A tissue is a group of connected cells that have a similar function within an organism.

The organs in your body are composed of four basic types of tissue, including:

- **Epithelial tissue.**
- **Connective tissue.**
- **Muscular tissue.**
- **Nervous tissue.**

Epithelial

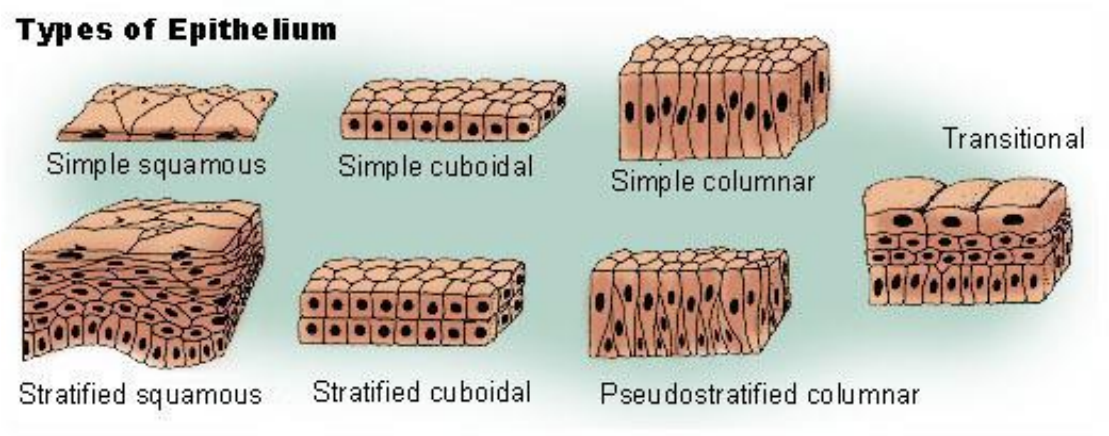
Epithelial tissue is made of closely –packed cells arranged in flat sheets single or multiple layers. Cell junctions ,Basement membrane ,thin continuous supporting layer ,basal lamina epithelioid tissues.

Types of epithelial tissue

The epithelial tissue is classified according to number of layers and the shape of the outermost layer

Number of cell layers

1-Simple epithelium – single layer of cells
2-Stratified epithelium – several layers of cells
3-Pseudostratified epithelium – single layer of cells of variable size and shape, with nuclei at a different layer.
4-Transitional epithelium.



Shape of cells

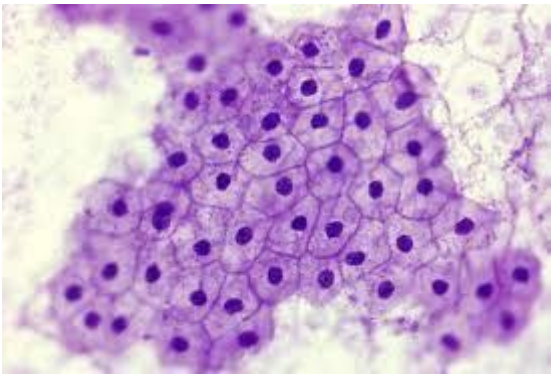
1-Squamous – the width of the cell is greater than its height
2-Cuboidal – the width, depth, and height are approximately the same
3-Columnar – the height of the cell exceeds the width

Simple Squamous epithelium

Simple squamous epithelium cells are flat in shape and arranged in a single layer.

This single layer is thin enough to form a membrane that compounds can move through via passive diffusion.

This epithelial type is found in the walls of capillaries, linings of the pericardium, and the linings of the alveoli of the lungs.

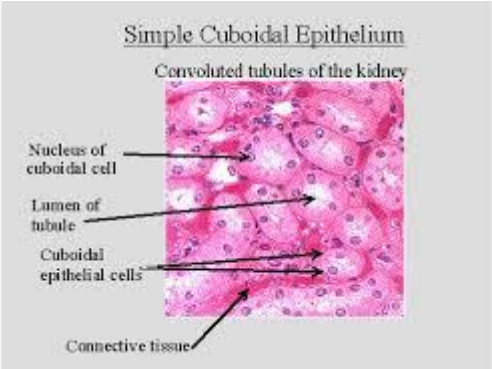


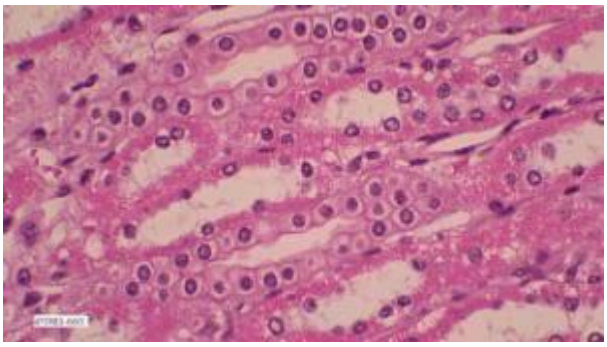
Simple Cuboidal epithelium

Simple cuboidal epithelium consists of a single layer cells that are as tall as they are wide.

The important functions of the simple cuboidal epithelium are secretion and absorption.

This epithelial type is found in the small collecting ducts of the kidneys, pancreas, and salivary glands.

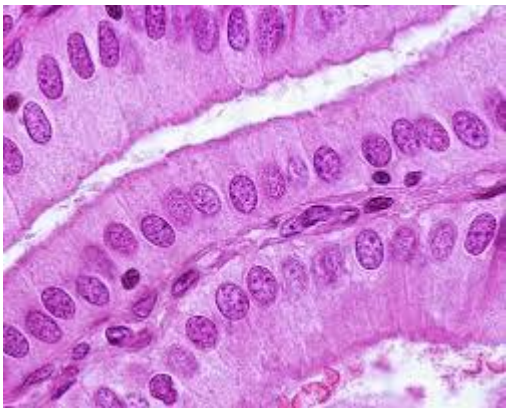




Simple Columnarepithelium

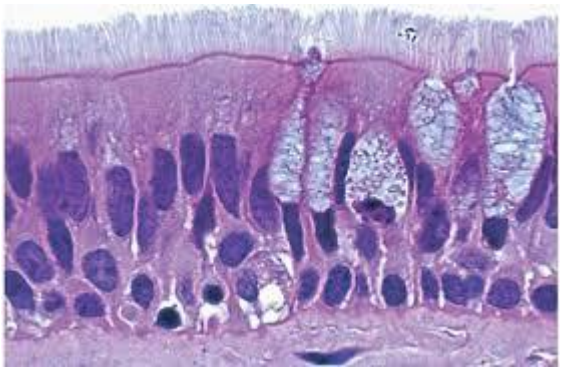
Simple columnar epithelium is a single row of tall, closely packed cells, aligned in a row.

These cells are found in areas with high secretory function (such as the wall of the stomach), or absorptive areas (as in small intestine).

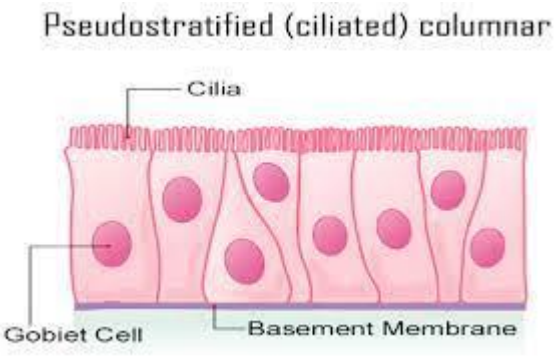


Pseudostratified

These are simple columnar epithelial cells whose nuclei appear at different heights, giving the misleading that the epithelium is stratified .



Ciliated epithelium is found in the airways (nose, bronchi).



Compound or Stratified Epithelia

Contain two or more layers of cells ,regenerate from below Major role is protection ,are named according to the shape of cells at typical layer.

1. Stratified squamous epithelium
2. Stratified cuboidal epithelium
3. Stratified columnar epithelium
4. Transitional epithelium

1. Stratified squamous epithelium

Stratified squamous epithelium consists of multiple layers, with squamous cells at the apical surface. Deeper layers of

cells appear cuboidal or columnar Thickest epithelial tissue – adapted for protection.

Stratified Squamous epithelium are of 2 types

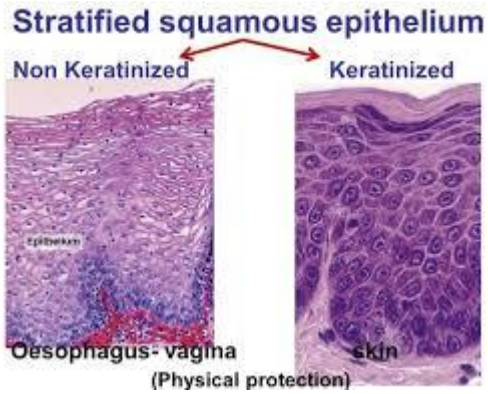
1-Keratinized Stratified epithelium:

The Epidermis (most superficial layer) of the skin is composed of **stratified squamous epithelial** cells that contain large quantities of the protein

Functions- Impervious to water, resistant to mechanical damage.

2-Non-keratinized stratified epithelium:

- These are Layers of living squamous epithelium formed by cuboidal cells
- Found in moist surface like, buccal cavity, oesophagus, vagina
- **Functions**– protection from mechanical damage

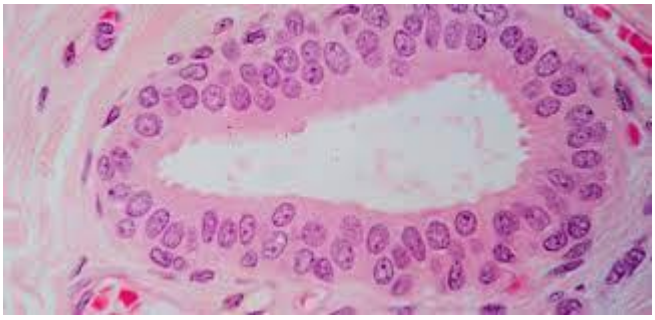


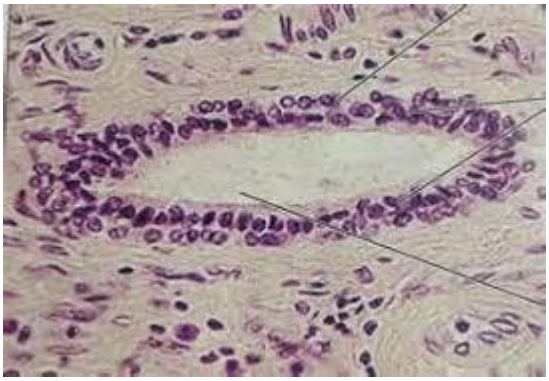
2. Stratified cuboidal epithelium:

Stratified cuboidal epithelium consists of multiple layer of cell where the outermost layer of cells is cuboidal in shape.

Found in conjunctiva of eyes, lining of ducts of sweat glands, salivary gland, mammary glands and urethra.

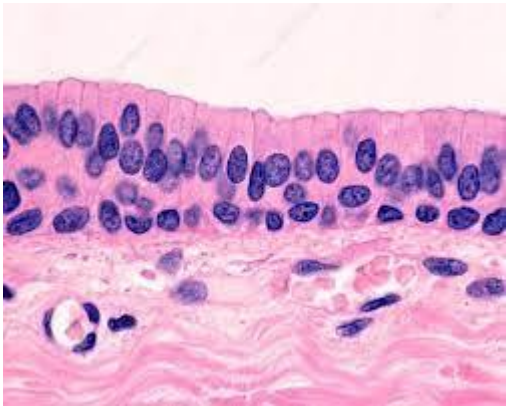
Function– Protection against mechanical and chemical stress





3. Stratified Columnar epithelium:

- Stratified columnar epithelium consists of multiple layers of cells where the outermost layer of cells are columnar in shape, Middle layer is cuboidal.
- It forms lining of, respiratory tract and mammary gland.
- **Function**– secretion of fluids and protection from mechanical and chemical stress.



4. Transitional epithelium:

- Transitional epithelium consists of layers of cells which are similar in size and may be flattened at the top and have the capability to modify the shape.
- Cells are living, large and stretch to change its thickness.
- Found in urinary bladder, ureter, renal pelvis.
- **Function**-expansion of the organ, prevent loss of water form blood and prevent escape of urine to surrounding tissue.

Specialised Epithelium

1. Glandular epithelium
2. Germinal epithelium
3. Sensory epithelium
4. Ciliated epithelium

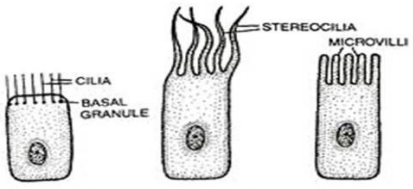


Fig. 7.2. Epithelial cells showing projections in the form of cilia, stereocilia and microvilli.

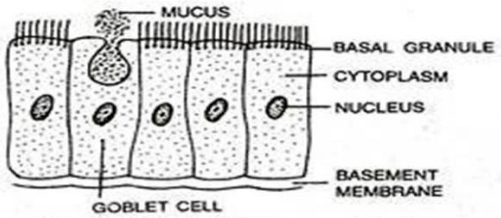
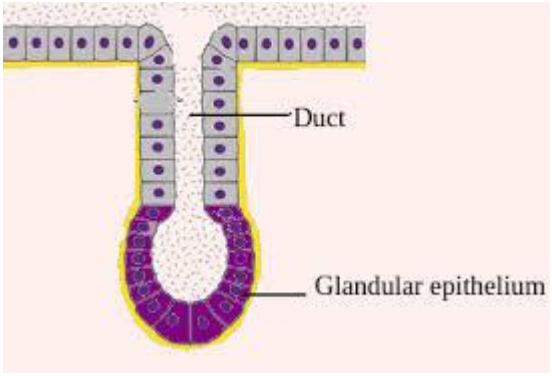


Fig. 7.9. Ciliated Columnar epithelium.

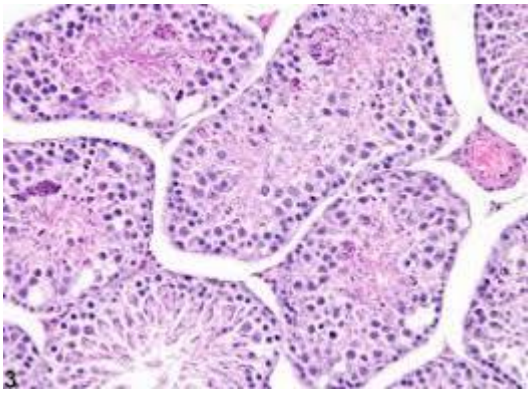
1. Glandular epithelium:

Glands are composed of cuboidal and columnar epithelium and are specialized for secretion. They secrete enzymes, hormones, mucus .



2. Germinal epithelium:

These are cuboidal or columnar epithelium layer found in the ovary and seminiferous tubules.



3. Sensory epithelium:

These are modified columnar epithelium having sensory hair (cilia) at the free surface lies between columnar epithelium.

Found in nasal cavity and tongue.

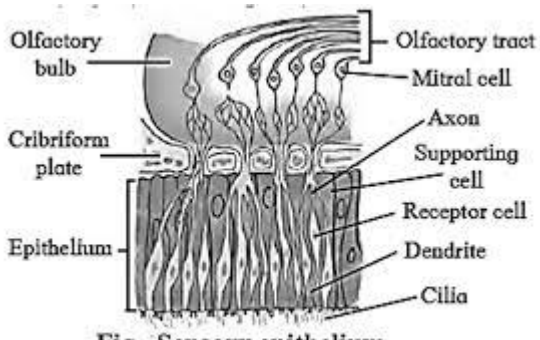


Fig. Sensory epithelium

4. Ciliated epithelium:

- These are elongated columnar epithelium having numerous cilia at the free end.
- Found in Ureter, respiratory passage, spinal cord, oviduct .