

Done by:

Histics Team 429

Special thanks:

احمد الدريهم

زياد الفرج

شهد الأشقر

مروة حسونة

سلطان الجريسي

محمد الحربي

شهد الرويشد

أروى المدني

نجود الهجن

PART TWO : EPITHELIAL TISSUE

EPITHELIAL TISSUE

1- Epithelial membranes (Epithelia).

2- Glands

General characteristics:

- 1- Have cells with little intercellular space.
- 2- are avascular.
- 3- Are separated from the underlying C.T. by the basement membrane.
- 4- Apical surface modifications:
 - a- Microvilli (brush border).
 - b- Cilia.
- 5- Are derived from ectoderm, endoderm or mesoderm.

Parameters for classification of epithelial membranes:-

(1) The shape of most superficial cells:

- a- squamous (flat)
- b- cuboidal
- c- columnar

2) The Number of cell layers:

- a- Simple
- b- stratified

Function of epithelial tissue:

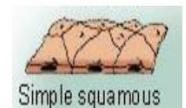
- a- Protection
- b- Absorption
- c- Secretion
- d- Excretion
- e- Transport
- f- Sensory reception

TYPES OF EPITHELIAL MEMBRANES:-

(A) Simple Epithelium:

1- Simple squamous epithelium:-

- Flattened polygonal cells with central flat nuclei.
- **Found in:** Pulmonary alveoli, loop of Henle (kidney), endothelium of blood vessels, pleura and peritoneal cavities.



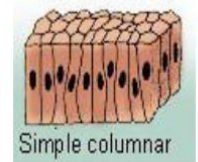
2- Simple cuboidal epithelium:-

- Cuboidal polygonal cells with central round nuclei.
- **Found in:** Ducts of many glands, covering of the ovary, follicular cells of thyroid follicles and some kidney tubules.



3- Simple columnar epithelium:

- Tall rectangular cells with oval nuclei usually at the basal half.
- **Found in:** Lining of stomach, gall bladder and large ducts of glands.
- Some have cilia, **e.g.** uterus, oviducts, small bronchi (lungs).
- Some exhibit goblet cells or microvilli, **e.g.** intestines.

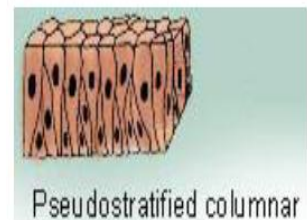


4- Pseudostratified columnar epith.:

- Single layered cells that appear to be stratified. Every cell touches the basal lamina but not all reach the surface. Nuclei are located at different layers

Commonly have cilia on the apical surface

- **Found in:** Male urethra, epididymis.
- Has goblet cells (that release mucus), **e.g.** respiratory tract epithelium.
- No goblet cells **e.g.** auditory tube and lacrimal sac.
 - a- with cilia b- without cilia



(B) stratified epith:-

- Stratified epithelium does not have goblet cells, cilia or microvilli.

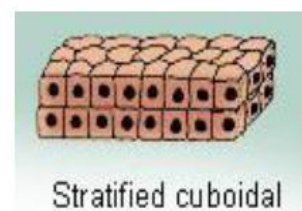
1- Str. Squamous epith:-

- Most basal layer rests on basal lamina and it consists of cuboidal cells
- The most superficial layer is formed of flat squamous cells.
- 1) Non-keratinized: Superficial layer not covered by keratin (dead tissue). **e.g.** lining of mouth, oral pharynx, esophagus, true vocal cords and vagina.
- 2) Keratinized: Superficial layer covered by keratin. **e.g.** epidermis of skin especially in soles and palms.
- Keratin is found only in stratified squamous epithelium.



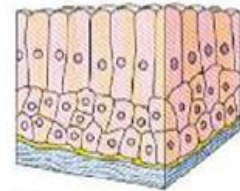
2- Str. Cuboidal epith.

- Two layers of cuboidal cells.
- **e.g.** ducts of sweat glands.



3- Str. Columnar Epith.

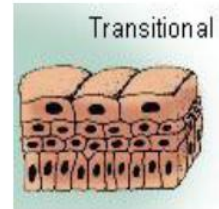
- Superficial layer composed of columnar cells.
- Basal cells are polyhedral to cuboidal.
- **e.g.** conjunctiva of the eye, large excretory ducts and regions of male urethra.



stratified columnar

4- Transitional epith.

- Many (3-6) layers of cells.
- Basal layer: Low columnar or cuboidal.
- Superficial layer: Large dome-shaped mononucleated or binucleated cells.
- **e.g.** urinary bladder.

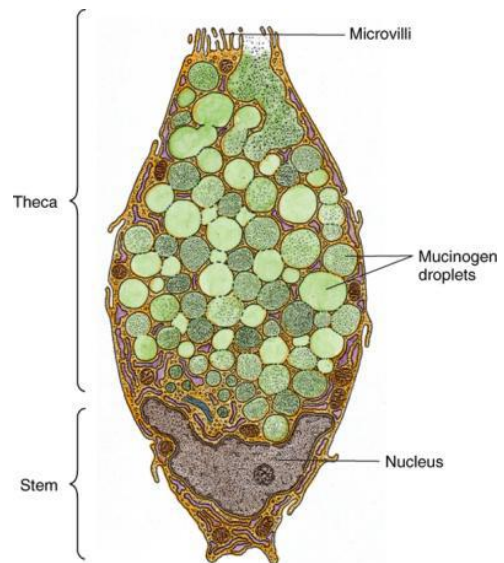


Transitional

Glands:-

Goblet Cells (Unicellular glands):

- Mucous glands that are dispersed individually in the epithelia lining the digestive tract and portions of the respiratory tract.
- Thin basal region lies on basal lamina. Apical portion, theca, faces the lumen of the tract.



© Elsevier, Gartner & Hiatt: Color Textbook of Histology 3E - www.studentconsult.com