

EPITHELIUM TISSUE:

Epithelium (epi- + thele + -ium) is one of the four basic types of animal tissue. The other three types are connective tissue, muscle tissue and nervous tissue.

Epithelial tissues line the cavities and surfaces of blood vessels and organs throughout the body.

The three principal shapes associated with epithelial cells are—squamous, cuboidal and columnar.

Epithelial layers contain no blood vessels, so they must receive nourishment via diffusion of substances from the underlying connective tissue, through the basement membrane.

Simple epithelium is a single layer of cells with every cell in direct contact with the basement membrane that separates it from the underlying connective tissue. In general, it is found where absorption and filtration occur. The thinness of the epithelial barrier facilitates these processes.

Keratinized:

In this particular case, the most apical layers (exterior) of cells are dead and lose their nucleus and cytoplasm, instead contain a tough, resistant protein called keratin. This specialization makes the epithelium waterproof, so is found in the human skin . The lining of the esophagus is an example of a non-keratinized or "moist" stratified epithelium

Transitional:

Transitional epithelia are found in tissues that stretch and it can appear to be stratified cuboidal when the tissue is not stretched or stratified squamous when the organ is distended and the tissue stretches. It is sometimes called urothelium since it is almost exclusively found in the bladder, ureters and urethra.

Cells of epithelial tissue are tightly packed and form a continuous sheet. They have almost no intercellular spaces. All epithelia is usually separated from underlying tissues by an extra cellular fibrous basement membrane. The lining of the mouth, lung alveoli and kidney tubules all are made of epithelial tissue. The lining of the blood and lymphatic vessels are of a specialised form of epithelium called endothelium.

Epithelium lines both the outside (skin) and the inside cavities and lumina of bodies. The outermost layer of human skin is composed of dead stratified squamous, keratinized epithelial cells.

Tissues that line the inside of the mouth, the esophagus and part of the rectum are composed of nonkeratinized stratified squamous epithelium. Other surfaces that separate body cavities from the outside environment are lined by simple squamous, columnar, or pseudostratified epithelial cells. Other epithelial cells line the insides of the lungs, the gastrointestinal tract, the reproductive and urinary tracts, and make up the exocrine and endocrine glands. The outer surface of the cornea is covered with fast-growing, easily regenerated epithelial cells. Endothelium (the inner lining of blood vessels, the heart, and lymphatic vessels) is a specialized form of epithelium. Another type, mesothelium, forms the walls of the pericardium, pleurae, and peritoneum.

Epithelial tissue rests on a basement membrane, which acts as a scaffolding on which epithelium can grow and regenerate after injuries. Epithelial tissue has a nerve supply, but no blood supply and must be nourished by substances diffusing from the blood vessels in the underlying tissue. The basement membrane acts as a selectively permeable membrane that determines which substances will be able to enter the epithelium.

