



NCERT Class-9 Science Solutions: Chapter 6 – Tissues Part 9

Question 50:

Describe the structure and function of different types of epithelial tissues. Draw diagram of each type of epithelial tissue.

Answer:

Epithelial tissues are the covering or protective tissues in the animal body. Epithelium covers most organs and cavities within the body and keep different body systems separate. The skin, the lining of the mouth, the lining of blood vessels, lung alveoli and kidney tubules are all made of epithelial tissue. Epithelial tissue cells are tightly packed and form a continuous sheet. They have only a small amount of cementing material between them and almost no intercellular spaces. The permeability of the cells of various epithelia play an important role in regulating the exchange of materials between the body and the external environment and also between different parts of the body. Regardless of the type, all epithelia are usually separated from the underlying tissue by an extracellular fibrous basement membrane.

Epithelial tissues are of following types:

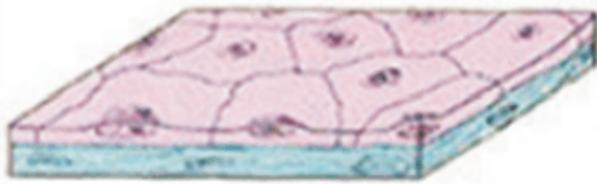
- Simple squamous epithelium
- Stratified squamous epithelium
- Columnar epithelium, and
- Cuboidal epithelium.

These tissues differ in structure that correlate with their unique functions. For example, in cells lining blood vessels or lung alveoli, where transportation of substances occurs through a selectively permeable surface, there is a simple flat kind of epithelium. This is called the simple squamous epithelium. Simple squamous epithelial cells are extremely thin and flat and form a delicate lining. The skin, oesophagus and the lining of the mouth are also covered with squamous epithelium. Skin epithelial cells are arranged in many layers to prevent wear and tear. Since, they are arranged in a pattern of layers, the epithelium is called stratified squamous epithelium.

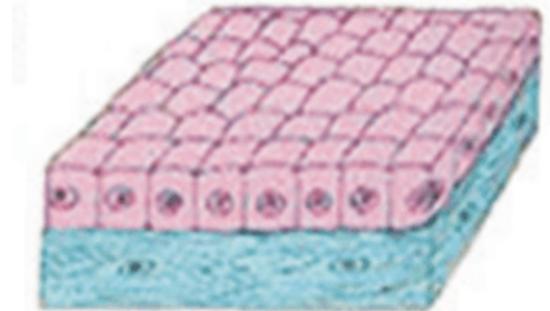
Where absorption and secretion occur, as in the inner lining of the intestine, tall epithelial cells are present. This columnar epithelium facilitates movement across the epithelial barrier. In the respiratory tract, the columnar epithelial tissue also has cilia, which are hair-like projections on the outer surfaces of epithelial cells. These cilia can move, and their movement pushes the mucus forward to clear it. This type of epithelium is thus ciliated columnar epithelium.

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Cuboidal epithelium forms the lining of kidney tubules and ducts of salivary glands, where it provides mechanical support. Epithelial cells often acquire additional specialisation as gland cells, which can secrete substances at the epithelial surface. Sometimes a portion of the epithelial tissue folds inward, and a multicellular gland is formed. This is glandular epithelium.



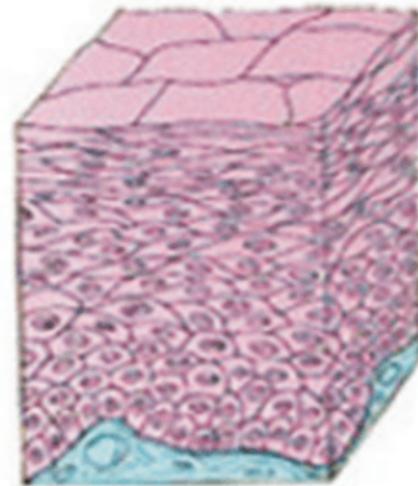
(A) Squamous



(B) Cuboidal



(C) Columnar (Ciliated)



(D) Stratified squamous

Different types of epithelial tissues

Image Different Types of Epithelial Tissues

Question 51:

Draw well labelled diagrams of various types of muscles found in human body.

Answer:

Human body consist of three types of muscles Skeletal muscle It has striated, tubular, multinucleated fibres and is usually attached to skeleton. These are voluntary (under the control of our will). Often called striated muscles due to presence of alternate dark and light bands (straitions).

Smooth muscle It has spindle-shaped, non-striated uninucleated fibres and occurs in walls of internal organs. It is involuntary in action.

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Cardiac muscle It has striated, branched, uninucleated fibres and occurs only in the walls of the heart. It is involuntary in action.

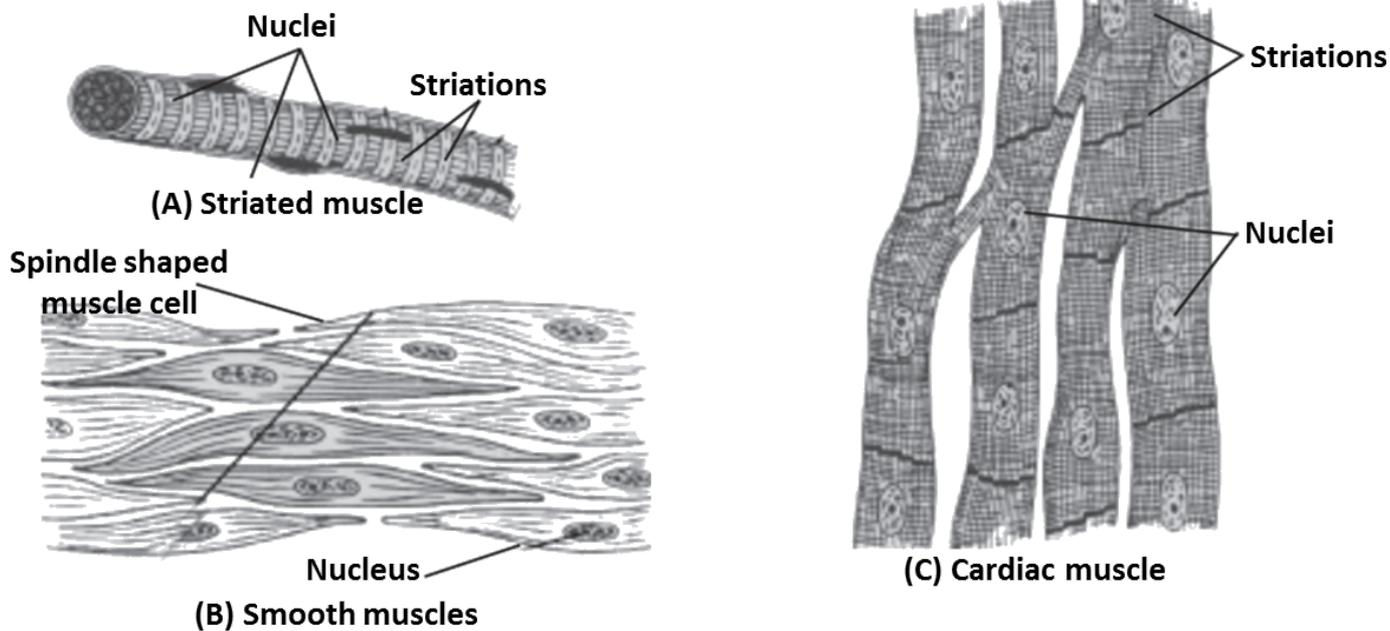


Image Muscles in Human Body