

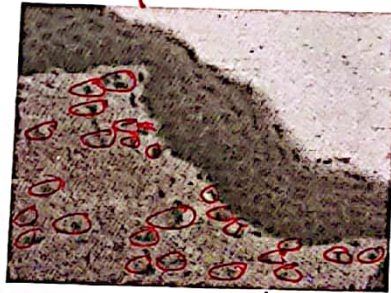
Epithelial Tissue

→ Epithelium is derived from all the 3 Embryonic layers.

□ Epithelium creates a selective barrier between the external environment and the underlying connective tissue

□ The cells predominate, they are closely apposed and adhere to one another by means of special junctions (Highly cellular)

□ Their basal surface is attached to an underlying basement



(Resting on basement membrane)

* لفتا كبير، يوحد نوعان من ECM
Basement membrane ①
Interstitial Fluid. ②

membrane (بينية)

Embryo تكوين

ovum + sperm

→ Zygote → morula

3 Embryonic layers: ectoderm, endoderm, mesoderm

* Structural (Related to structure)

General morphological signs of epithelial tissues

ال Blood vessels أووعية الدموي لا تدخل epithelium (أذن توفى يتعدى epithelium) من

underlying Connective Tissue
عن طريق Diffusion.

Epithelial tissues are widespread throughout the body. They form the covering of all body surfaces, line body cavities and hollow organs, and are the major tissue in glands.
تجويفات Esophagus, Digestive tract

1) Cells are closely packed together.

2) Intercellular substance is reduced to a minimum. [minimal intercellular space]

3) Cells rest on the basal lamina. [All Rest on basement membrane]

4) Polarity of epitheliocytes (in the epitheliocytes there are apical and basal poles).
called avascular

5) All epithelia don't have blood vessels. They derive their nutrition from the blood vessels of underlying connective tissue.

6) Availability of intercellular junctions. [Junction Complex]

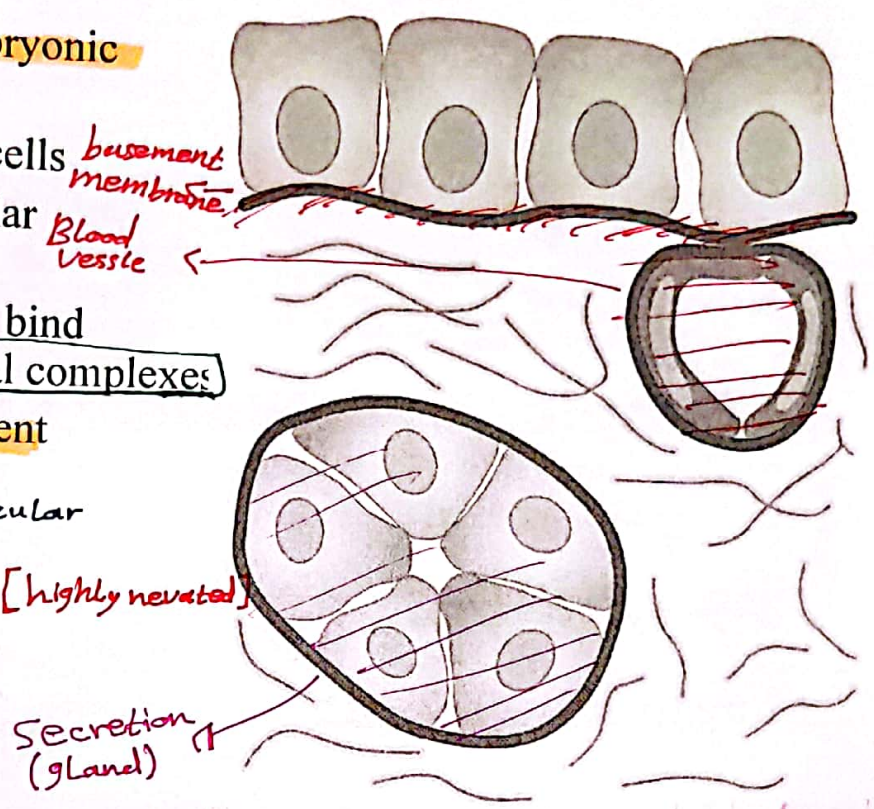
7) High ability to regeneration. Ex: Ulcer, trauma, injury

8) Derived from three embryonic layers

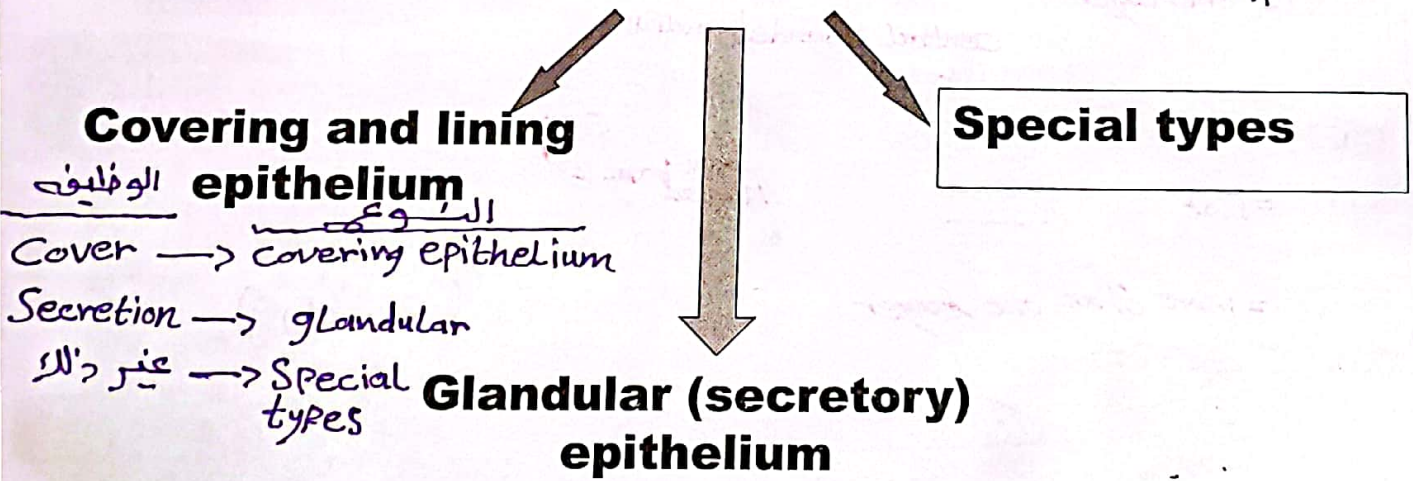
Ectoderm mesoderm Endoderm

General features of epithelium

- Derived from **3 embryonic layers**.
- Closely aggregated cells
- Very little intercellular substances
- Regular shaped cells bind together by **junctional complexes**
- Basal lamina (**basement membrane**)
- **Avascular** * NOT vascular
- Rich in nerve supply [**highly nevatel**]
- High **renewal rate**
regeneration



Classification of epithelium



- Epithelium covers body surfaces, lines body cavities, and constistutes glands, therefore it is subdivided into lining , glandular and special types

Classification of covering = lining epithelium

Number of layers

Shape of cells

Simple

One layer of cells

Stratified

More than one layer

➤ **Squamous**

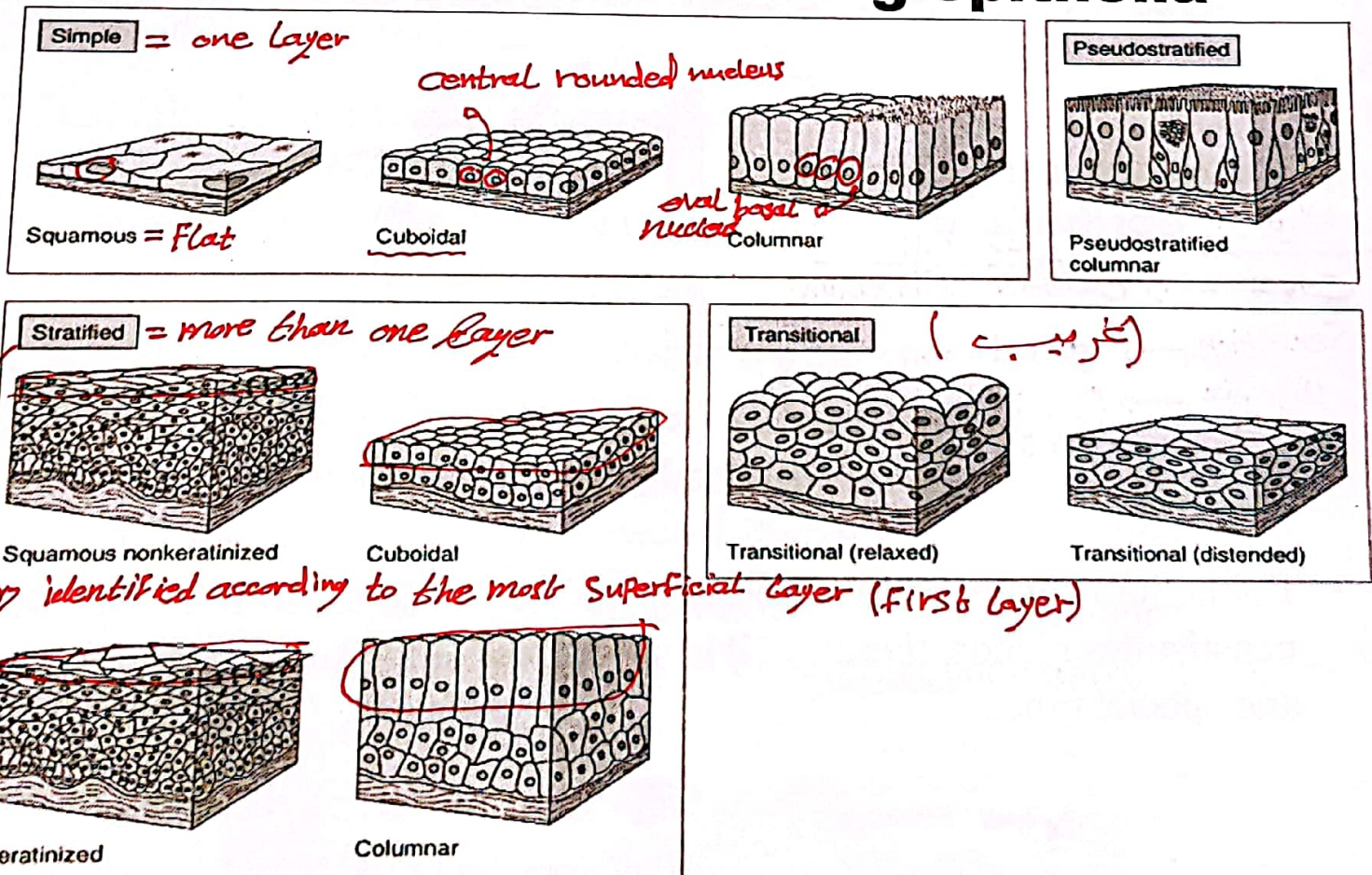
➤ **Cuboidal**

➤ **Columnar**

➤ **Pseudostratified**

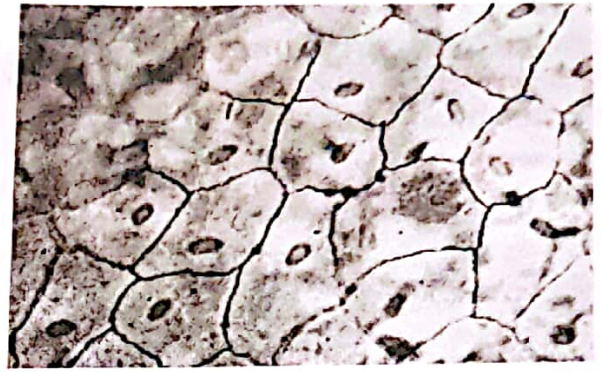
نحدد شكل الخلية مع المايكروسكوب عن طريق النواه (شكليا)

Classification of lining epithelia (covering)

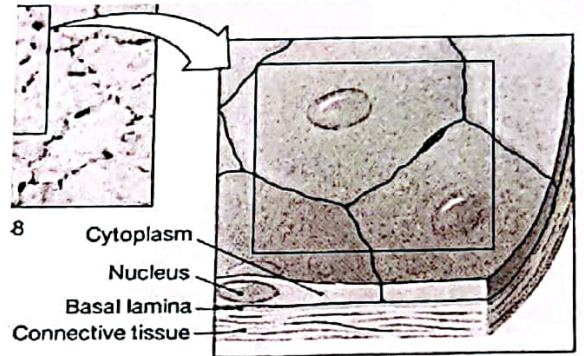


1- Simple Squamous Epithelium

LM: *very thin + smooth surface*



Simple squamous

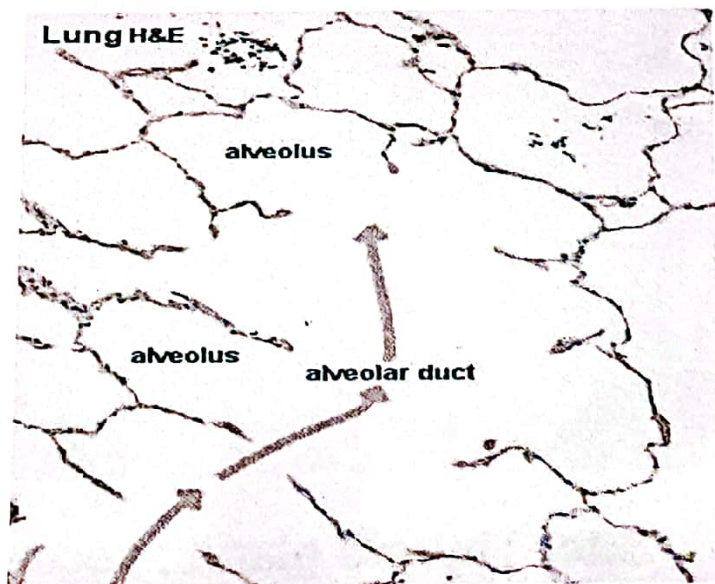
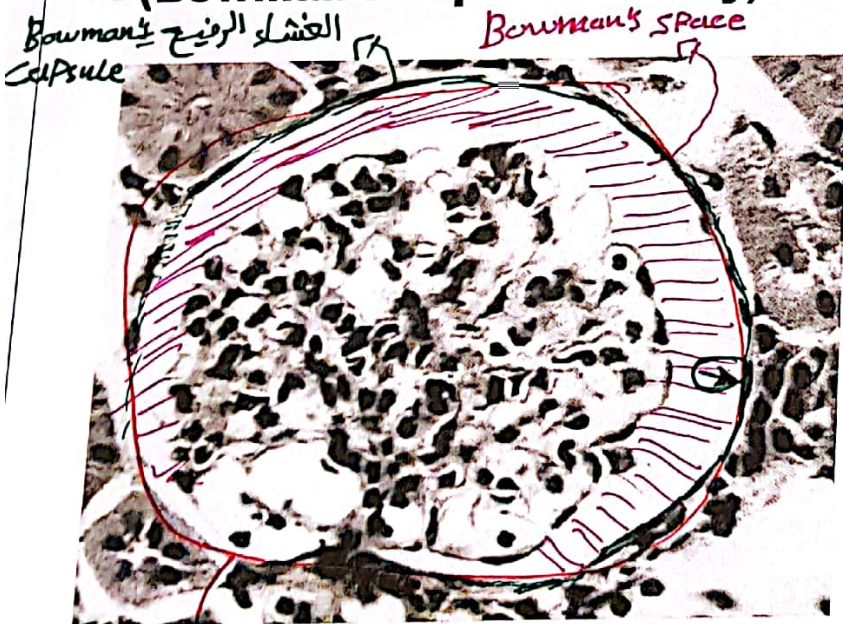


1- Simple Squamous Epithelium

is Found in :

① (Bowman's capsule- kidney)

② (Lung alveoli)

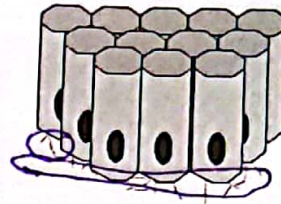
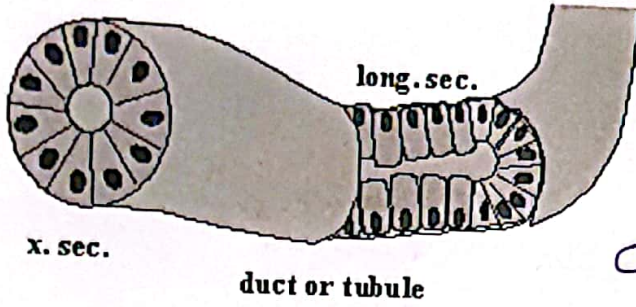


Function: Filtration of blood

Function: gas exchange

3- Simple Columnar Epithelium

نوعين



Ciliated = Cilia على نوع

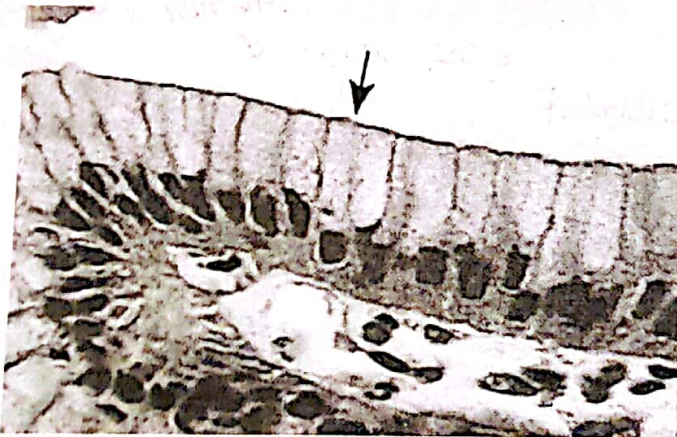
نوع بدون Cilia
Non-ciliated

Types:

- a) Non ciliated → cilia
- b) Ciliated

Simple columnar epithelium (non ciliated)

LM



Simple columnar



Sites: ducts of glands: secretion
digestive tract : absorption → It has microvilli NOT cilia!

gastrointestinal tract

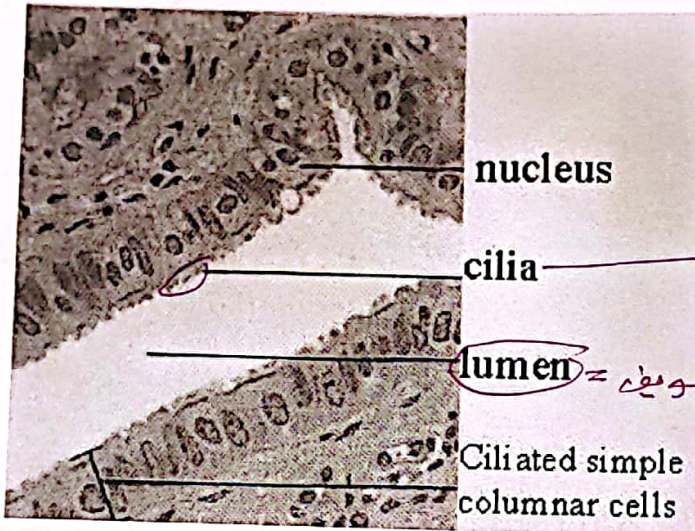
apical on the *
apix : apical ←

تعدية
bronchiole

respiratory tract

أكثر مكان فيه
ciliated epithelium

Simple columnar epithelium ciliated



Functions - Cleaning



Sites: uterus, oviduct & bronchiole of the lung
Fallopian tube (movement of luminal contents)

Nose (nasal cavity) + nasopharynx + Larynx + trachea = Pseudostratified columnar epithelium

respiratory epithelium

بدل هذا الإلح الطويل نقول

4- Pseudostratified columnar

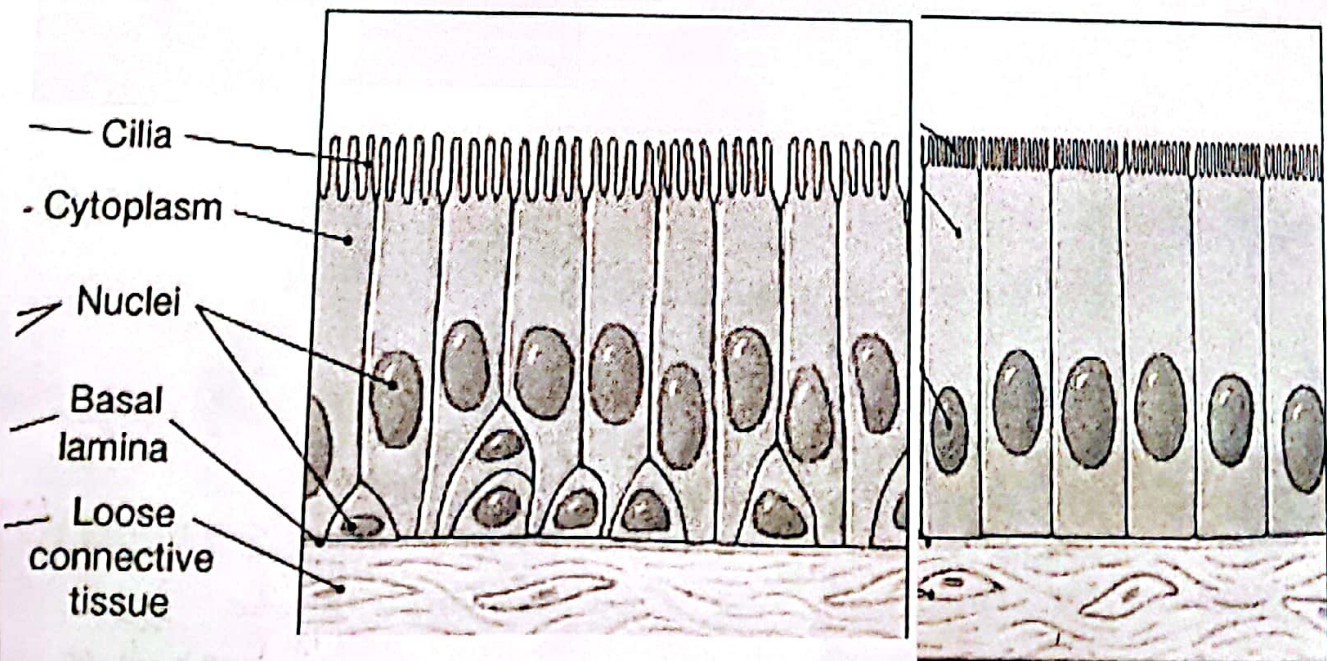
False

epithelium

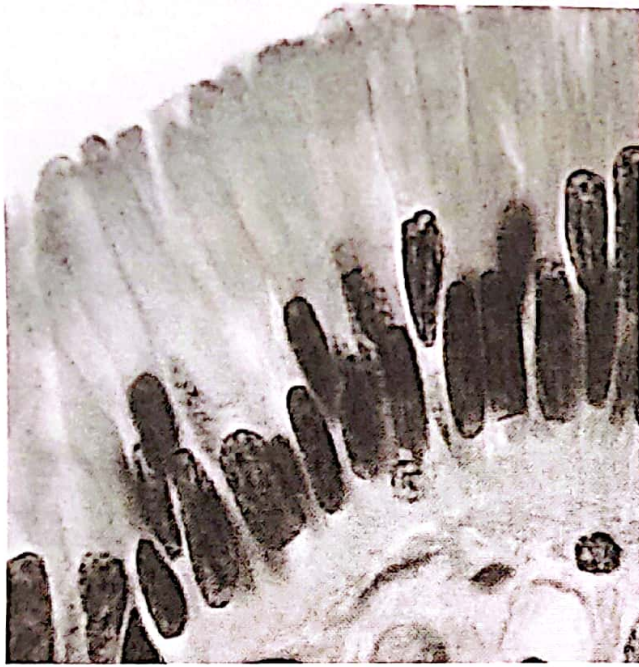
Confined for respiratory system

متواجد بكثرة

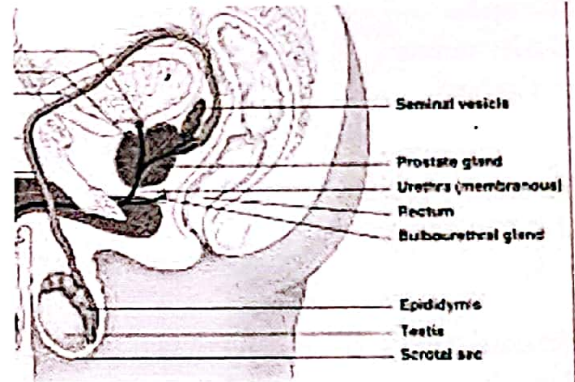
ciliated



Pseudostratified columnar epithelium non ciliated



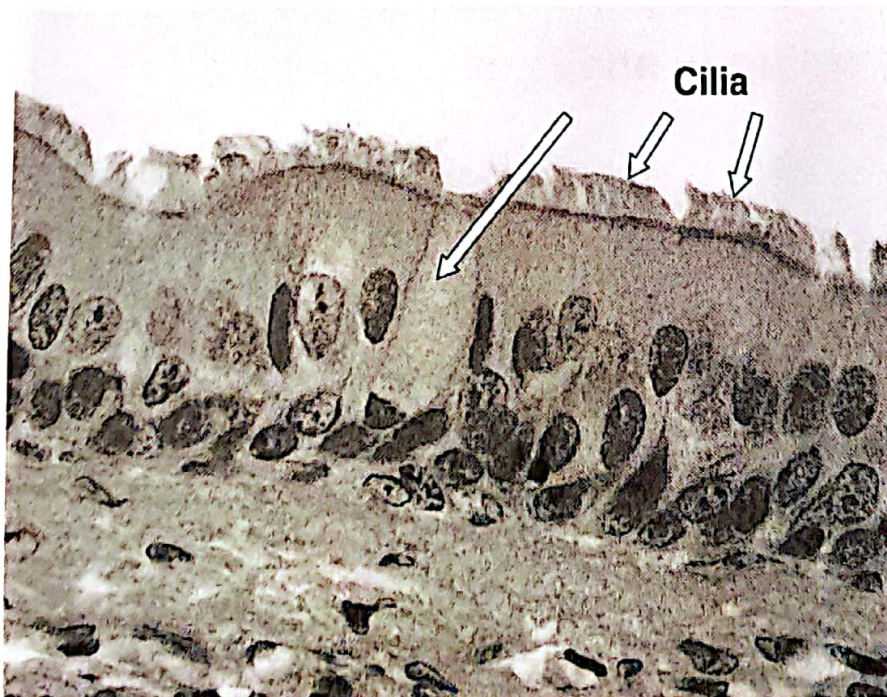
- Sites: Male genital tract – large ducts of glands: (secretion) *OF Sperm*



[ما أفنناها] Stereocilia (Sperm) ; non-ciliated ;
 microvili here is short and non motile.
 cilia → long and motile

Pseudostratified columnar epithelium ciliated

Sites: Nose- Trachea



Epithelium

• جدول تشخیص

| Type | Site | Function |
|---|---|--|
| Simple Squamous | <ul style="list-style-type: none"> • Bowman's capsule- kidney • Lung alveoli | Filteration |
| Simple cuboidal | <ul style="list-style-type: none"> ❖ Thyroid follicles ❖ Kidney tubules | <ul style="list-style-type: none"> ❖ Secretion ❖ Ions exchange |
| Simple Columnar non ciliated | <ul style="list-style-type: none"> ➤ Digestive tube ➤ Ducts of the glands | <ul style="list-style-type: none"> ➤ Absorption ➤ Secretion |
| Simple Columnar ciliated | <ul style="list-style-type: none"> ▪ uterus, oviduct ▪ bronchiole of the lung | ▪ Movement of luminal contents |
| Pseudostratified columnar ciliated | ✓ Nose- Trachea | Movement of luminal contents |
| Pseudostratified columnar non ciliated | <ul style="list-style-type: none"> ❑ Male genital tract ❑ large ducts of glands | Secretion |

2- Stratified Epithelium

What cell is on the top layer?

Classification according to shape of most superficial layer

Stratified sqamous epithelium

Stratified cuboidal epithelium

Stratified columnar epithelium

Transitional epithelium

