

Epithelial tissue:

Is present in two forms

1-as sheet that cover the body on it's external and internal surface

2-as glands , which orginate from invaginated epithelial cells.

Epithelial tissues have numerous functions

1-Protection: of underlying tissue of the body from abrasiol and injury.

2-Trans cellular transport: of molecules across epithelial layers.

3-Secretion: of mucus , hormones , enzymes and so forth from various glands.

4-Absorption: of material from a lumen.

5-Control movement: of material , between body compartment via selective permeability.

6-Detection: of sensations via taste buds , retina and the eye.

Classification of epithelial Membranes:

The epithelial tissue are classified accourding to:

1-numerous of cell layers between the basal lamina. Free surface

2-morphology of the epithelial cells.

If the membrane is composed of single layer of cells , it is called simple epithelium if it is composed of more than one cell layer , it is called stratified epithelium.

The morphology of cells may be squamous(flat) , cuboidal or columnar.

Stratified epithelia are classified by the morphology of the cells in their superficial layer only.

In addition to these two major classes of epithelial , which are further identified by cellular morphology , there are two othedistinct types:

1-pseudo stratified

2-Transitional.

1-simple squamous epithelium:

Composed of a single layer of tightly packed, thin or low profile polygonal cells, when viewed from the surface, the epithelial sheet looks much like a tile floor with a centrally placed bulging nucleus in each cell.

Simple squamous epithelial line pulmonary alveoli, compose the loop of henle and the parietal layer of Bowman's capsul in the kidney and blood and lymph vessels.

2-Simple cuboidal epithelium:

A single layer of polygon-shaped cells constitutes simple cuboidal epithelium the cells present a square profile with a centrally placed round nucleus. Simple cuboidal epithelium make up the ducts of many glands of the body, from the covering of the overy and compose some kidney tubules.

3-Simple columnar epithelium:

Is composed of a single layer of tall cells shaped like hexagonal solids in the longitudinal section. nuclei are ovoil and located in the based half of cells. Simple columnar epithelial is found in the lining of much of the digestine tract, gallbladar and large duct and glands it's function of protection, absorption and material.

4-Stratified squamous (Nonkeratinized) epithelium.

Is thick, because it is composed of several layers of cells, only the deepest layer is in contact with the basal lamina.

The most basal (deepest) cells of this epithelium are cuboidal in shape, these located in the middle of the epithelium are polymorphous, and the cells composing the free surface of the epithelium are flattened (squamous).

It is usually wet and is found lining the mouth, oral pharynx, esophagous.

5-Stratified squamous (keratinized) epithelium:

Is similar to stratified squamous Non-keratinized epithelium except that the superficial layers of the epithelium are composed of dead cells whose nuclei and cytoplasm have been replaced with keratin this epithelium constitutes the epidermis of skin, a tough layer that resists friction and is impermeable to water.

6-Stratified cuboidal epithelium:

Which contains only two layers of cuboidal cells, lines the duct of sweet gland.

7-Stratified columnar epithelium:

It compose of a low polyhedral to cuboidal deeper layer in contact with the basal lamina and a superficial layer of columnar cells. This epithelium is found only in few places in the body, Namely, conjunctive of the eye, and regions of the male urethra.

8-Transitional epithelium:

It's name because it was arroneously believed to be in transiti between stratified columnar and stratified squamous epithelium.

This epithelium is now known to be a distinct type located exclusively in the urinary system, where it lines the urinary tract from the renal calyces to the urethra.

Transitional epithelium is composed of many layers of cells, those located basally are rather low columnar or cuboidal cells, polyhedral cells composed several layers above the basal cells. The most superficial cells of the empty bladder are large, are accasionally binucleated, and exhibit rounded dome tops that bulge into lumen. Theses dome-shaped cells become flattene and the epithelium become thinner when the bladder is distendea.)

9-pseudo stratified columnar epithelium:

Pseudostratified columnar epithelium appears to be stratified but it is actually composed of a single layer of cells. All cells in pseudostratified columnar epithelium are in contact with the basal lamina but only some cells reach the surface of epithelium. It is found in the male urethra, epididymis and larger excretory ducts of glands. Function have absorption, transt and secretion.

Cell-surface specialization:

1-Microvilli:

Microvilli are small finger-like cytoplasmic projection emanating from surface of cells into the lumen. Have functions such as absorption and enzymes for splitting disacharakides. It is found in epididymis and proximal tubulers in kidney

2-Glycocaly x:

A carbohydrate rich surface coat is present in all of cells which contain the microvilli. It sevveas protection layer by allowing only to dissolved substance to pentrat between microvilli.

3-Cilia:

It is motile, hair-like structure emanating from apical male and female reproductive system.

Theses structures act as protection in respartory system and as movement tho ova and spermatozoa in reproductive system.