



Practice

Curriculum: Phase 1/ Semester2/ TOB/ Session

Histology Practical / Epithelial Tissues 1

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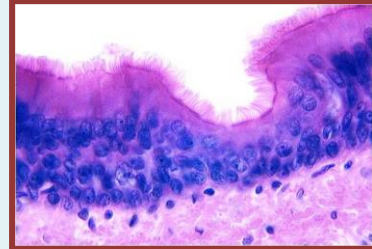
Classification of Tissues



There are four principal types of tissues :

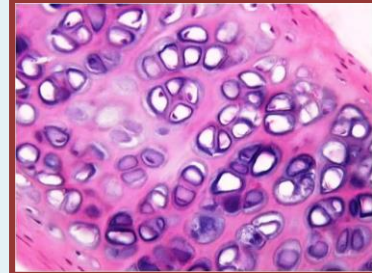
1- Epithelial Tissue:

covering and lining; and glands

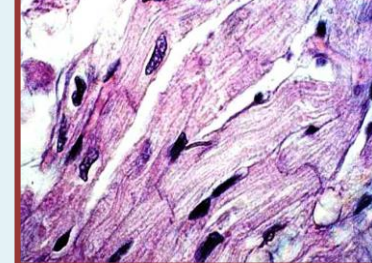


2- Connective Tissue:

protects and supports, binds organs together, stores energy, and provides immunity

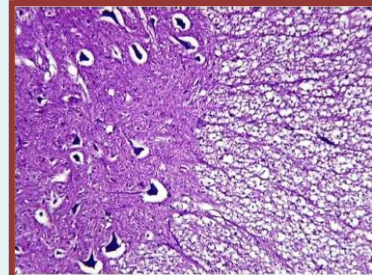


3- Muscular Tissue: movement



4- Nervous Tissue:

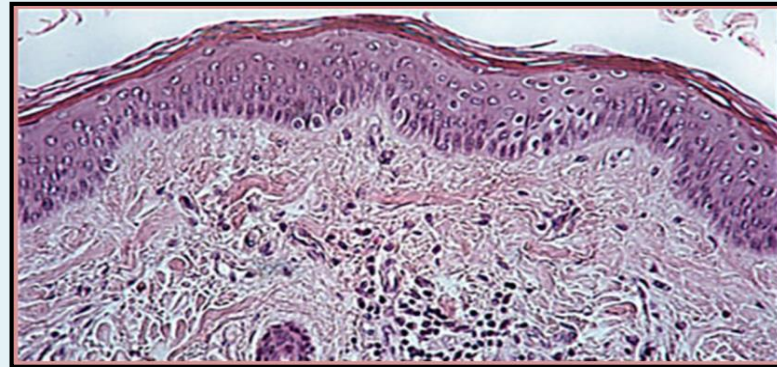
transmits impulses that coordinate body activities



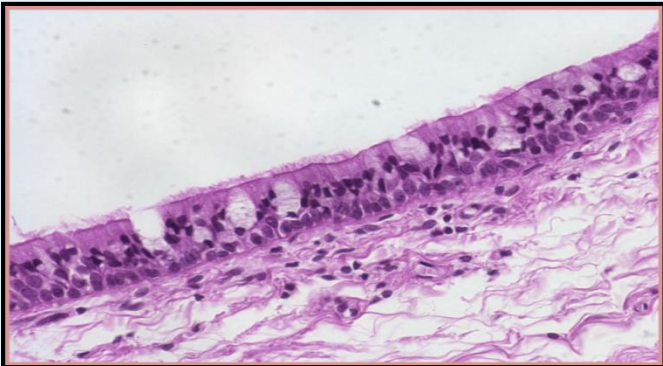


Epithelial Tissues = Epithelium

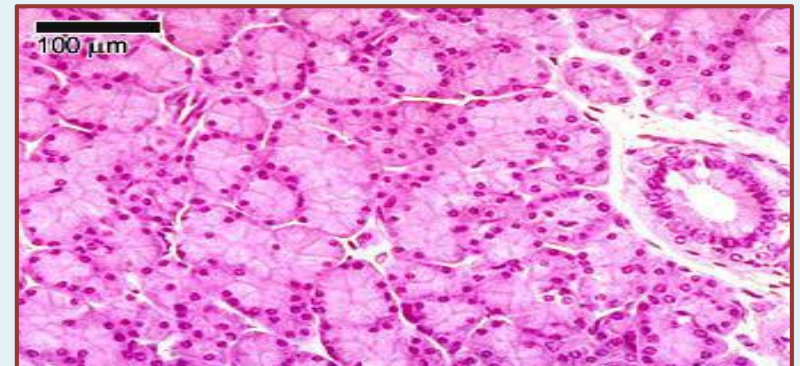
They are sheets of continuous cells that cover surfaces, line cavities of the body and are the major tissues of glands.



1-Covering epithelium (skin)



2-Lining epithelium (trachea)



3- Glandular epithelium (salivary gland)

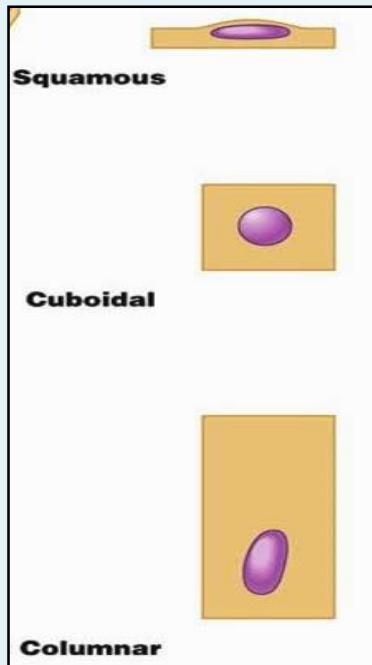


Classification of the Epithelial Tissues

According to :

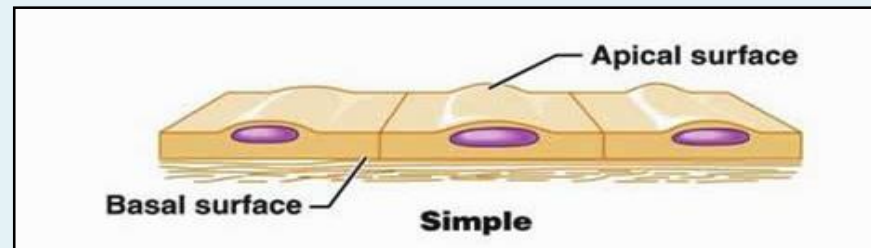
A-Number of cells layers

B-Shape of the superficial cells



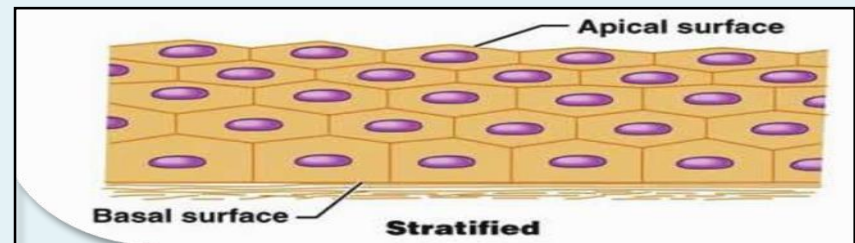
1- Simple Epithelium:

One layer, where diffusion, filtration, secretion and absorption occur.



2- Stratified Epithelium:

Several layers, protects underlying tissue from wear.





What is the meaning of endothelium and mesothelium



Endothelium: is the lining of circulatory system (blood vessels, lymph vessels and heart).

Mesothelium: is the lining of major body cavities: peritoneum, pleura and pericardium

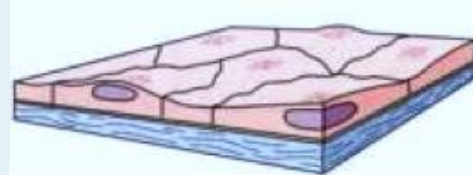


What are The Types of Simple Epithelium?

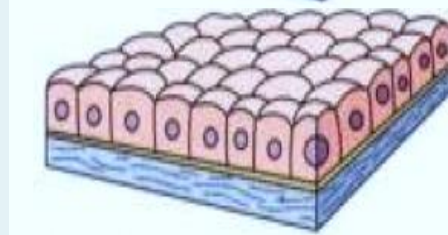


Simple epithelial tissue are classified according to the shape of individual cells into:

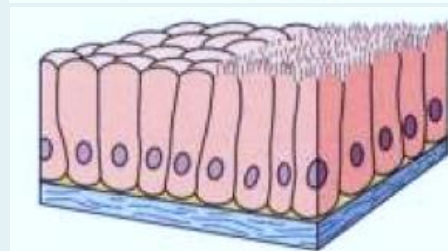
Simple squamous epithelium



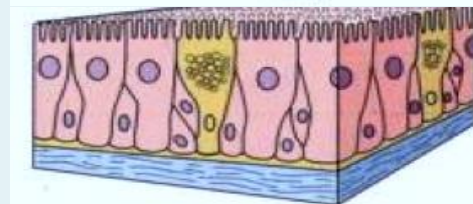
Simple cuboidal epithelium



Simple columnar epithelium



Pseudostratified columnar epithelium





1- Simple Squamous Epithelium

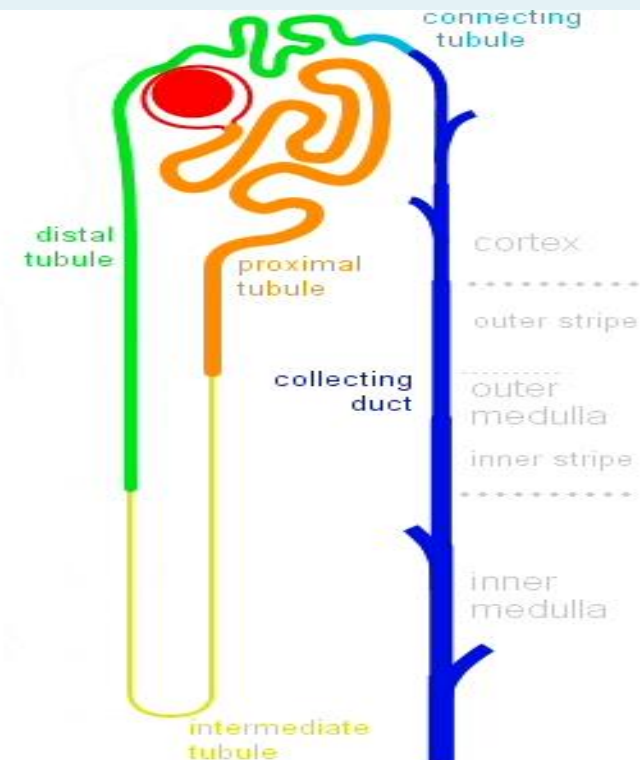
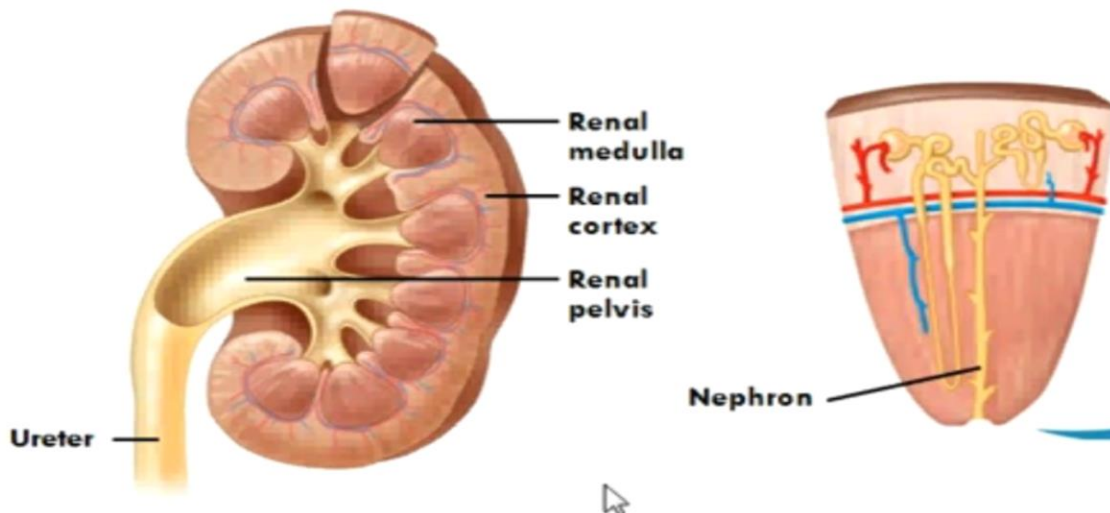
- One layer of flat shaped cells.
- Lines body cavities and blood vessels (e.g. in Bowman's capsule, endothelial lining of blood/lymph vessels, and mesothelium of pleural and peritoneal cavities)

Function :

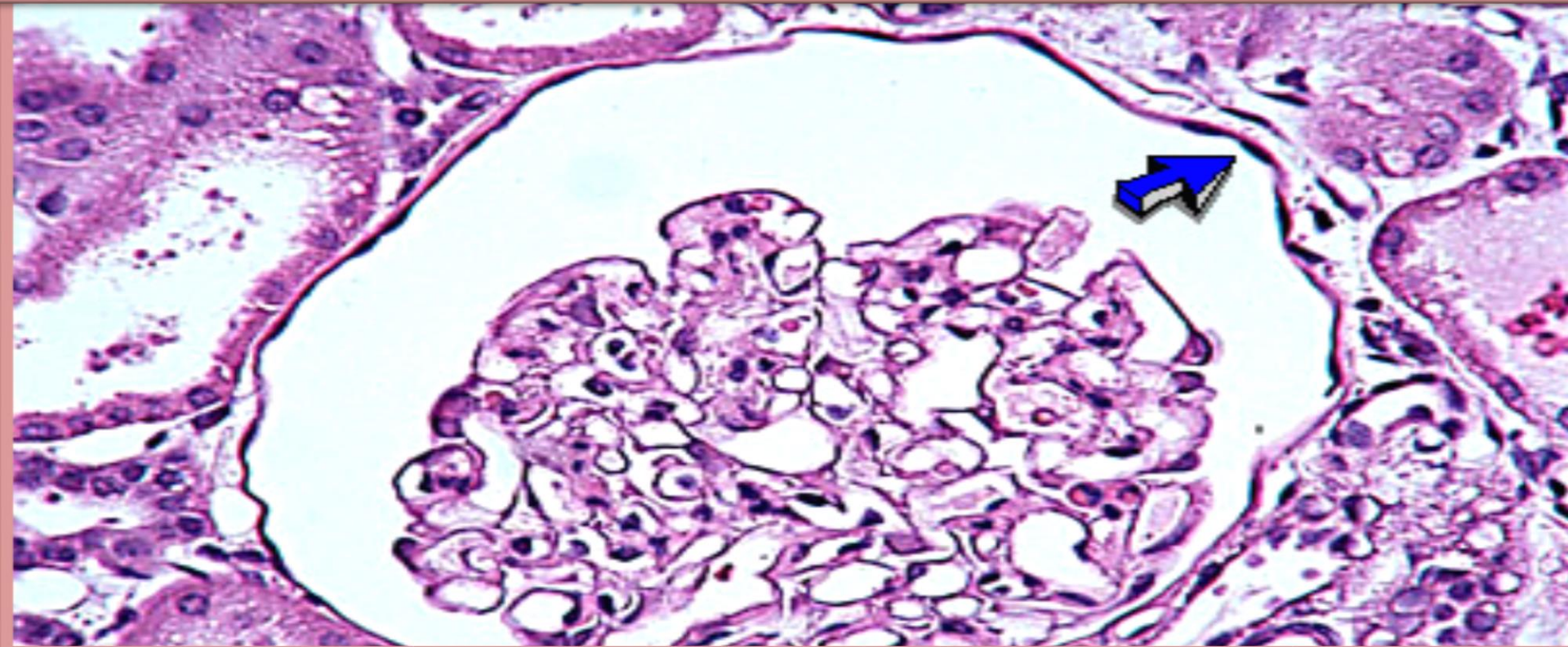
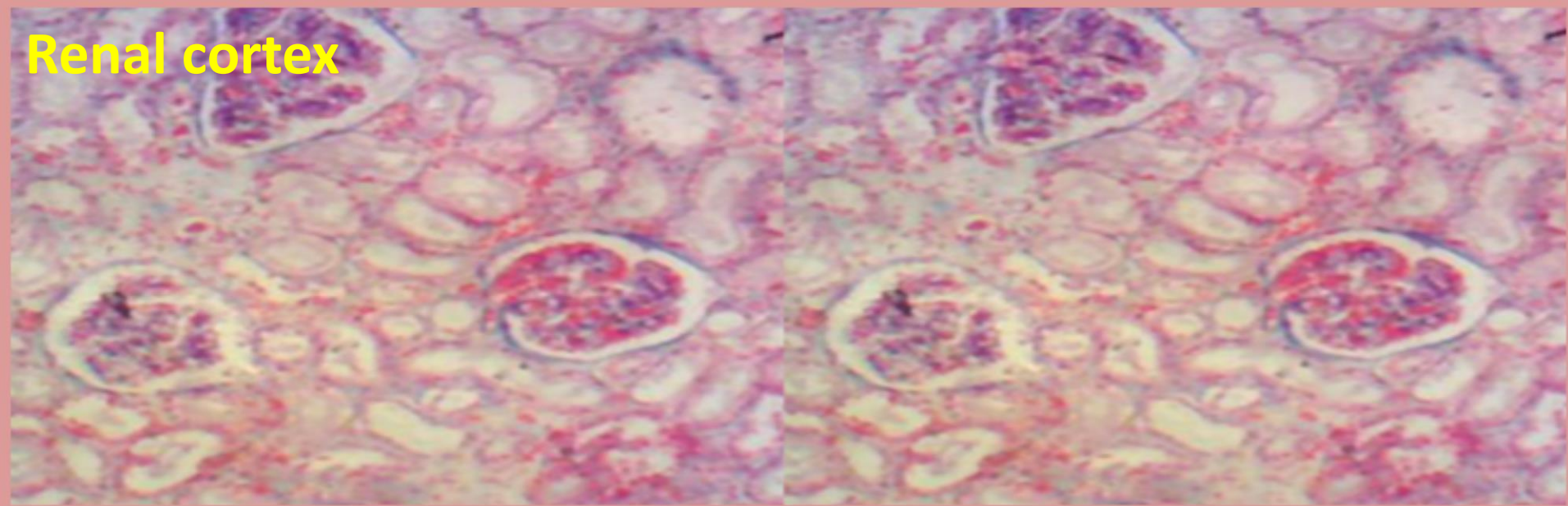
selective lubricated barrier that allows movement & diffusion (exchange of gases , nutrients , wastes)

The **kidney** consists of an outer **cortex** and an inner **medulla**. In the **cortex** there are round structures called **glomeruli** which are surrounded by the **Bowman's capsule**.

Kidney Structure



Renal cortex

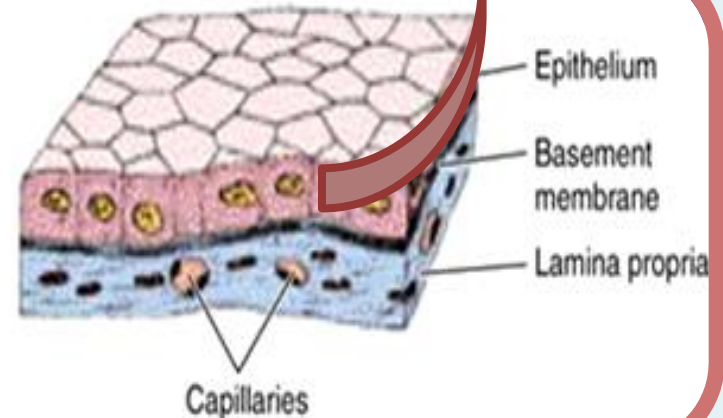
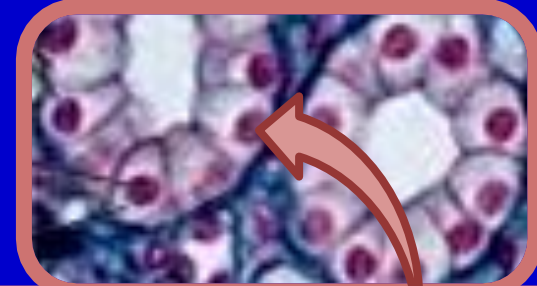


2- Simple Cuboidal Epithelium

Simple cuboidal epithelium consists of a single layer of cube-shaped cells. Each cell has a spherical nucleus in the center. It is adapted for secretion and absorption

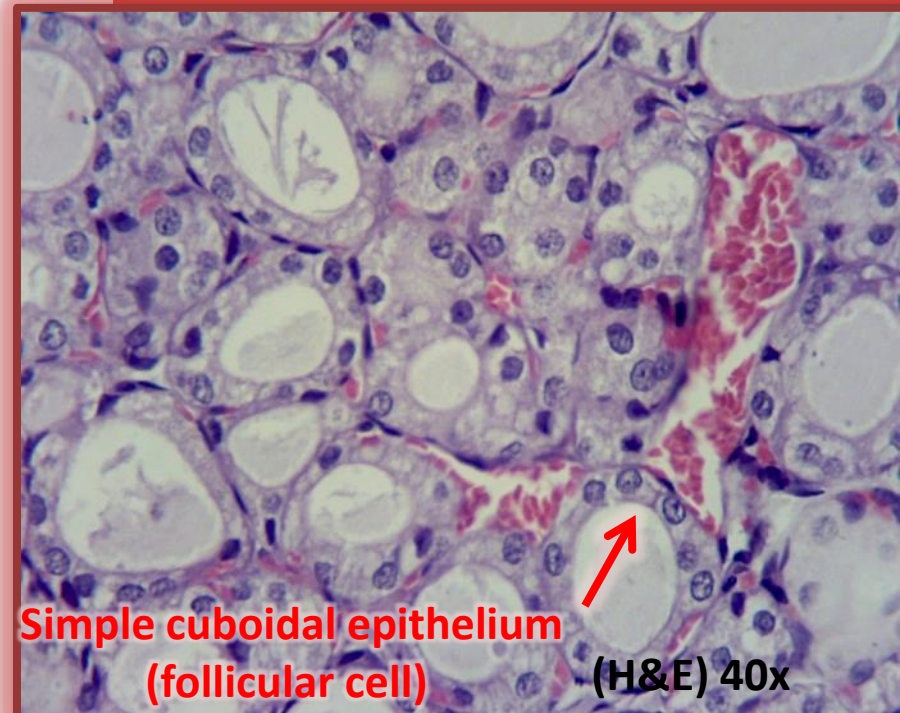
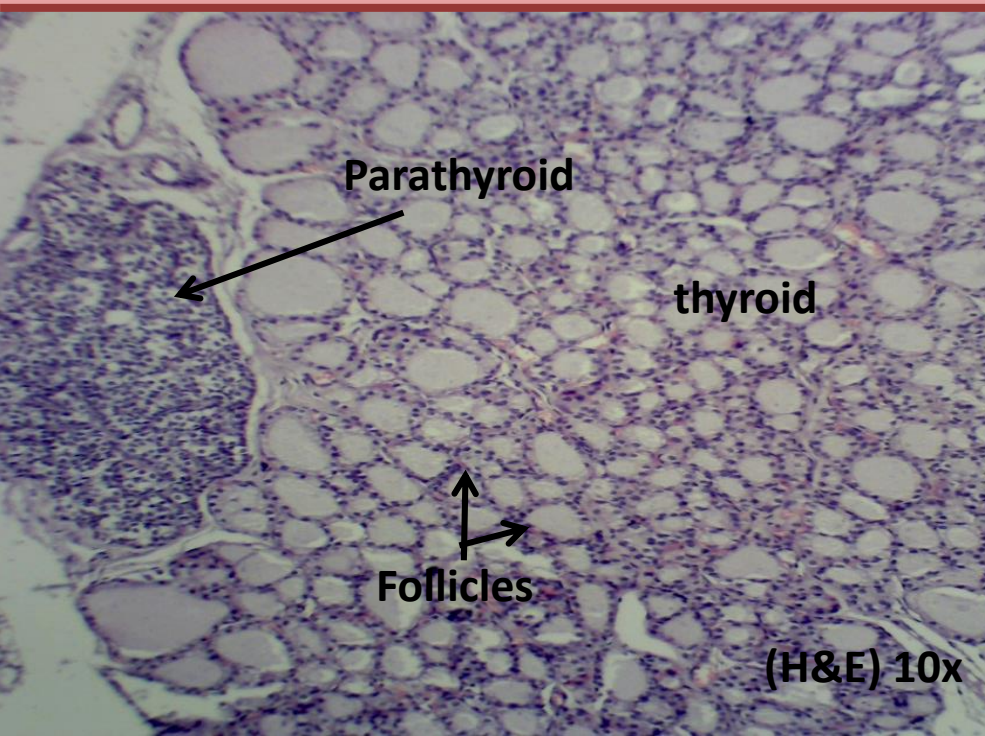
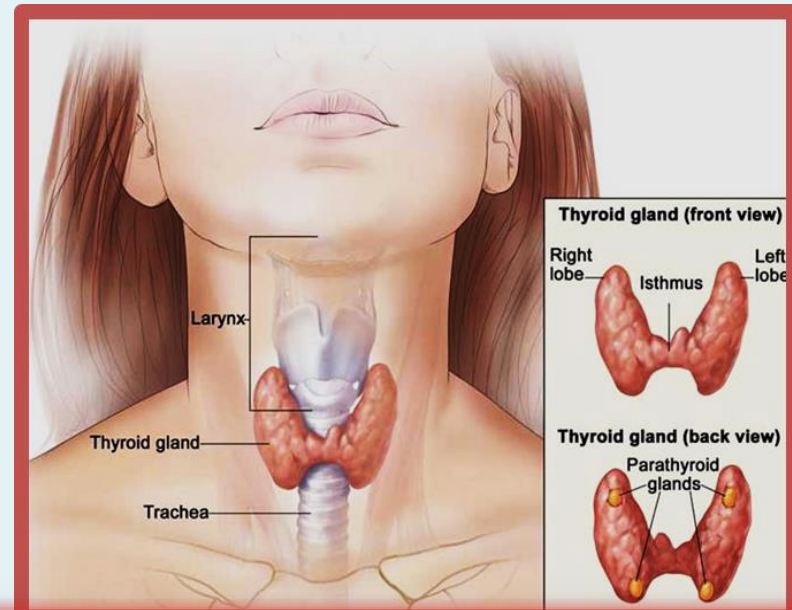
Locations: lining

- kidney tubules
- salivary ducts
- pancreatic ducts
- liver
- thyroid gland
- mammary gland



Thyroid Gland

The thyroid gland locates in the cervical region anterior to the larynx, consists of two lobes united by an isthmus .



Follicles

Thyroglobulin





3-Simple columnar epithelium

Comes into two forms:

➤ **Non ciliated Simple columnar epithelium**

A single layer of nonciliated rectangular cells. Also functions in secretion and absorption. Specialized cells containing microvilli perform absorption. Goblet cells secrete mucus.

Located in stomach and intestine.

➤ **Ciliated Simple columnar epithelium**

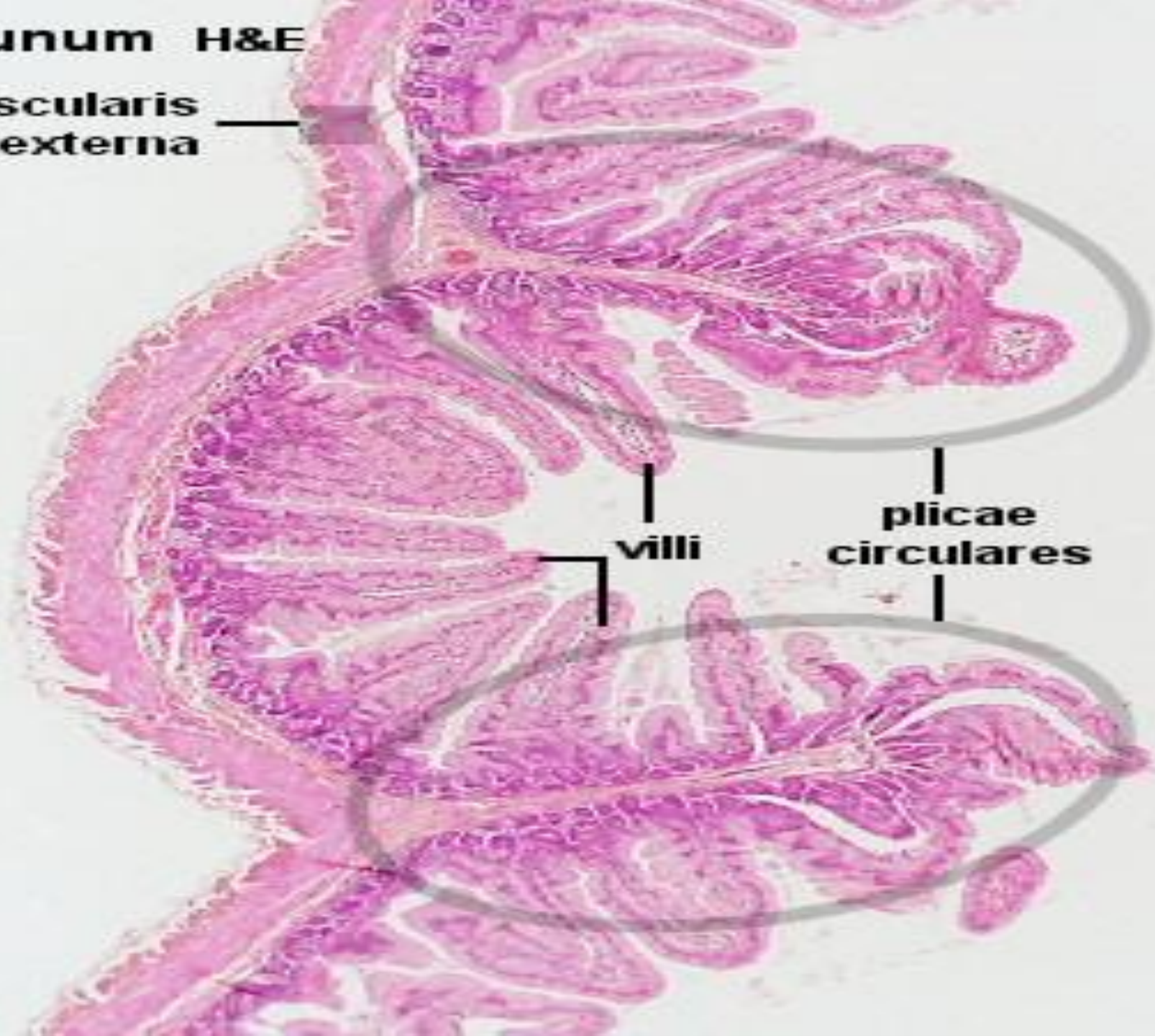
A single layer of rectangular cells. Functions in movement. Located in oviduct, seminal vesicle and ependymal canal.

Jejunum H&E

muscularis
externa

villi

plicae
circulares



Jejunum H&E

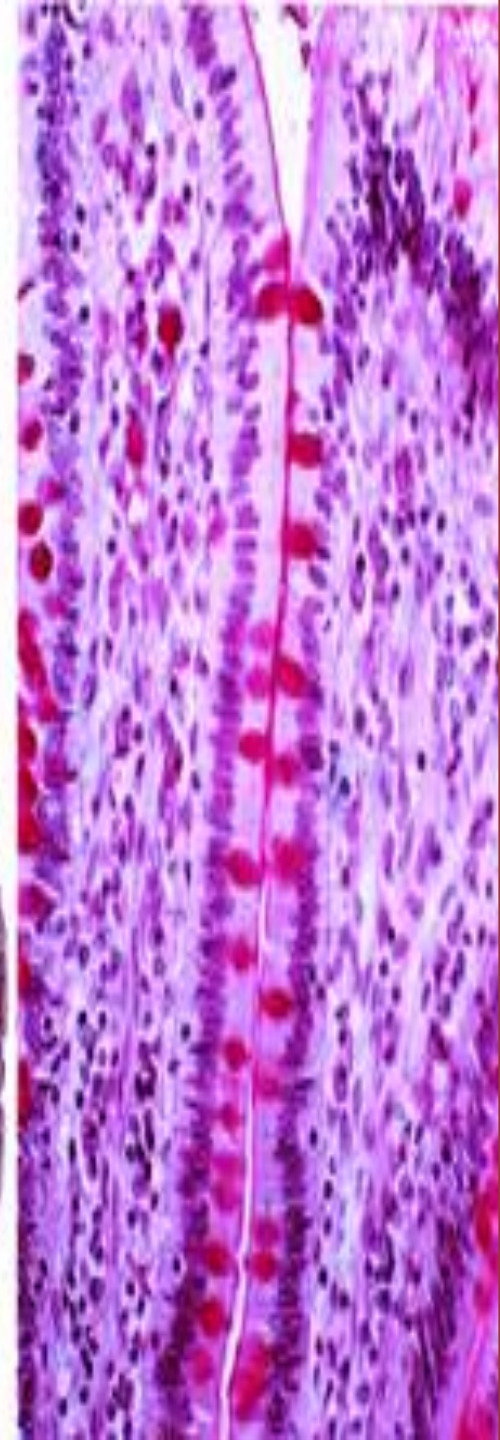
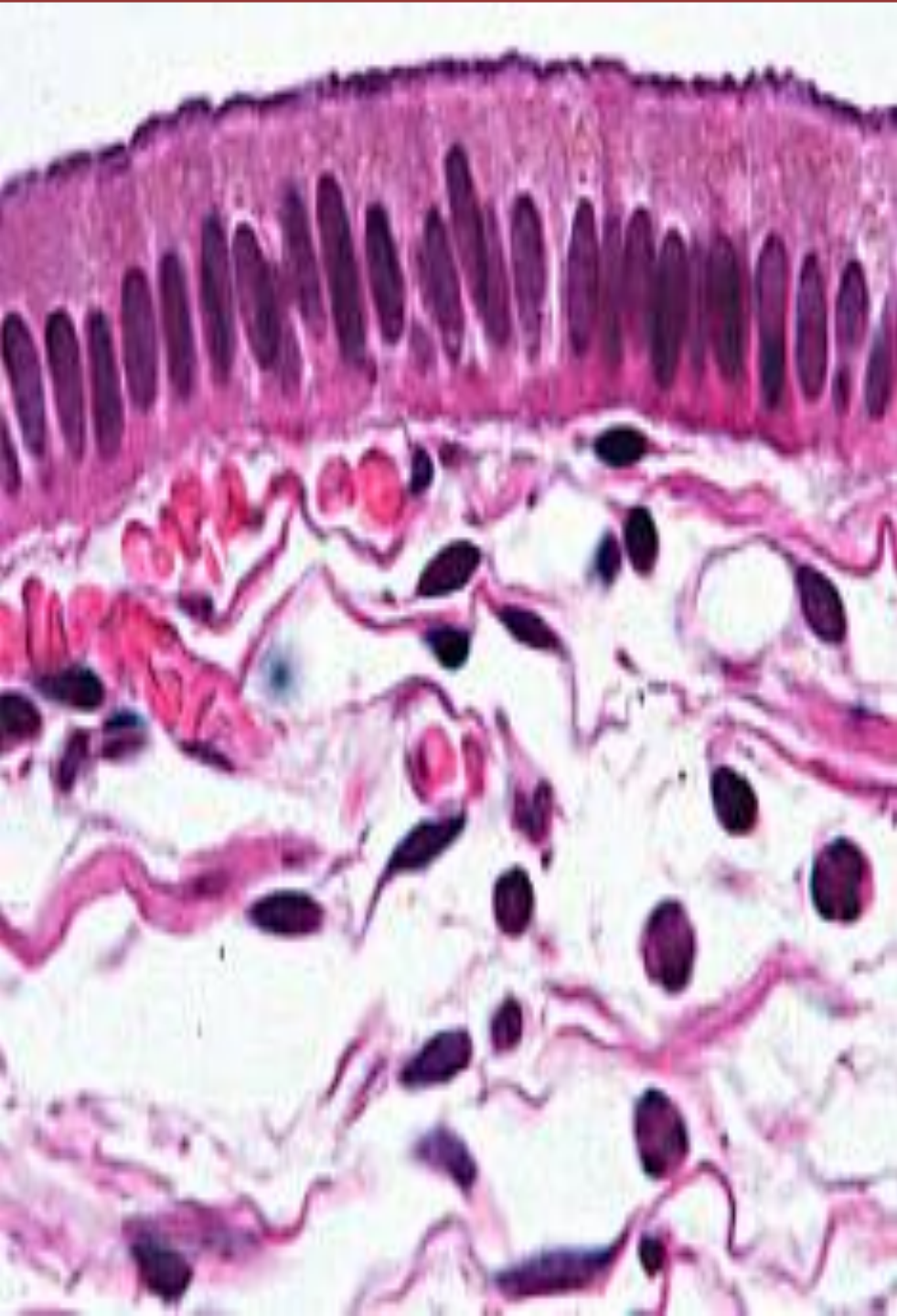


villus

crypts

submucosa

muscularis externa





4- Pseudostratified Ciliated Columnar Epithelium

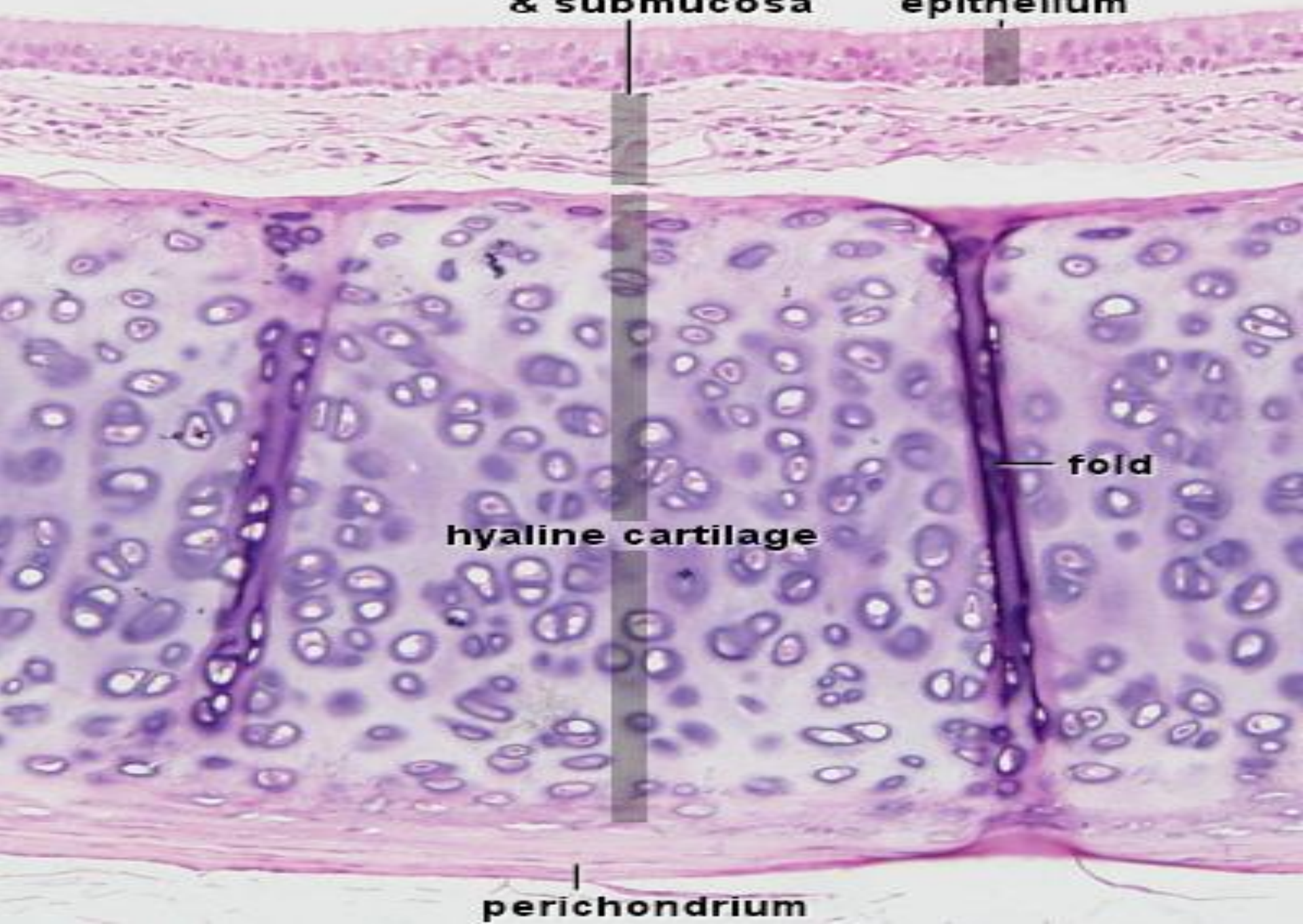
- the nuclei are at different levels, giving the false impression of several layers of cells. In fact all the cells touch the basement membrane but not all reach the surface.
- lining the upper respiratory tract (nose, nasopharynx, trachea, bronchi and bronchioles) and is sometimes called “respiratory epithelium.

Function : Because has cilia and goblet cells functions in secretion and movement

Trachea H&E

**lamina propria
& submucosa**

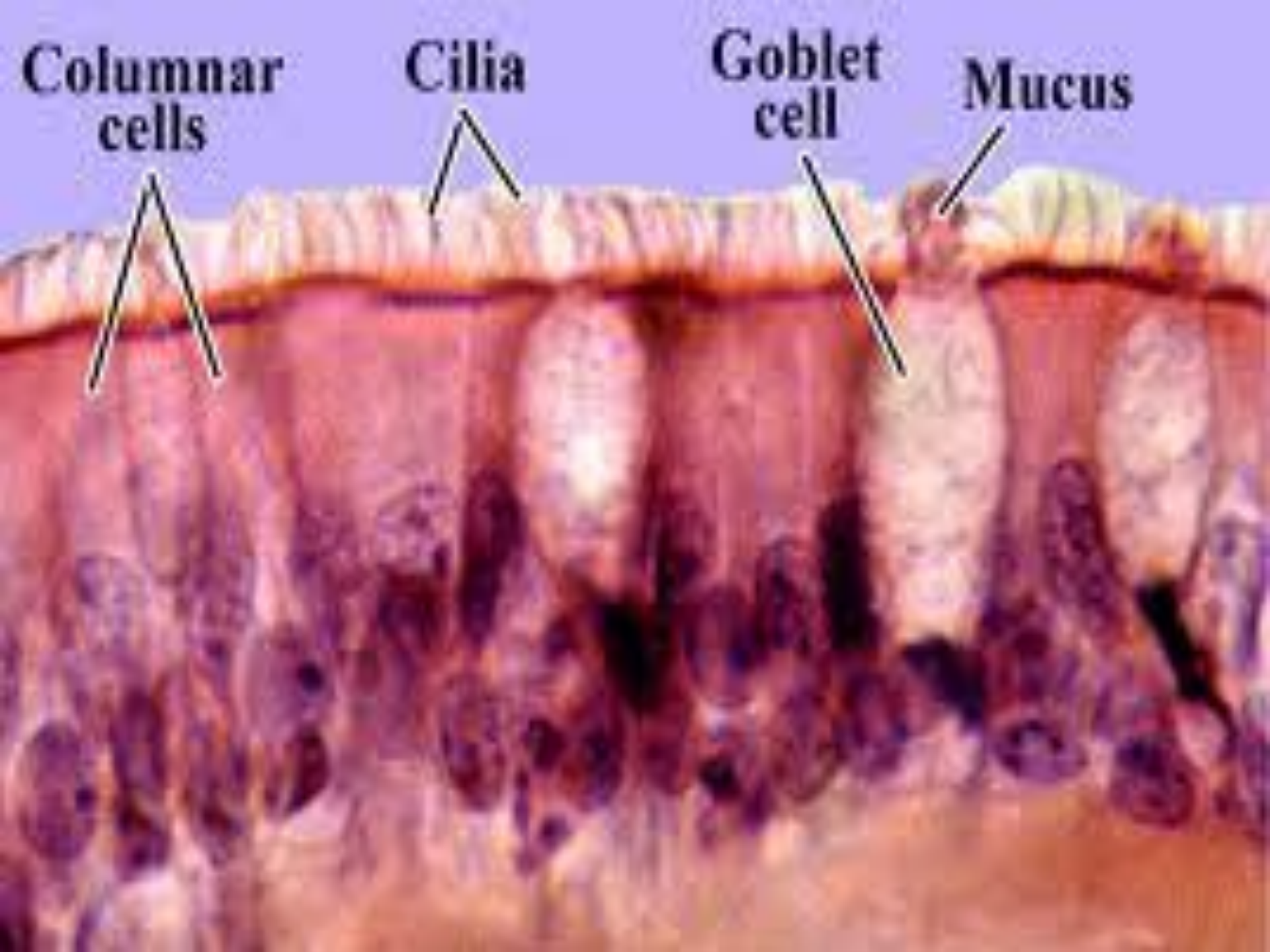
**respiratory
epithelium**



fold

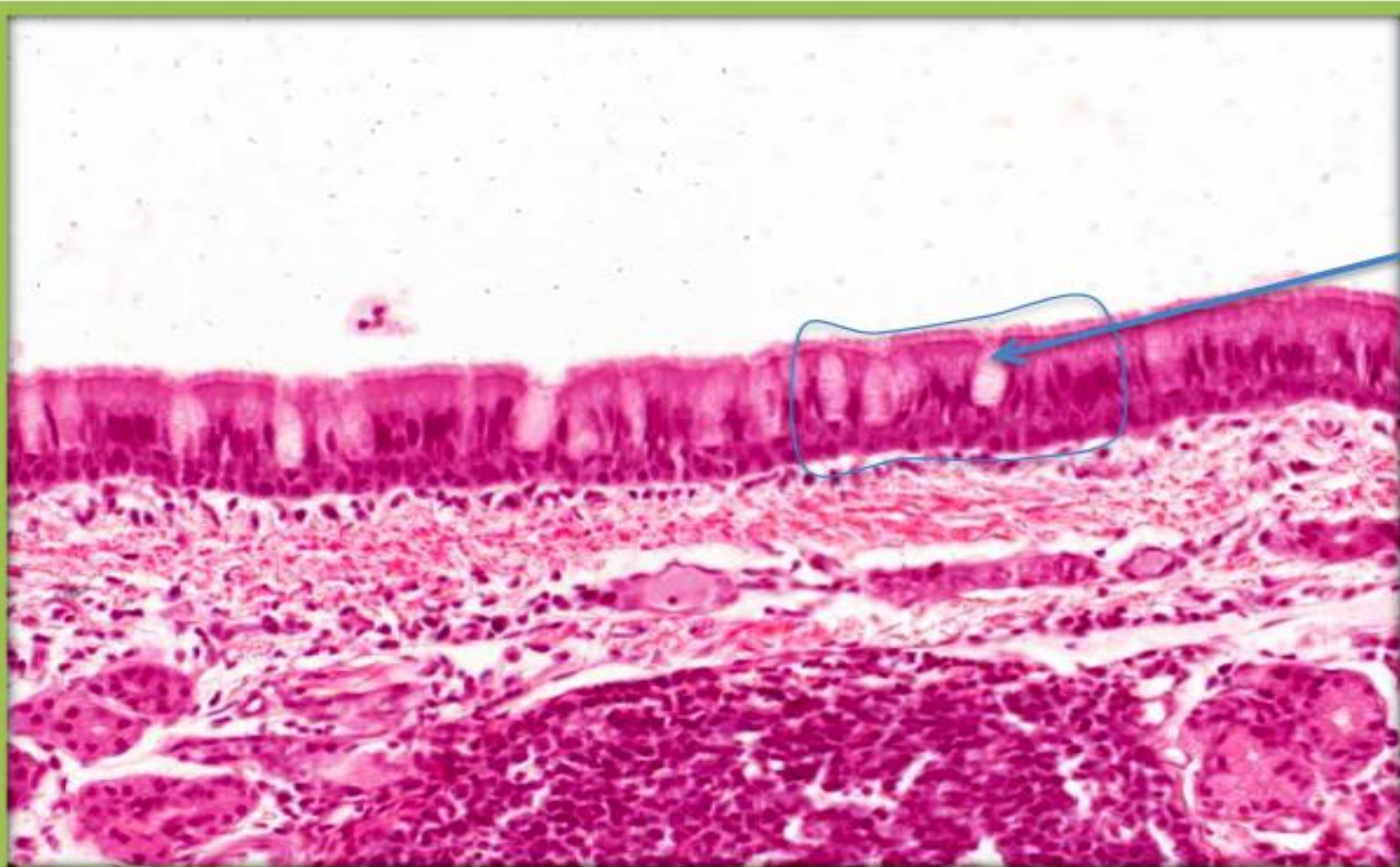
hyaline cartilage

perichondrium





pseudostratified Ciliated Columnar Epithelium with Goblet Cells



Goblet
cell

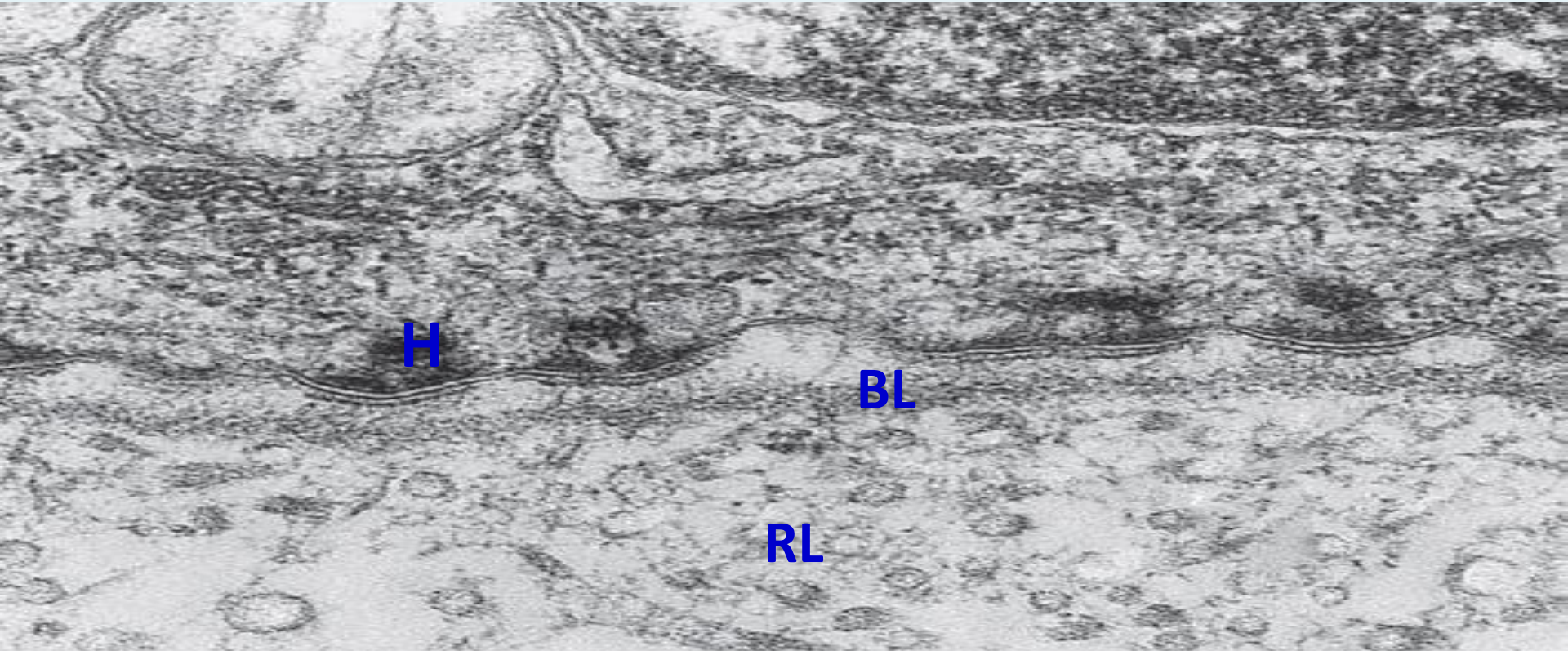


Basement Membrane

The external and internal surfaces of the body are lined by one or more layers of epithelial cells. These cells rest on a thin basement membrane which separates the epithelium from the underlying connective tissue. In histological sections stained with haematoxylin and eosin (H & E), the basement membrane is often difficult to discern, but it is readily shown by the periodic acid Schiff (PAS) reaction and by electron microscopy .



under the Transmission Electron Microscope (TEM) the basement membrane may be resolved into two structures. Nearest the epithelial basal poles is an electron-dense layer, 20-100 nm thick, consisting of a network of fine fibrils that comprise the basal lamina. Beneath this layer is often a more diffuse and fibrous reticular lamina.



The ultrastructural components of the basement membrane are revealed by TEM. The dense basal lamina (BL) may appear with thin clear zones on each side and is anchored to a thicker, more diffuse reticular lamina (RL) containing collagen III reticular fibers. Hemidesmosomes (H) bind the basal surface of the epithelial cell (C) to the basal lamina



Thank you

Dr. Nirran Kadhim AL-Rubaey 2018