Pseudostratified Epithelia

Pseudostratified columnar epithelium is composed of more than one type of cell with the cell nuclei at different levels in a perpendicular section thus giving the impression that the membrane is composed of more than one layer of cells. Some of the cells may not reach the lumen, although all are adjacent to the basal lamina. Such an epithelium lines the layer excretory ducts of many glands and parts of the male urethra.

This type of epithelium may be ciliated, usually in association with goblet cells, and is found lining the larger respiratory passages and some of the excretory ducts of the male reproductive system.

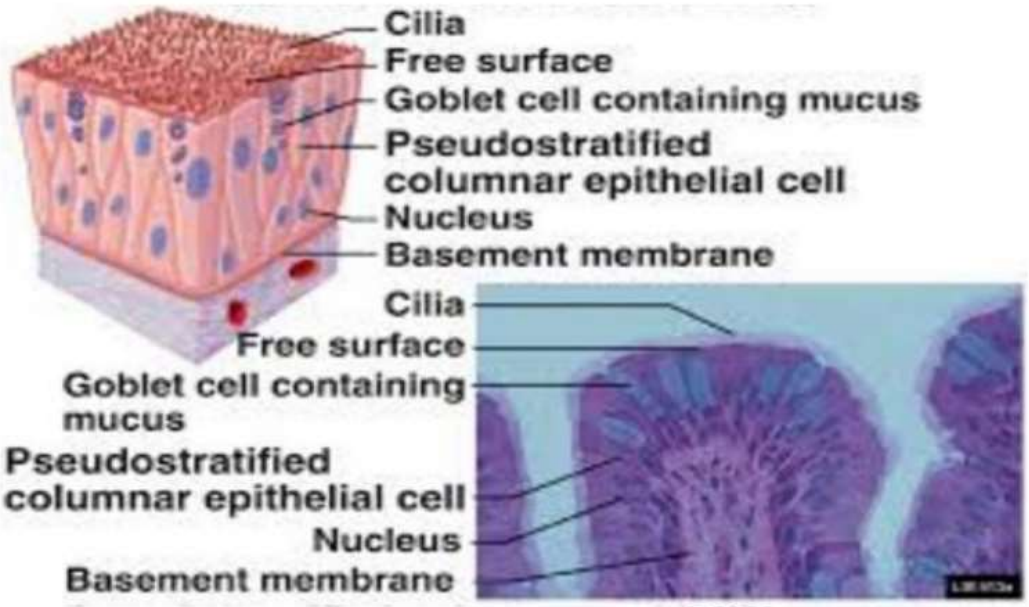


Figure 1-5: Pseudostratified epithelium.

Stratified epithelia

All stratified epithelia can withstand more trauma than the simple types and thus are located in sites where they are subjected to friction and shearing forces, but because of their thickness they are not membranes through which absorption can occur readily.

A- **Stratified squamous mucosal:** found in mouth, esophagus and vagina.

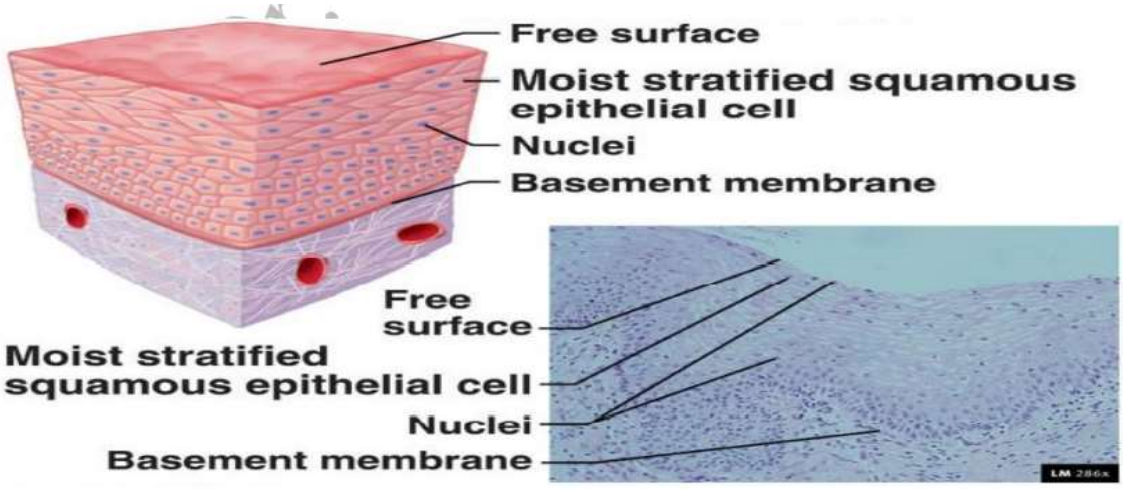


Figure 1-6: Stratified squamous.

B.**-Stratified squamous keratinized epithelium**: is found in the skin. Its cells form many layers; the cells closer to the underlying tissue are usually cuboidal or columnar. Toward the surface, the cells become irregular in shape and flatten progressively as they get closer to the surface, where they are thin and squamous. In the skin the surface is dry, and the surface cells undergo a transformation into a tough, resistant, nonliving layer of material called keratin.

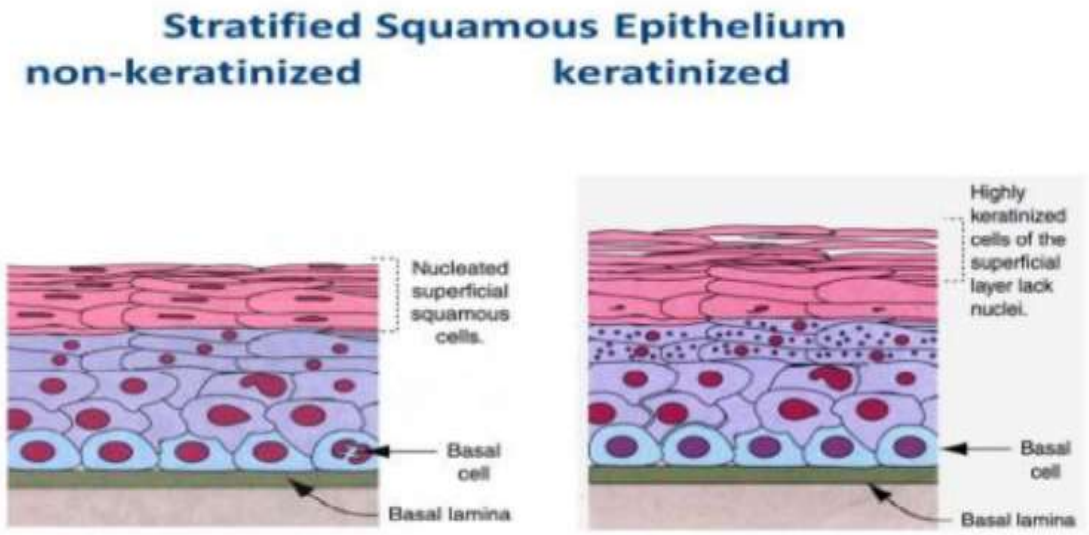
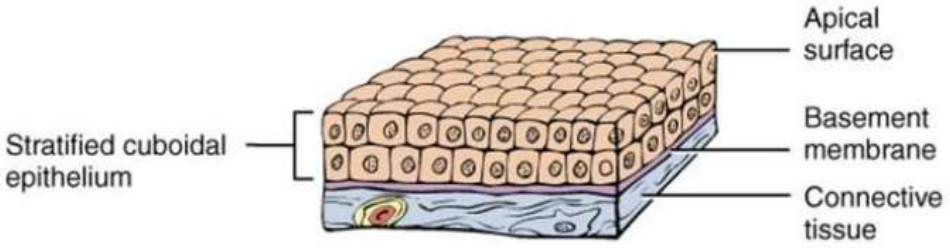
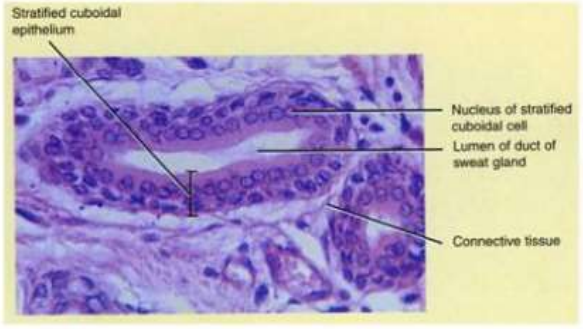


Figure 1-7: Stratified squamous keratinized and nonkeratinized epithelium.

C-Stratified cuboidal epithelium: is found only in the ducts of sweat glands in the adult and consists of two layers of cuboidal cells. As this type lines a tube , it is obvious that the cells of the superficial layer or layers are smaller seen in cross section then those of the basal layer.





- Multilayered
- Surface cells cuboidal
  - rare (only found in sweat gland ducts & male urethra)

Figure 1-8: Stratified cuboidal epithelium.

D- Stratified columnar epithelium: is relatively rare. Usually the basal layer or layers consist of relative low, irregularly polyhedral cells, and only the cells of the superficial layer are of the tall columnar type. Such an epithelium lines part of the male urethra and is found in some large excretory ducts and in the conjunctiva.

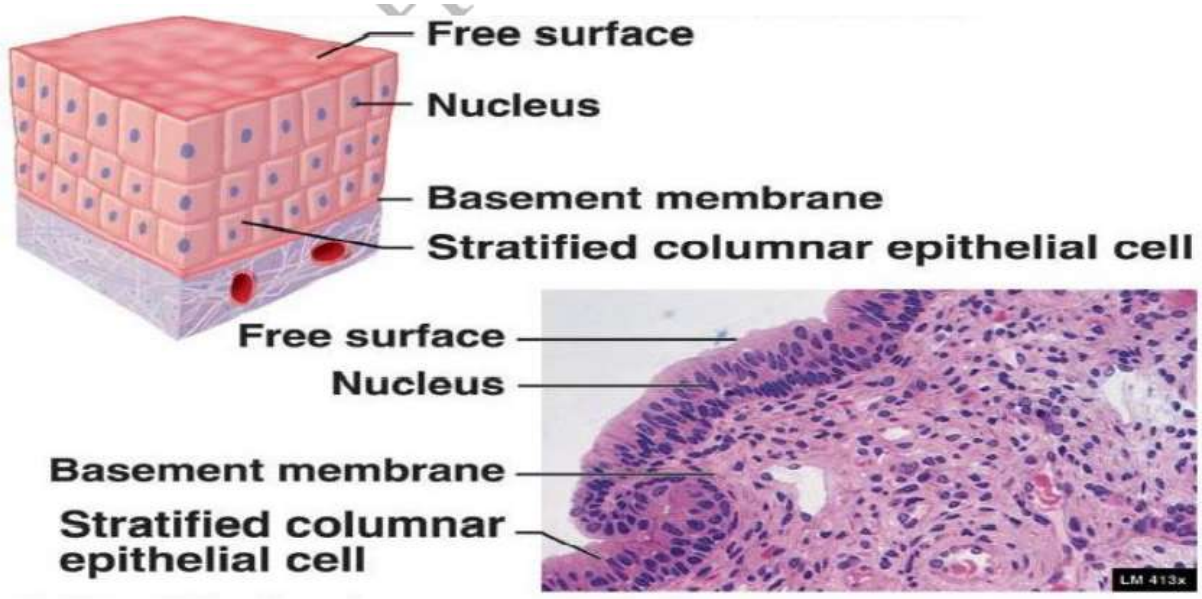


Figure 1-9: Stratified columnar epithelium.

E- Transitional epithelium: is so termed because originally it was believed to represent a transition between the stratified squamous non keratinized and stratified columnar types. It is found lining the urinary bladder, the ureter, and the upper part of the urethra. It is subject to considerable variations in internal pressure and capacity.

Hence, its appearance varies with the degree of distention. The basal layer is cuboidal or even columnar in type, the intermediate levels are cuboidal and polyhedral, and the superficial layers vary from cuboidal to squamous, depending upon the degree of distention. These cells are often binucleated .

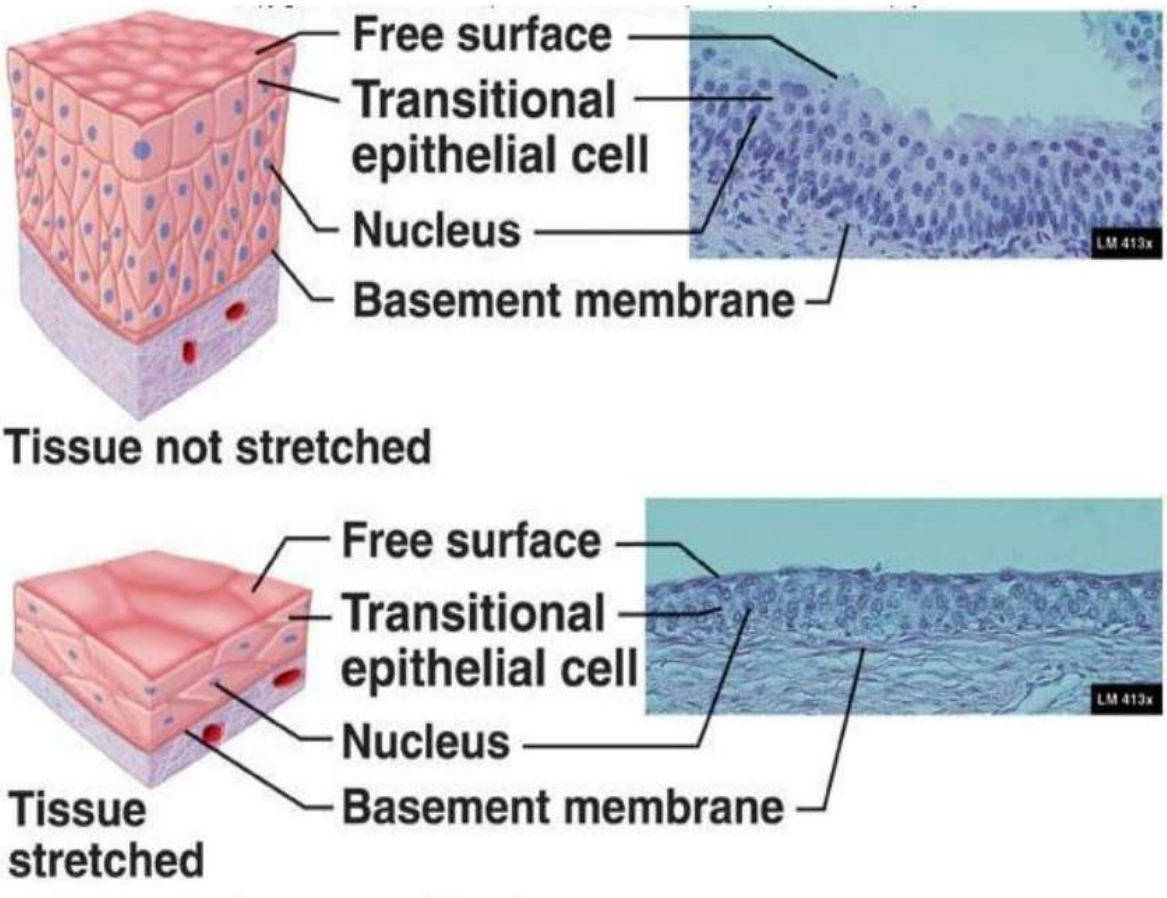


Figure 1-10: Transitional epithelium in two conditions.