



Types of Cells and Tissues in Epithelium

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Description

One of the four primary forms of bodily tissue, epithelial tissue covers both internal and external surfaces in body and is present in all organs. Depending on where it is in body, it has a variety of different structures and functions. The majority of glandular tissue is made up of the epithelium, a type of human tissue that lines hollow organs and body cavities and covers all internal and external body surfaces. Depending on where in the body it resides, epithelial tissue serves a range of purposes, including absorption, secretion, and protection.

Body's organs are made of four different types of tissue in general, including:

- Epithelial
- Connective
- Muscular
- Nervous

All materials that enter or exit an organ must first pass through epithelial tissue. Body contains a wide variety of epithelial tissue types. The outer layer of skin is an example of epithelial tissue (epidermis).

- Intestines' lining.
- Respiratory tract's lining.
- Sweat glands; the lining of abdominal cavity.

Epithelial cells compose epithelial tissue. Depending on where they are in body and the jobs they perform, the cells can have a variety of forms and can be arranged in a single layer or numerous layers. A cell is the smallest biological entity capable of independent life. All living things, including the tissues in body, are composed of cells. The body has more than 30 trillion cells.

Three components of cell:

The cell membrane: It encloses the cell and regulates the substances that enter and exit the cell.

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The nucleus: The nucleus is a component of the cell that houses the majority of the DNA in the cell (genetic material).

The cytoplasm: The cytoplasm is the liquid that makes up a cell. It has additional cell components that serve particular purposes.

Some cell types, including some epithelial cells, have features on their cell surface that enable them to carry out specific tasks, such as:

Microvilli: On the surface of epithelial cells, microvilli are finger-like, immobile structures that serve to expand the cell's surface area so that it can more effectively absorb substances. Numerous microvilli found in the epithelial cells lining small intestine absorb nutrients from the food people consume and defend body from intestinal germs.

Cilia: On the surface of the cell, cilia are minute, motile (they can move) structures that help move whole cells or substances around the outer surface of the cell. On their surfaces, ciliated cells often have hundreds of cilia. People respiratory tract's epithelial cells feature cilia, which collect dust and other things person breathe in and direct them into nostrils rather than his/her lungs. The epithelial cells that border the fallopian tubes, which are used to transport eggs from the ovary to the uterus, are another type of cells having cilia.

Stereocilia: Projecting from the surface of some epithelial cells, stereocilia are specialised microvilli that resemble cilia. For hearing and balance, stereocilia are required on the epithelial tissue in the inner ear.

Because the roles of epithelial tissues vary based on where they are in the body, there are many different types of epithelial cells.

Depending on their structure, epithelial cells can be classified as:

Squamous epithelium: The cells of the squamous epi-

thelium have a flat, sheet-like appearance.

Cuboidal epithelium: These cells have equal width, height, and depth and resemble cubes in appearance.

Columnar epithelium: Having the appearance of a column, columnar epithelial cells are taller than they are wide.

Numerous vital processes carried out by epithelial tissue are necessary for life. Since epithelial cells are distributed all over body, their use and purpose vary according to where they are.

The following functions of epithelial tissue can be one or a combination of them all:

Protection: Several parts of body are shielded by epithelial tissue. For instance, the epithelial tissue that makes up skin shields the deeper tissues in body, including blood vessels, muscle, and internal organs. Our intestines' epithelial cells have cilia that guard the rest of body from intestinal germs.

Secretion: The glandular epithelium in glands has the ability to secrete (release) fluids, hormones, and enzymes.

Absorption: Some compounds may be absorbed by the epithelial lining of internal organs, such as liver and lungs.

For instance, intestines' interior epithelial lining absorbs nutrients from the food person ingest.

Excretion is the process through which waste is expelled from the body. His/Her kidneys' epithelial tissue excretes waste, while his/her sweat glands' epithelial tissue excretes sweat.

Filtration: The respiratory tract's epithelium removes debris and impurities from the air you breathe in. Your kidneys' epithelial tissue filters person's blood.

Diffusion: Diffusion in biology is the passive transfer of molecules or particles from areas of higher concentration to areas of lower concentration. Filtration, absorption, and secretion processes are all aided by diffusion.

Sensory reception: Person's body can take in external sensory stimuli thanks to sensory nerve endings embedded in epithelial tissue. As an illustration, hearing and balance depend on the stereocilia on the outer surface of the epithelial tissue in your ear. Additionally, the stratified squamous epithelium of your tongue contains taste buds.

The potential for malignancy to develop in epithelial tissue, such as adenocarcinoma or papillary thyroid cancer, is one of the main worries.