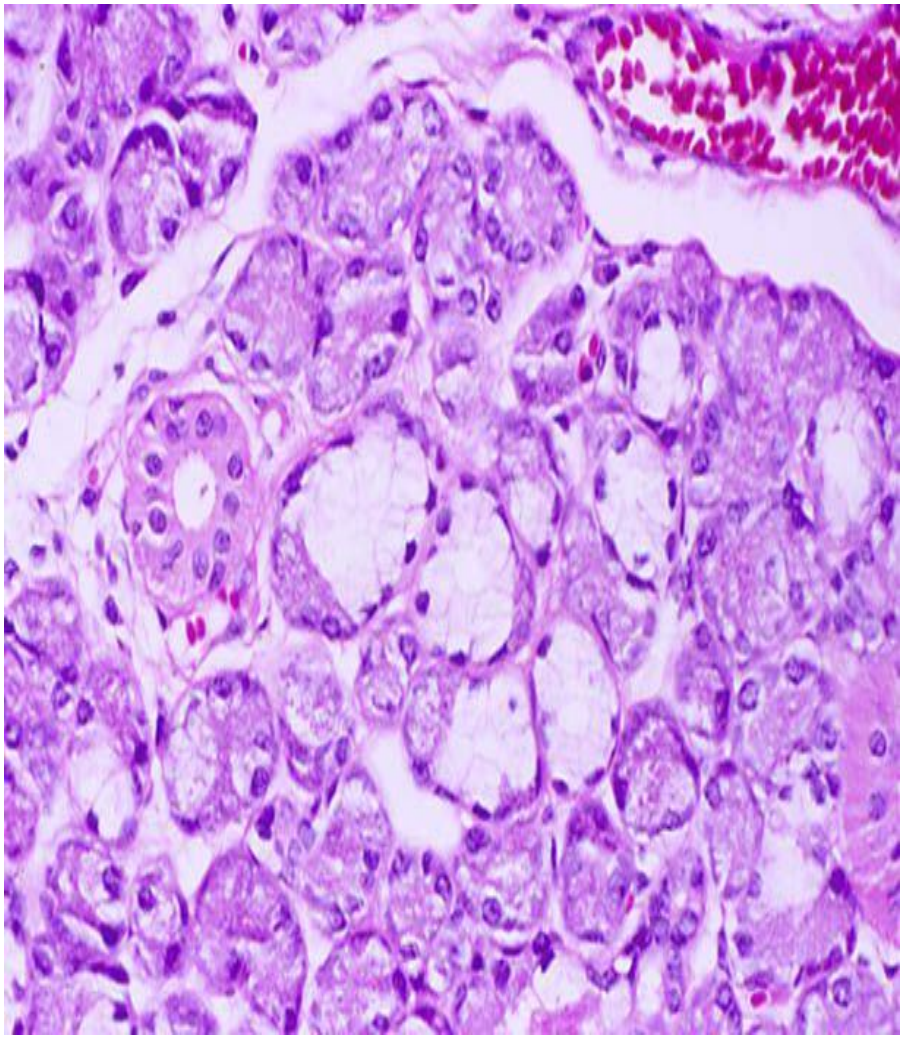


Mucous glands, which secrete a viscid glycoprotein secretion e.g. goblet cells and sublingual salivary gland.

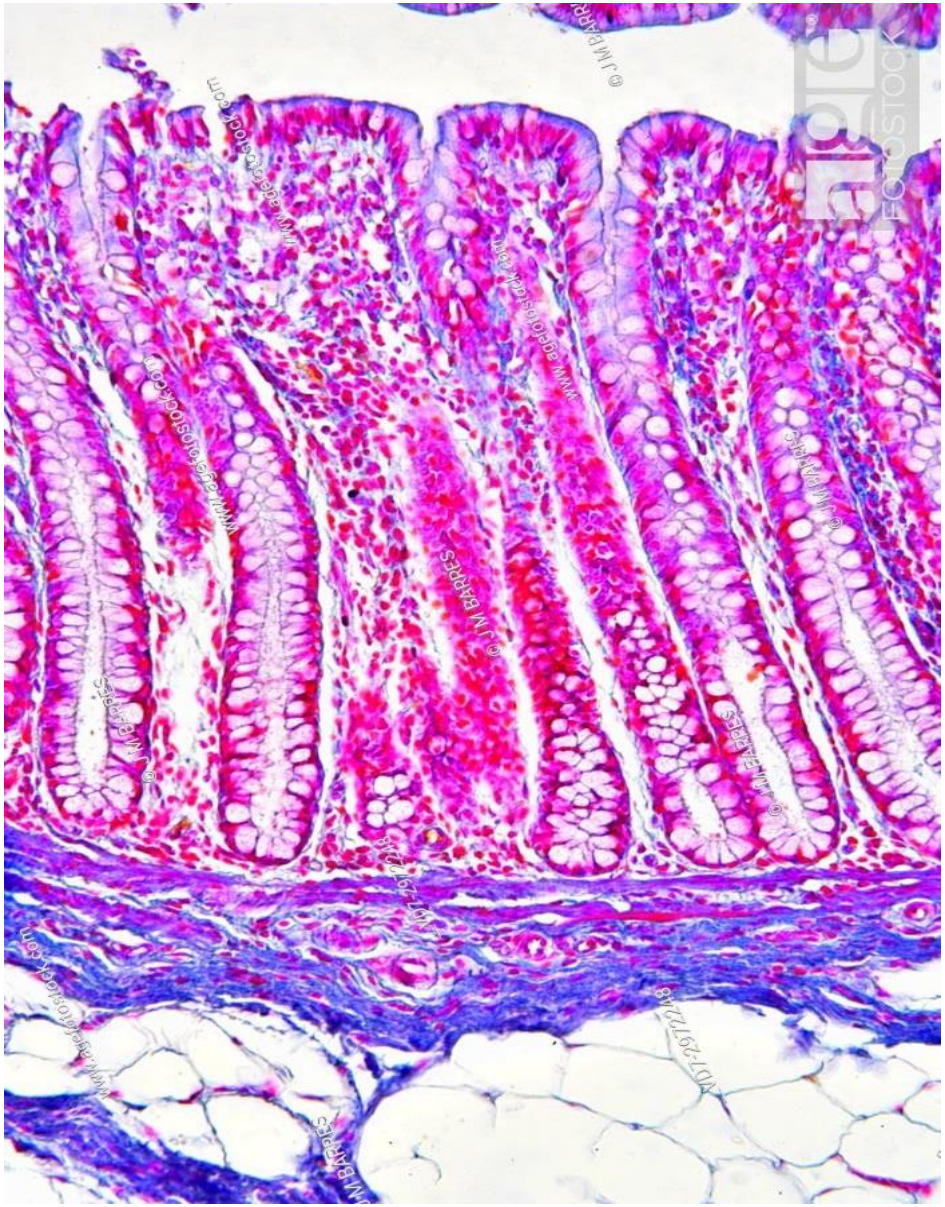


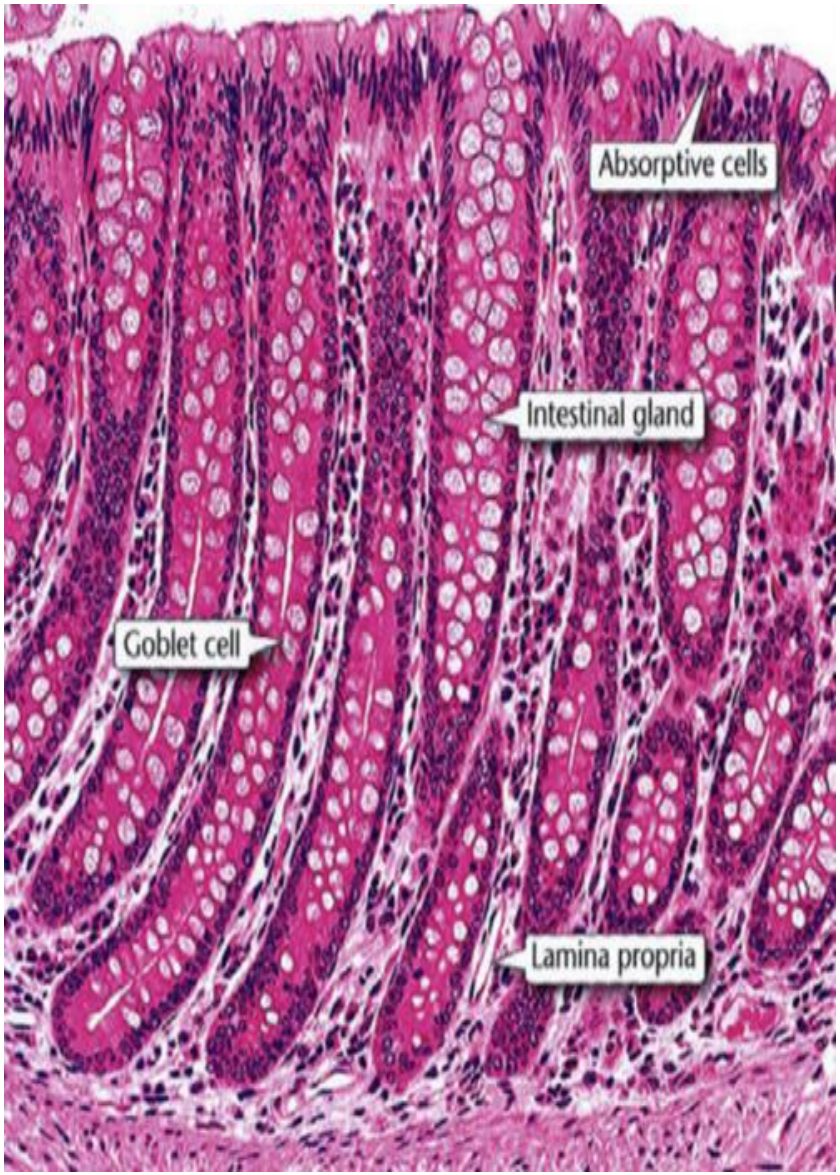
Mixed glands, which secrete both mucous and serous secretions e.g. submandibular salivary gland.





Tubular gland + goblet cell





6- According to the branching of the ducts and branching of the secretory portion:

exocrine glands could be

Classified into:

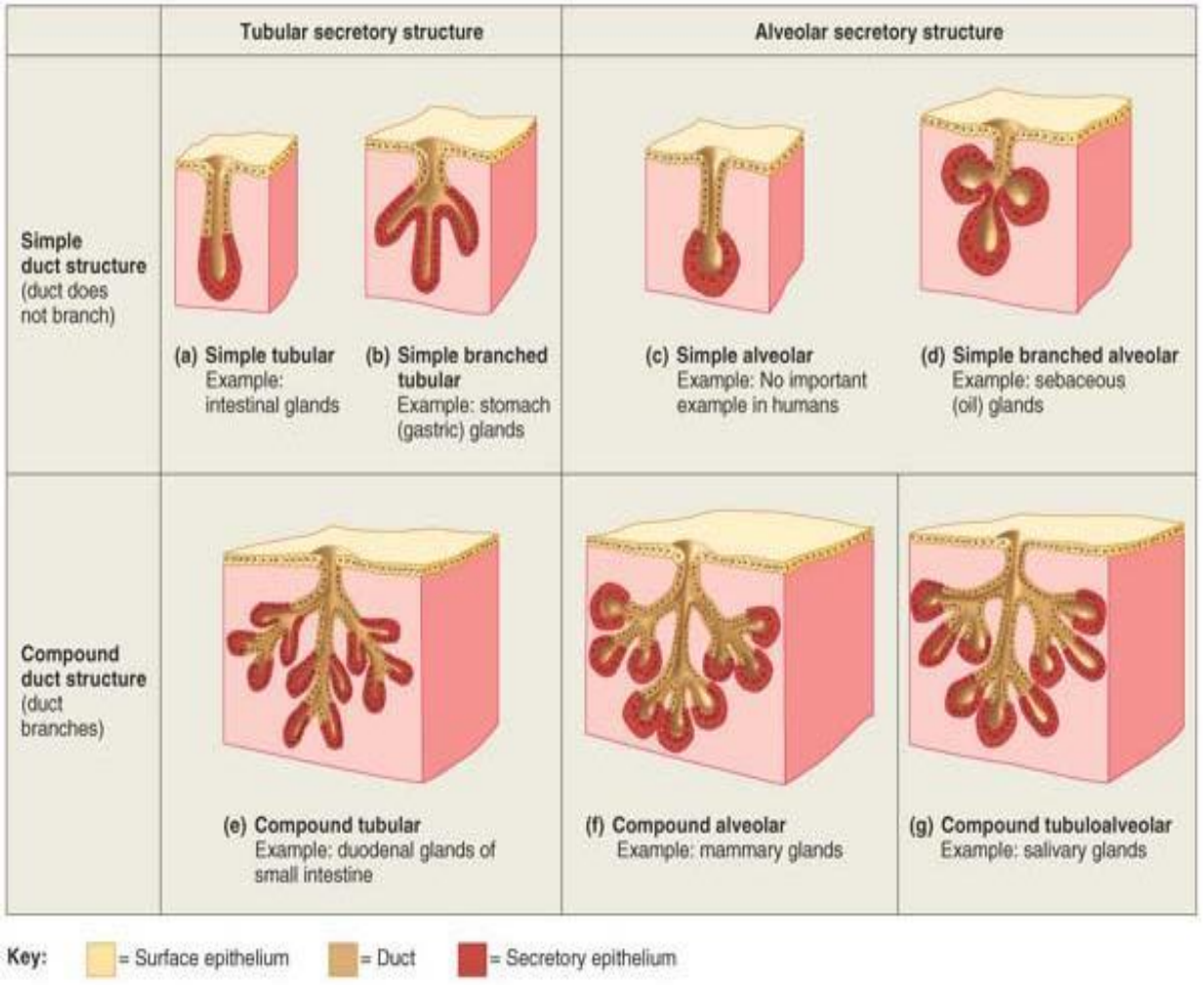
➢ Simple glands

- ❑ which have only one unbranched duct and one secretory unit.

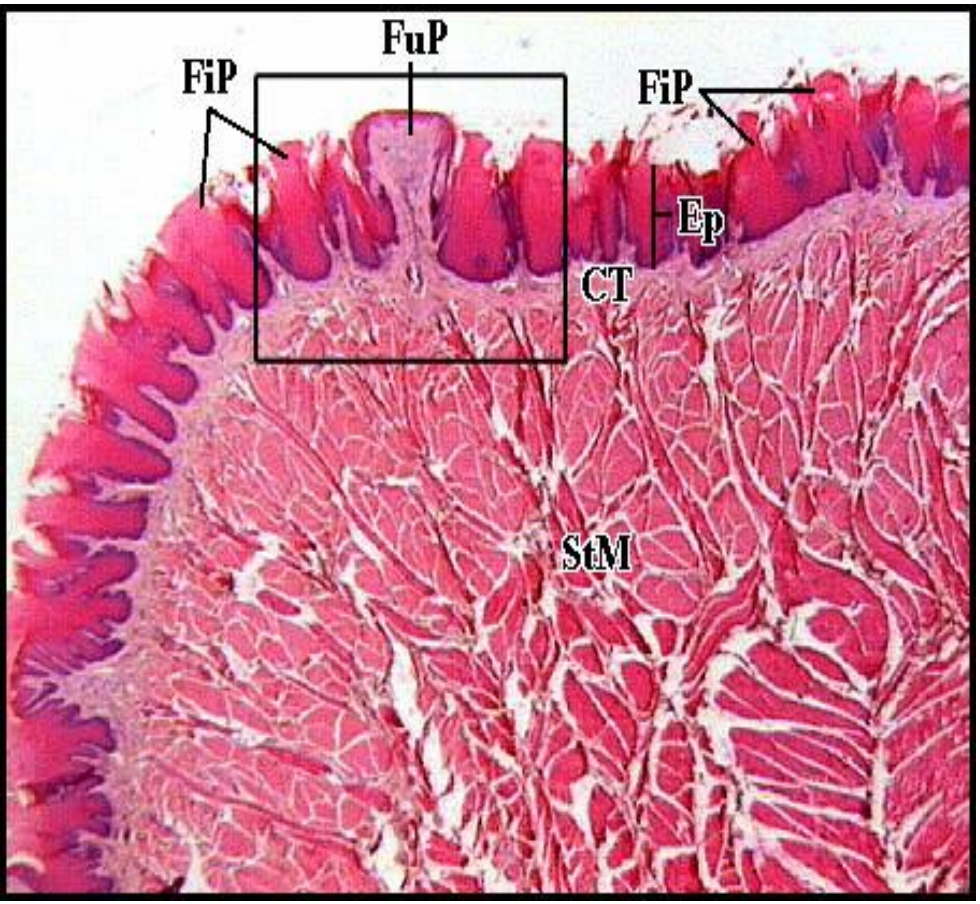
- ❑ Simple branched glands, which have one unbranched duct and branched secretory units.

➢ Compound glands

which have branched duct system as well as branched secretory units.

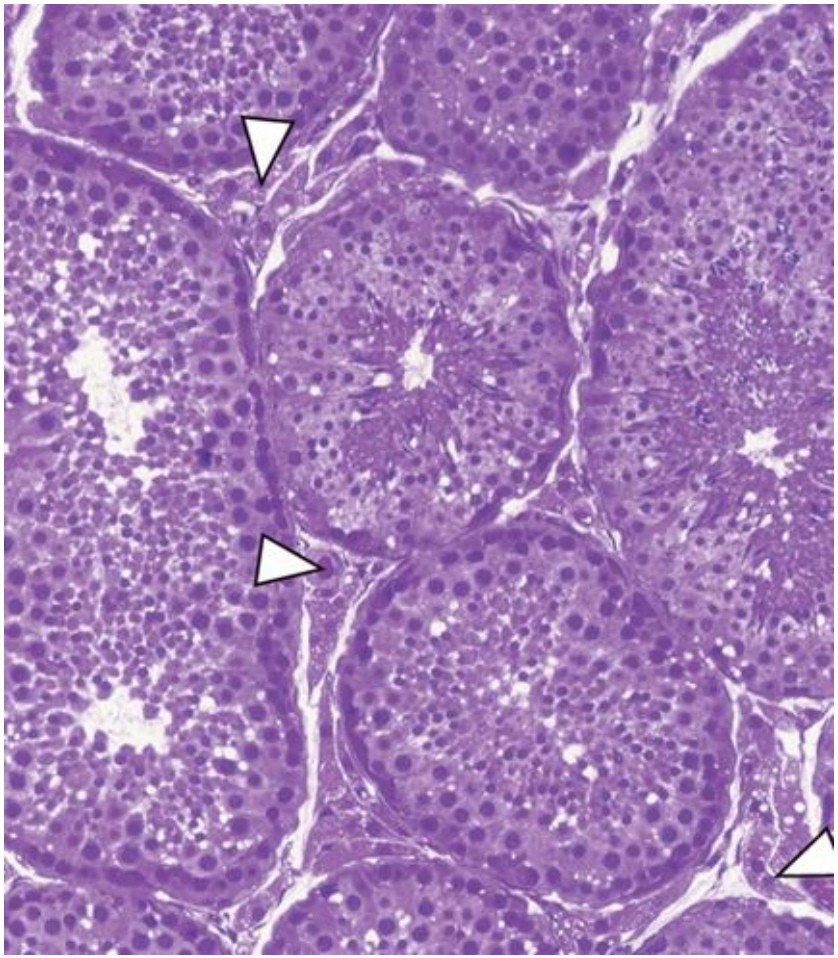


Special types of epithelium
Neuro-epithelium
Taste bud

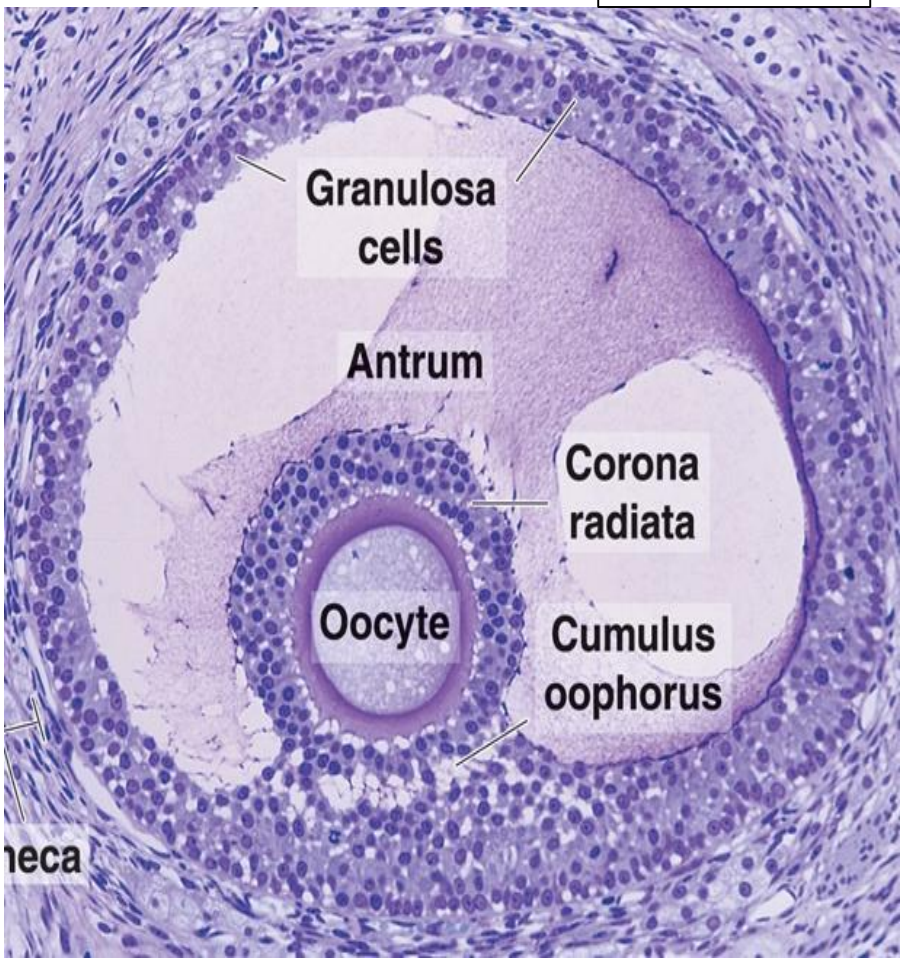


Germinal epithelium

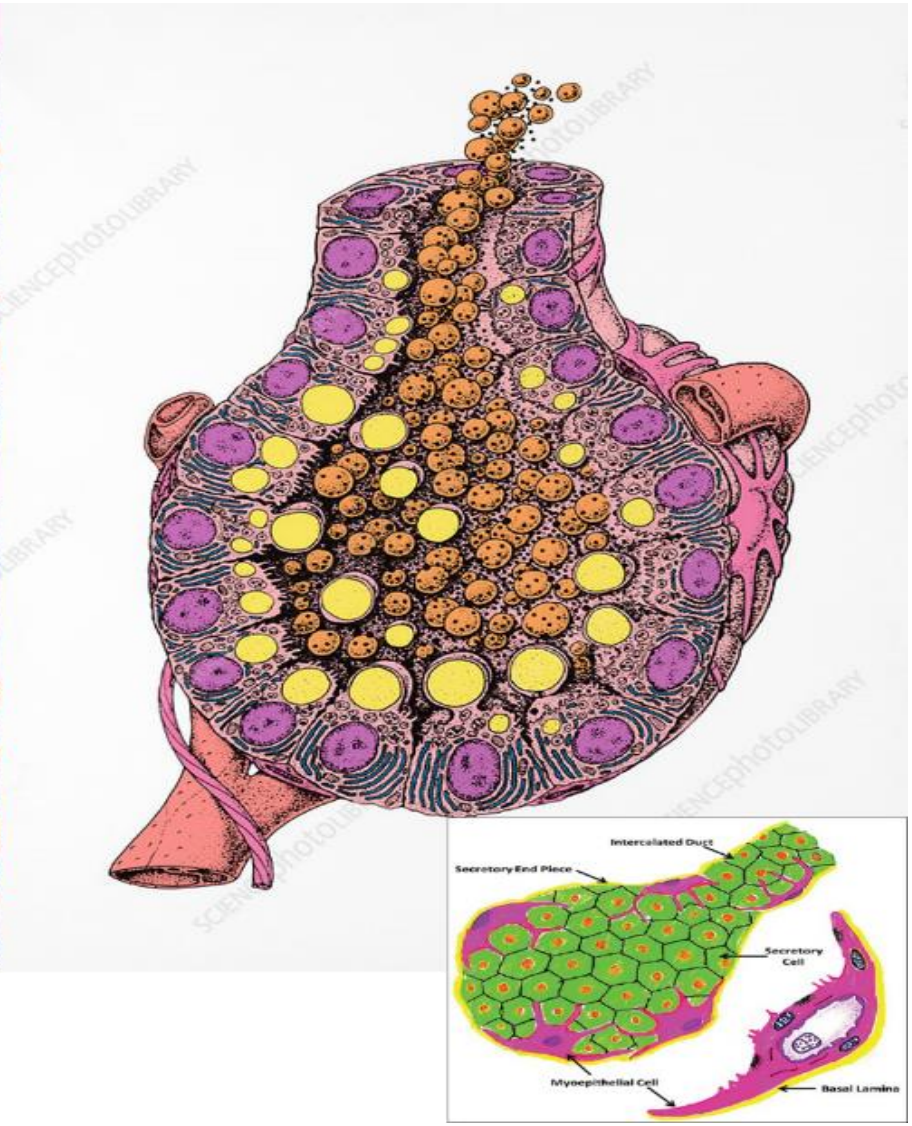
Testis



Ovary

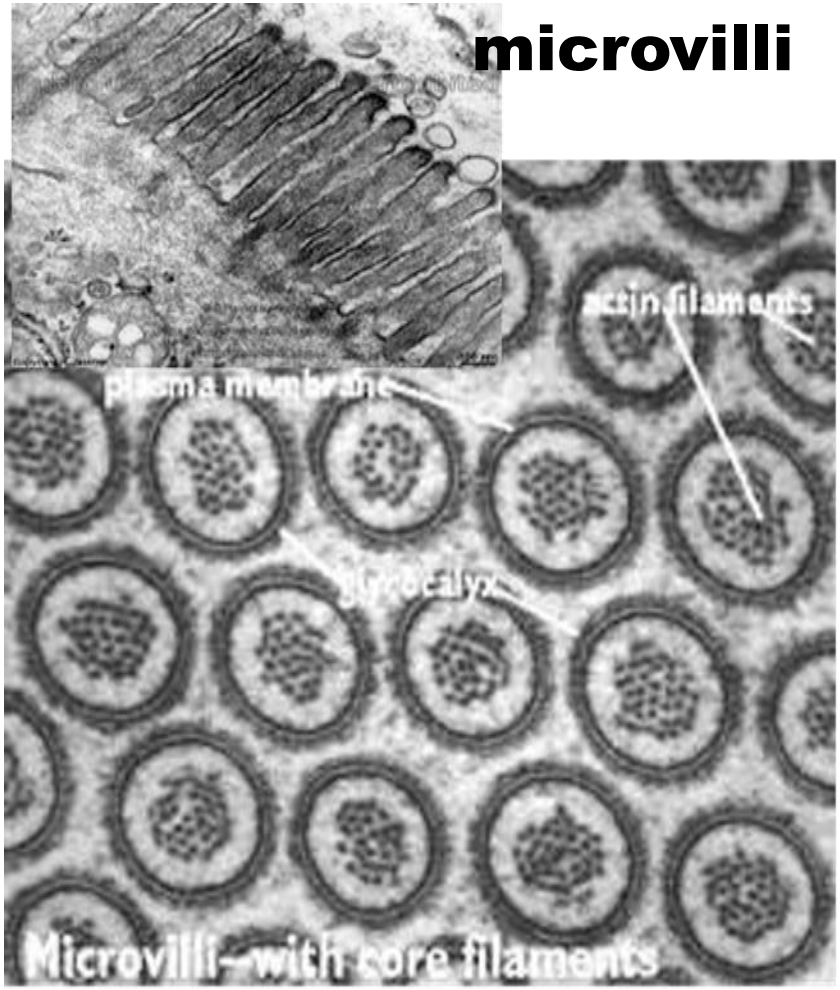


Myo-epithelium

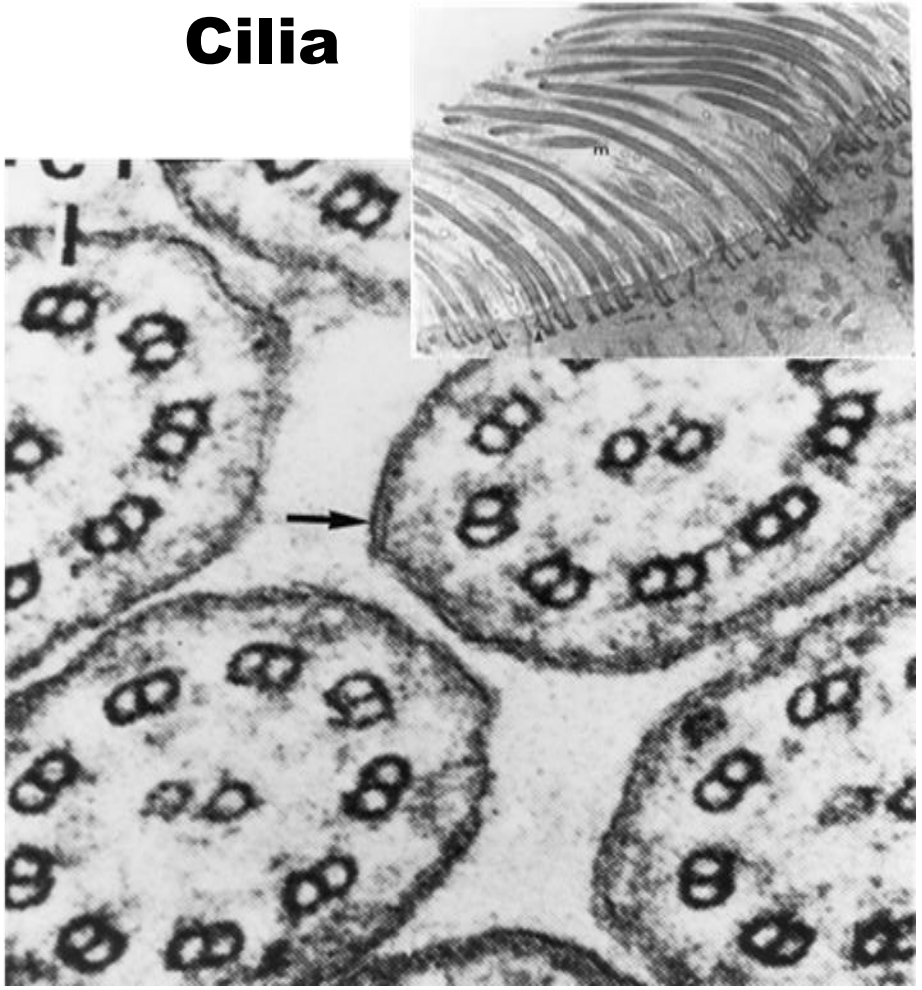


Apical modifications

microvilli



Cilia



Derivation

Ectoderm →

- Epidermis of skin
- Sweat glands and ducts

Mesoderm →

- Endothelium lining of blood vessels
- Mesothelium lining of body cavities
- Lining of urinary and genital organs

Endoderm →

- Lining of gastrointestinal tract& liver
- Lining of respiratory tract

Mitotic activity

Most epithelial cells have a life span less than that of the whole organism

The replacement of cells produced by mitotic activity of adult stem cells .

e.g. The stratified squamous epithelium of skin is replaced in a period of approximately 28 days.


Thank
You