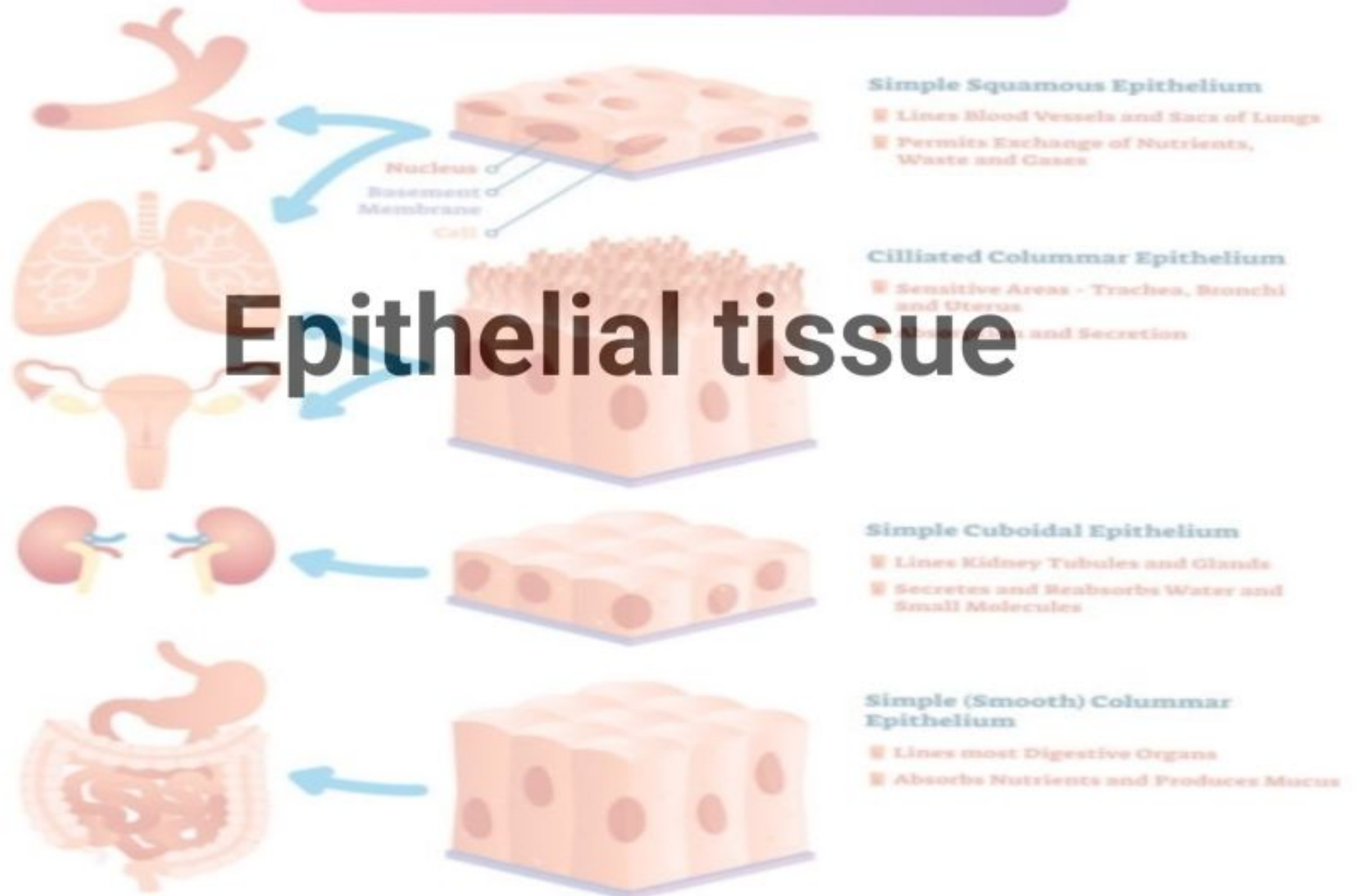


EPITHELIAL CELL



Epithelial tissue

epithelium tissue

characterized by:

تنشأ من جميع طبقات الخلية الجرثومية

1- Arise from all 3 germ layers .



2- It is called **epithelium**

3- It is called **mesothelium**

4- It is called **endothelium**



Covering the outer surface body



Lining the intrnal body cavity



Lining certain hollow organs

5- component cells rest on a basement membrane

الخلايا المكونه لها ترتكز علي غشاء قاعدي

- 6- **Matrix is scanty**
- 7- **The blood vessels and lymphatics are not seen between epithelial cells**
- 8- **Nutrients reach by diffusion from basement membrane**
- 9- **Have the ability of Regrenation**
- 10- **The nerve fibers can pass within epithelial cells**
- 11- **Epithelium cells can be modified to peform anthor function :**

```
graph TD; A[Epithelium cells can be modified to perform other functions] --> B[secretory]; A --> C[produce germ cells]; A --> D[receive the nervous stimuli]; B --> E[Glandular Epithelium]; C --> F[Germinal Epithelium]; D --> G[Neuro Epithelium];
```

secretory

Glandular
Epithelium

produce germ cells

Germinal
Epithelium

receive the nervous stimuli

Neuro
Epithelium

Function



Classification

according to structure



simple epithelium

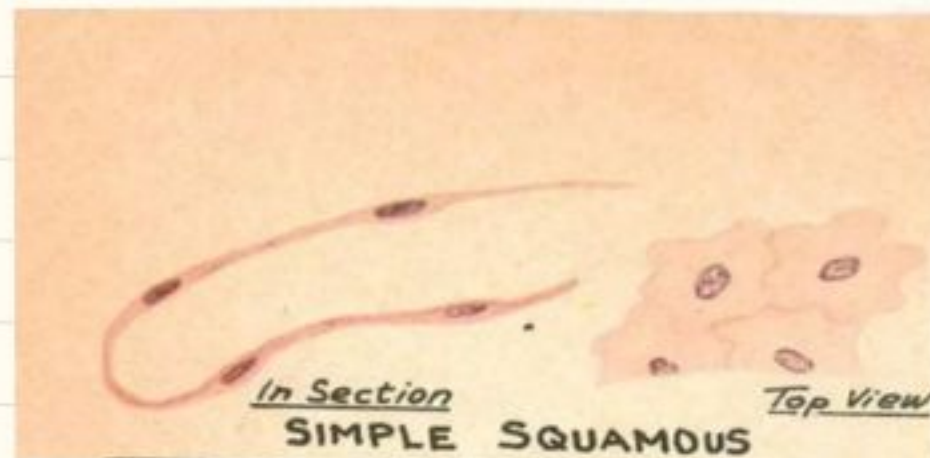
1-simple squamous epithelium one layer of cells

formation

- ★ Flattened nuclei
- ★ does not lie on a basement membrane

location

- ★ lining blood vessels
- ★ lining Bowman's capsules



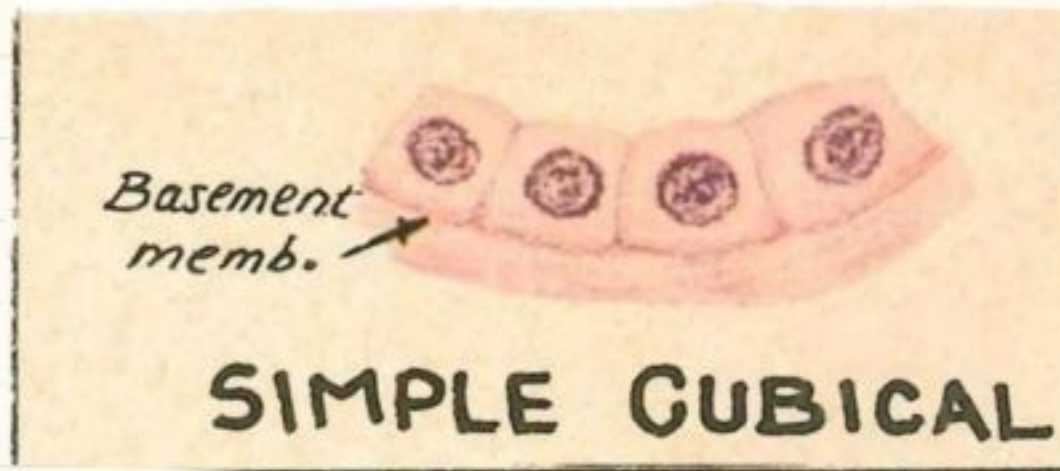
simple cuboidal epithelium one layer of cells

formation

- ★ cubical cell with rounded nuclei
- ★ lying on a basement membrane

location

- ★ in the kidney tubules
- ★ thyroid follicles of the thyroid gland



simple columnar epithelium one layer of cells

formation

location

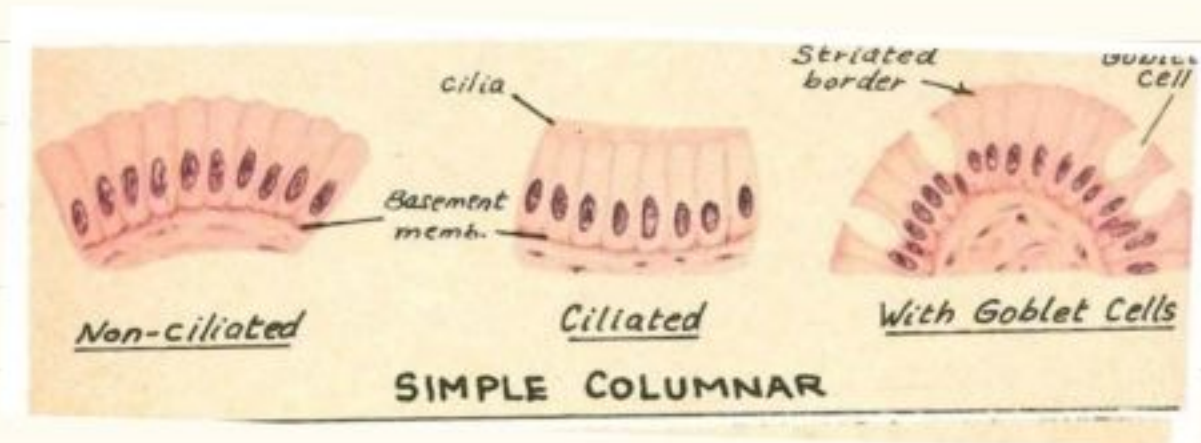
- ★ Tall cells with basal oval nuclei
- ★ lying on a basement membrane

- ★ lines the stomach → secretory
- ★ lines the small intestine → absorptive

ciliated simple columnar epithelium one layer of columnar cells carrying cilia on their free borders

location

- ★ bronchioles of the lung



pseudostratified epithelium one layer of cells but appear two layer

formation

it's formed of two kind of cells
tall cells reach the outer surface
of epithelium
short conical cells wedged
in between the tall cells

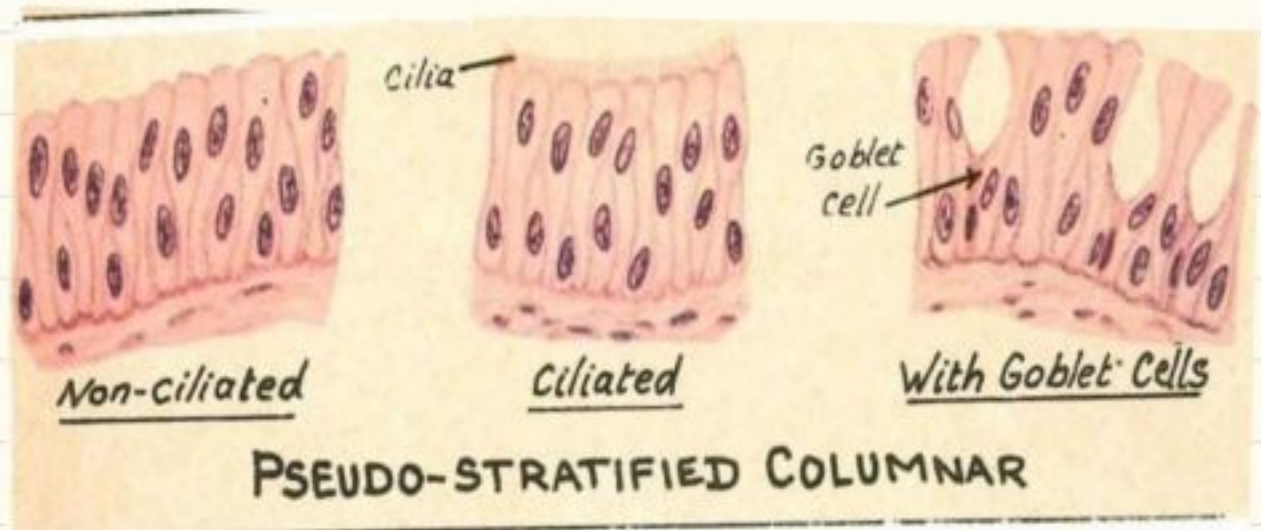
it appears two layers because
nuclei is at different levels

ciliated pseudostratified

it's pseudostratified but the
tall cells carry cilia on their
free surface

location

lines the ducts of parotid glands



found in

-trachea

stratified epithelial tissue

stratified squamous epithelium two types

non keratinized type

does not contain keratin

found in -mouth
-oesophagus
-tongue

formed of

lower layer is short columnar & cubical cells

Intermediate cells is polygonal cells

Outer layer is squamous layer

keratinized type

contain keratin

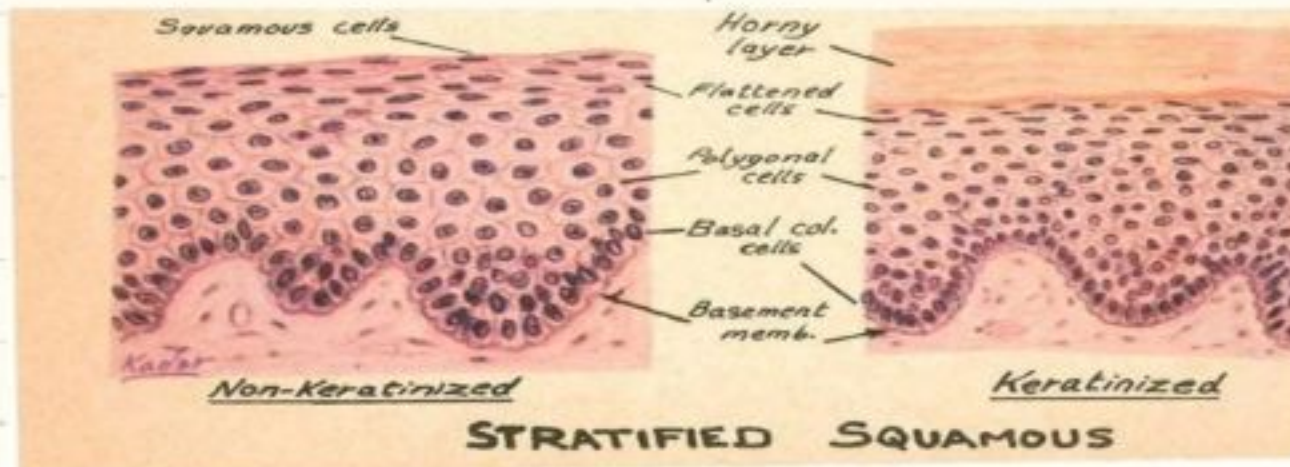
found in -epiderms of the skin

formed of

lower layer is short columnar & cubical cells

Intermediate cells is polygonal cells

Outer layer is Non-living horny layer(keratin)



stratified cuboidal epithelium

formed of

lower layer is cubical cells

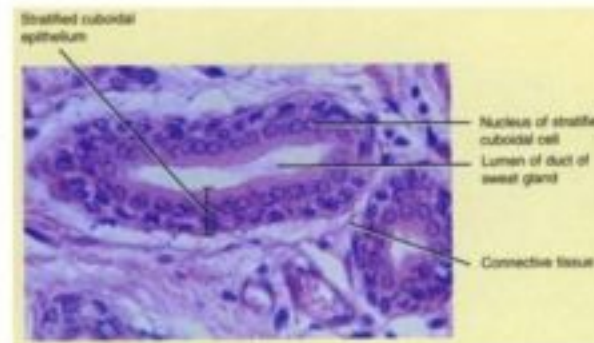
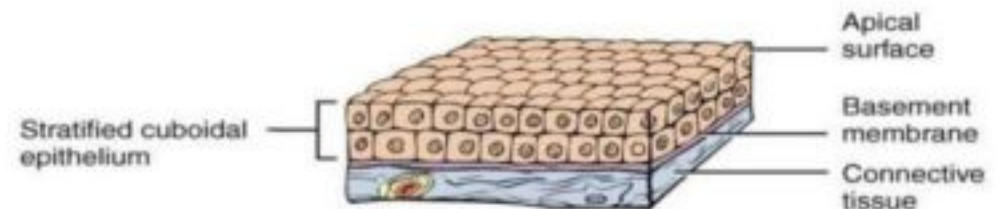
intermediate layer is polygonal cells

outer layer is cubical cells

found in

- lining ducts of sweat glands
- seminiferous tubules of the testis

Stratified Cuboidal Epithelium



- *Surface cells cuboidal
Lie in sweat gland ducts,
male urethra*

stratified columnar epithelium

formed of

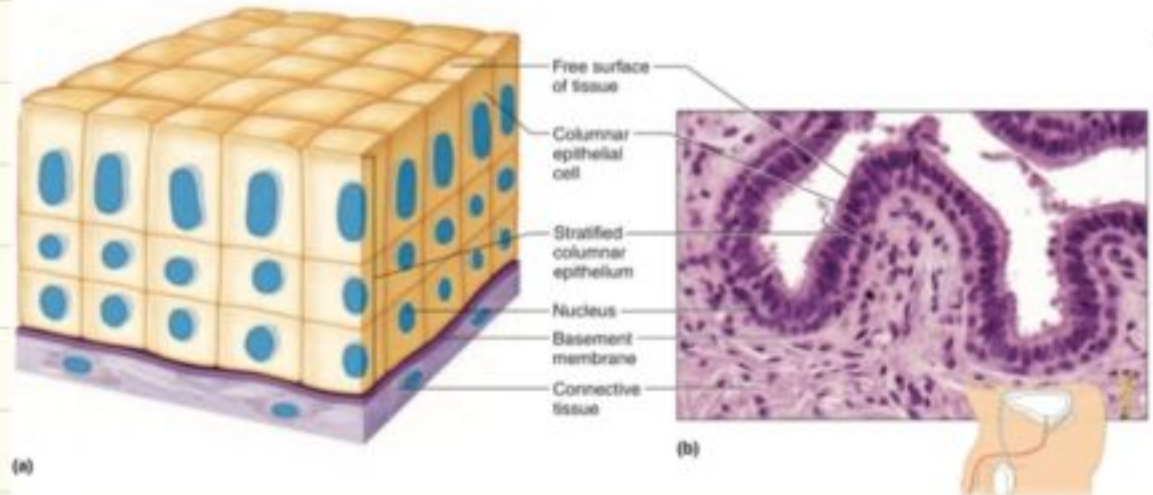
lower layer is columnar cells

intermediate layer is polygonal cells

outer layer is columnar cells

found in

-Lining the large ducts of a liver glands



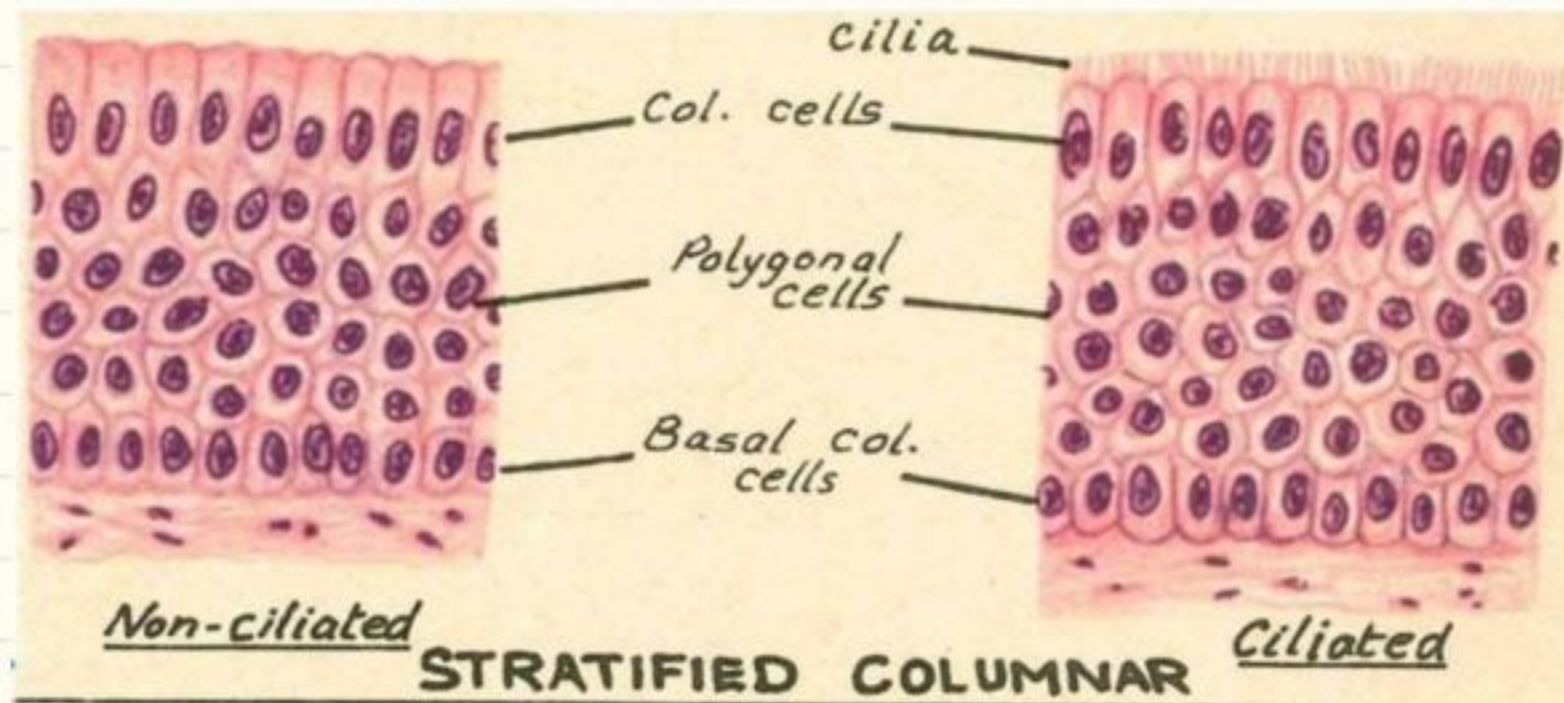
ciliated stratified columnar epithelium

it's stratified columnar epithelium but the outer layer carry cilia

found in

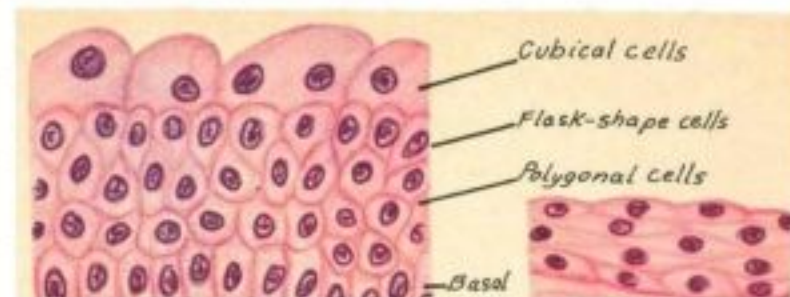
- Lining the larynx

بطانة الحنجرة



Transitional epithelium

formed of



lower layer is columnar cells~ rest on thin basement membrane

Intermediate layer is polygonal cells~ separated from each other by wide intercellular spaces .

-the cells of the layer is glide on each other

Because this epithelium is rich with mucoid matrix

يمكن الخلايا تنزلق فوق بعض لان النسيج غني بال Muroid matrix

outer layer is cubical cells~with a broad convex free border
& concave inner surface

لها سطح خارجي محدب و سطح داخلي مقعر

found in

-lines the urinary bladder

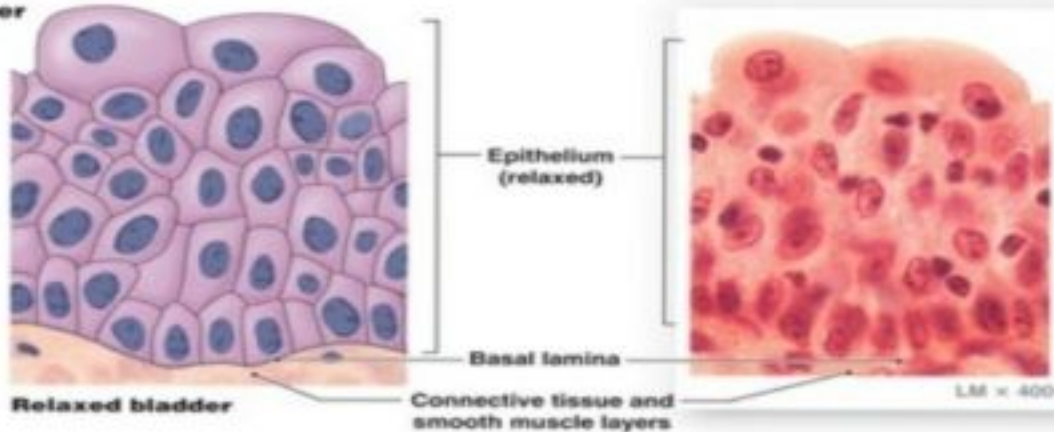
function

Allow the urinary bladder to expand
Prevent urine from leaking into the tissue

The transitional epithelium in an empty and a full urinary bladder

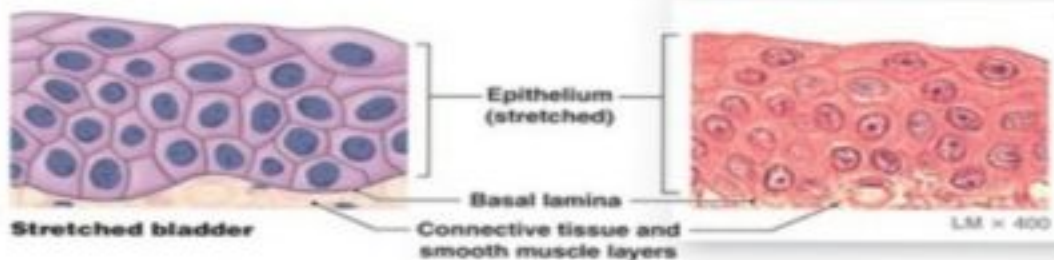
Epithelium in a Relaxed Bladder

In an empty urinary bladder, the superficial cells are cuboidal with a dome-shaped surface.



Epithelium in a Stretched Bladder

When the urinary bladder is full, the volume of urine has stretched the lining to such a degree that the epithelium appears flattened, and more like a stratified squamous epithelium.

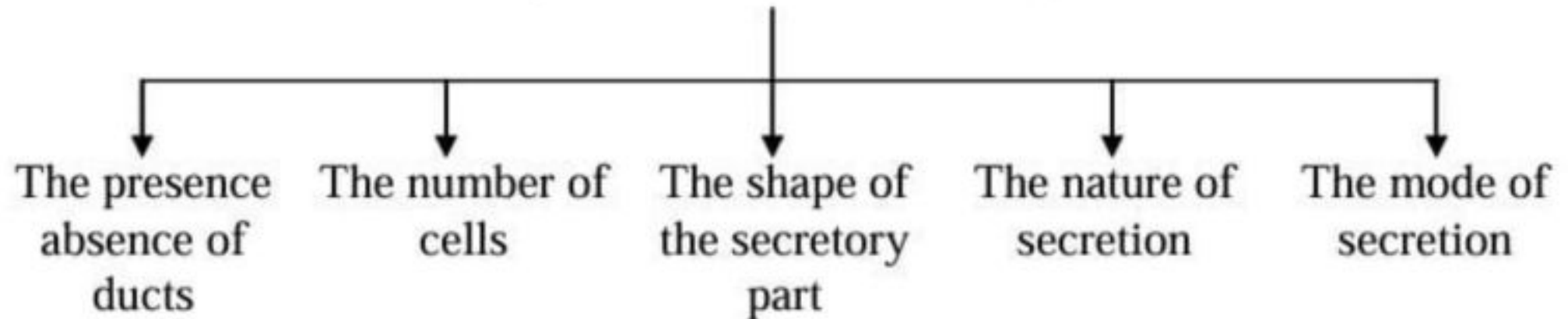


تسمح للمثانة البولية بالتمدد

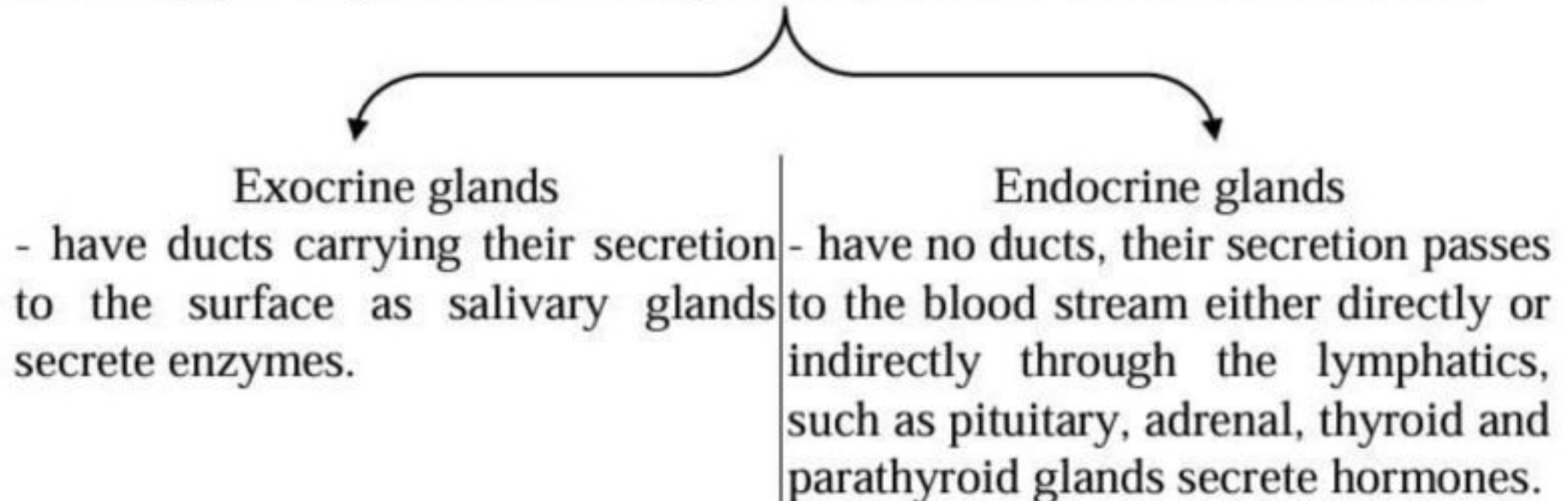
تمنع تسرب البول الى الانسجه

Classification of glands

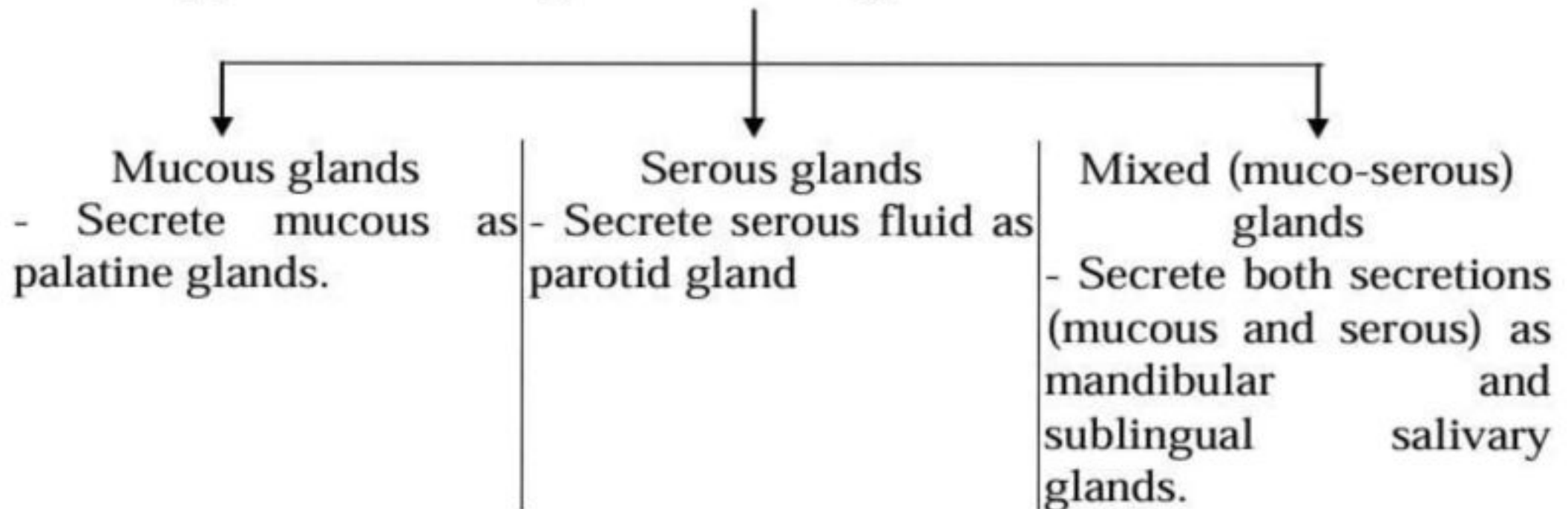
They are classified according to



1- The types of glands according to the presence or absence of ducts:



3- The types of exocrine gland according to the nature of secretion:



5- The types of exocrine gland according to the shape of secretory part:

