

BASIC MEDICAL SCIENCES

FSC TECHNICIANS I
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EPITHILIAL TISSUES

- Definition:
- Epithelial tissue is a type of animal tissue that covers the body surfaces, lines body cavities, and forms glands.
- - Functions:
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 - - Protection
 - - Secretion
 - - Absorption
 - - Sensations

CHARACTERISTICS

- - *Cellularity*: Epithelial tissues are primarily composed of cells, with little to no intercellular space.
- - *Polarity*: Epithelial cells exhibit polarity, meaning they have distinct apical (upper) and basal (lower) surfaces.
- - Apical surface may have specialized structures like microvilli or cilia to aid in functions such as absorption or movement.


ANATOMY

- **Attachment:** Epithelial cells are attached to a basement membrane.
- - **Function of basement membrane:**
 - - Separates the epithelium from underlying connective tissue.
 - - Provides structural support.
 - - Facilitates the exchange of nutrients and waste.


CLASSIFICATION

- **Classification** : Based on
 - - the shape of the cells:
 - - squamous (flat and scale-like)
 - - cuboidal (cube-shaped)
 - - columnar (column-shaped)
 - - the number of cell layers:
 - - simple (single layer)
 - - stratified (multiple layers)


epithelial tissues



simple squamous



simple cuboidal




simple columnar



stratified squamous



stratified cuboidal



stratified columnar



Pseudostratified columnar



transitional

FUNCTIONS

- **Protection:**
- Epithelial tissues form protective barriers
- That shield underlying tissues from physical trauma, pathogens, and harmful substances.
- For example, the epithelium of the skin protects against UV radiation and infection.

Continued

- **Secretion:**
- Certain epithelial cells secrete substances such as enzymes, hormones, mucus, and sweat.
- Glandular epithelium is found in glands throughout the body, specializes in secretion.

Continued

- **Absorption:**
- Epithelial cells in tissues like the lining of the small intestine
- Absorb nutrients from digested food and transport them into the bloodstream.
- **Sensation:**
- Epithelial tissues contain specialized cells
- that respond to stimuli such as touch, pressure, temperature, and pain allowing for sensation perception.

TYPES OF EPITHILIAL TISSUES

- **Simple squamous epithilium:**
 - Found in tissues where rapid diffusion or filtration occurs, such as the lining of blood vessels (endothelium) and air sacs of the lungs (alveoli).
- **Simple cuboidal epithilium:**
 - Present in glands and kidney tubules, where secretion and absorption take place.
- **Simple columnar epithelium:**
 - - Lines the digestive tract and contains goblet cells that secrete mucus, as well as microvilli for absorption.

Continued

- **Stratified squamous epithilium:**
- Forms epidermis (outer layer) of skin
- Lining of oral cavity
- Esophagus
- Vagina

Any Question





