

Difference Between Simple and Stratified Epithelial Tissue

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Key Difference – Simple vs Stratified Epithelial Tissue

Epithelial tissue is a type of tissue that forms the outer covering of the body and forms the lining of the body cavity. Based on the number of layers of the epithelial tissue, the epithelial tissue is divided into two main classes; the simple epithelial tissue and the stratified epithelial tissue. The key difference between simple and stratified epithelial tissue is that **simple epithelial tissue has only a single layer of cells, whereas stratified epithelial tissue has two or more cell layers stacked upon each other.**

What is Simple Epithelial Tissue?

The Simple Epithelial tissues contain a single layer of cells. The layer of cells rests on a non-cellular basement membrane. This basement membrane is composed of a fibrous network. Based on the shape of the cells in the layer of cells in the simple epithelial tissue, there are four main types of simple epithelial tissue.

Simple Squamous Epithelial tissue

The simple squamous epithelial tissue is composed of a single layer of flat polygonal or hexagonal shaped cells. Each cell has a centrally located, spherical nucleus and irregular boundaries. This tissue is distributed in the lining of the heart, alveoli, Bowman's capsule, the visceral and peritoneal lining of the coelom. Its main functions are protection, filtration, absorption, and secretion.

Simple Cuboidal Epithelial tissue

This type of tissue is composed of a single layer of cuboidal-shaped cells with same height and width. This tissue is distributed in the ducts and glands, which include pancreatic ducts and salivary glands. It is also distributed along the renal tubule. Simple cuboidal epithelial cells can also be lined with microvilli which will facilitate

the function of absorption. General functions are protection, absorption, secretion, and excretion.

Simple Columnar Epithelial tissue

This type of epithelial tissue consists of tall column-shaped cells with unequal height and width. The cells contain nuclei which are elongated and are situated in close proximity to the basement membrane. Simple columnar epithelial tissue cells contain goblet cells or secretory cells which secrete various chemicals and fluids. The tissue is distributed along the lining of the stomach, [small and large intestine](#), digestive glands, [ureter](#), uterine wall, and [gallbladder](#). The main functions include absorption, secretion, and excretion.

Pseudo Stratified Epithelial Tissue

The cells of pseudostratified epithelial tissue vary in height. This epithelial tissue appears to be composed of several cell layers as the cells are of different heights. Only the tallest cells reach the surface but all cells reside on the basement membrane. Due to this illusion, the epithelial tissue is named as pseudostratified. Most cells are ciliated and are distributed along the [trachea](#), [bronchi](#), and other respiratory structures. The main function is to trap the dust and infectious particles and to provide protection.

What is Stratified Epithelial Tissue?

Stratified epithelial tissue is composed of two or more layers of cells and is the most widespread tissue type lining interior organs and the body cavity. The stratified epithelial tissue is also categorized according to the shape of the cells.

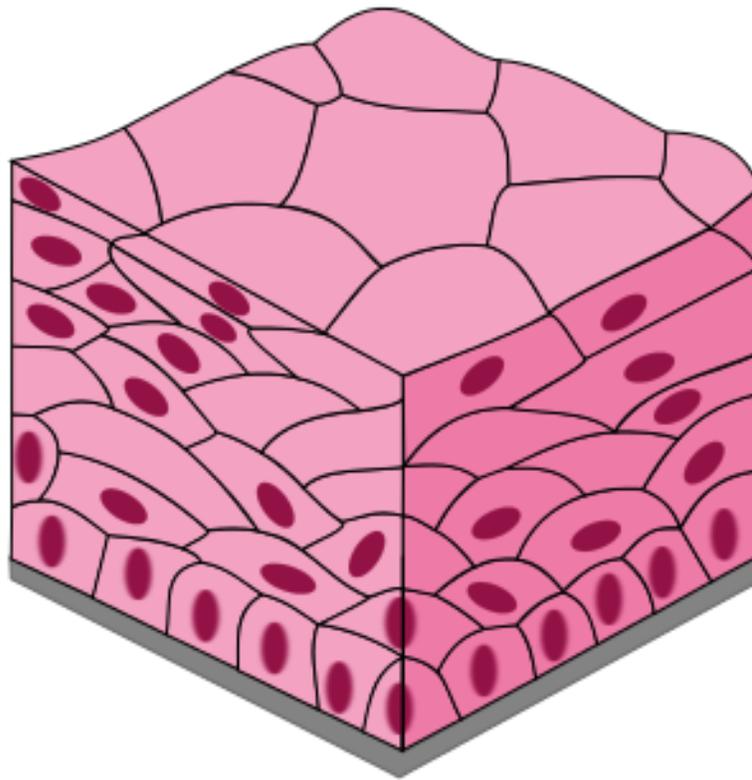


Figure 01: Stratified Epithelium

Stratified Squamous Epithelial Tissue

The shape of the cells is similar to that of simple squamous epithelial tissue, but are arranged in multiple layers. This stratified tissue type is further divided as keratinized and nonkeratinized. Keratinized stratified squamous epithelial tissue is distributed in the outer layer of the skin. It consists of the protein keratin which has a protective function. The other type is the nonkeratinized type. It is found in the oral cavity, esophagus to the stomach junction anus and rectum, vagina and cervix.

Stratified Cuboidal and Stratified Columnar Epithelial Tissue

These two types are characterized by the shape as in simple epithelial tissue but are stacked on multiple layers. Stratified cuboidal is found in the ducts of glands (sweat glands, mammary glands). Stratified columnar epithelial is present in transition areas (junctions) between other epithelial types.

Transitional Epithelial Tissue

Transitional epithelium is a type of stratified epithelial tissue. The cells are of varying shape and are stretched along the basement membrane. Distribution is along the lining of the ureters, urethra, and bladder.

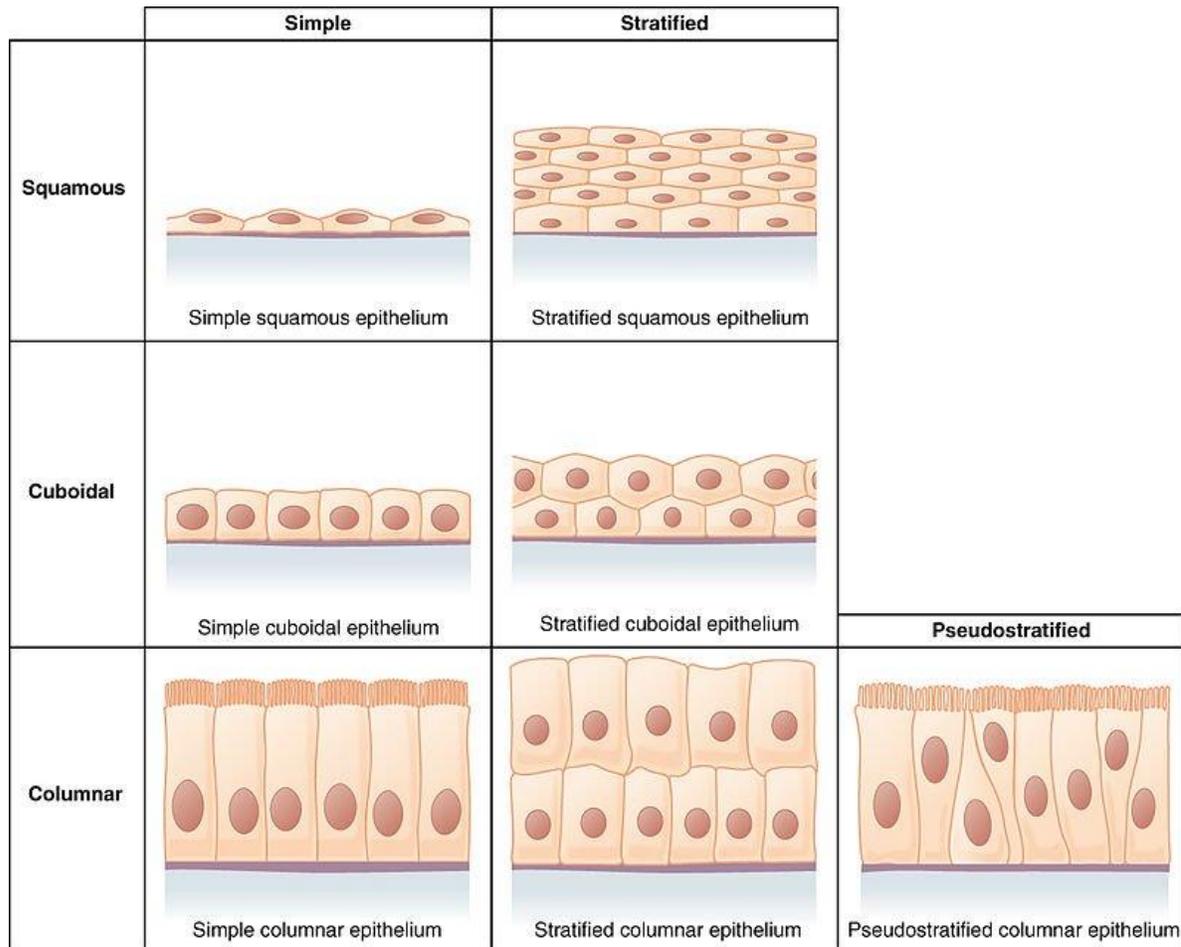


Figure 02: Simple and Stratified Epithelial Tissues

What are the similarities between Simple and Stratified Epithelial Tissue?

- They are types of tissues that form the lining of organs and protect the organs.
- Main functions of both tissues include absorption, secretion, excretion, and protection.
- Both tissues contain a basement membrane on which the cells reside.
- Both tissues contain different types of cells based on the shape of the cells.

What is the difference between Simple and Stratified Epithelial Tissue?

Simple vs Stratified Epithelial Tissue

The simple epithelial tissue has only a single layer of cells.

The stratified epithelial tissue has two or more cell layers stacked upon each other.

Summary – Simple vs Stratified Epithelial Tissue

There are two main types of epithelial tissues which are categorized based on the number of cell layers and cell shapes. The simple epithelial tissue has only a single layer of cells. The stratified epithelial tissue has two or more cell layers stacked upon each other. This is the basic difference between simple and stratified epithelial tissue. All these epithelial tissues form the lining of organs and the hollow cavity which performs a range of functions in terms of protection, absorption, secretion, and excretion.

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APA: Difference Between Simple and Stratified Epithelial Tissue. (2017, October 02). Retrieved (date), from <http://www.differencebetween.com/difference-between-simple-and-vs-stratified-epithelial-tissue/>

MLA: "Difference Between Simple and Stratified Epithelial Tissue" Difference Between.Com. 02. October 2017. Web.

Chicago: "Difference Between Simple and Stratified Epithelial Tissue." Difference Between.Com. <http://www.differencebetween.com/difference-between-simple-and-vs-stratified-epithelial-tissue/> (accessed [date]).



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