

STRUCTURAL ORGANISATION IN ANIMALS

Animal Tissue

Group of similar cells, performing similar function; with intercellular substances

Epithelial

Connective

Muscular

Neural

Epithelial Tissue

- Tissue that forms the free surface (inside/outside)
- Compactly packed
- Small intercellular matrix
- Types
 - Simple
 - Compound

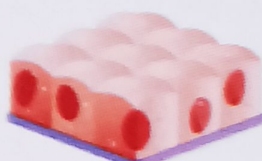
Simple Epithelial

(Single layer of cells, lining cavities, ducts and tubes)

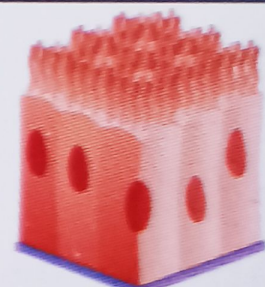
Squamous	Cuboidal	Columnar
-irregular boundaries (of cell) -walls of blood vessels -air sacs of lungs (from diffusion boundary)	-cube-like cells -secretion, absorption -duct of glands -PCT of nephron	-tall, slender cells -microvilli(+) -secretion, absorption -lining of stomach & intestine



Simple squamous



Simple cuboidal



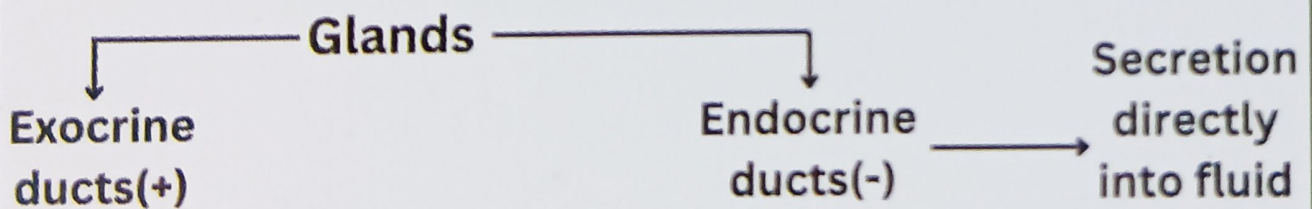
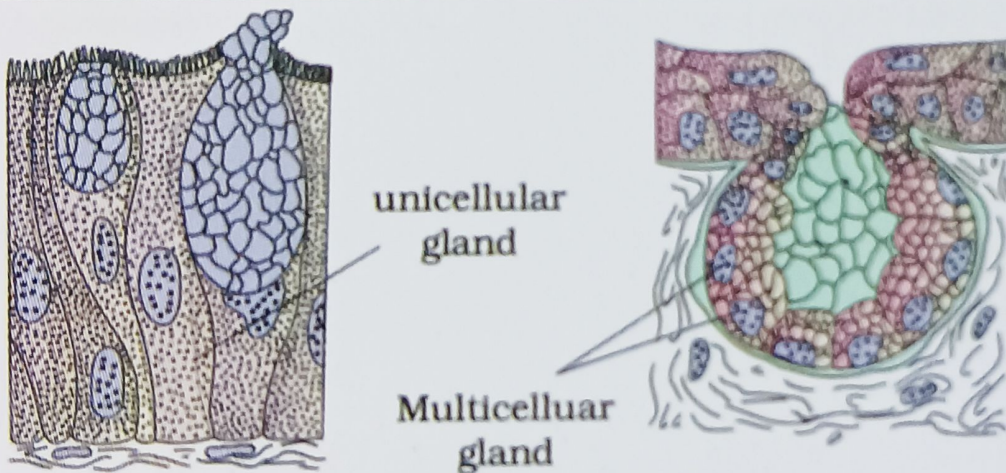
Simple columnar

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Columnar Epithelial Tissue

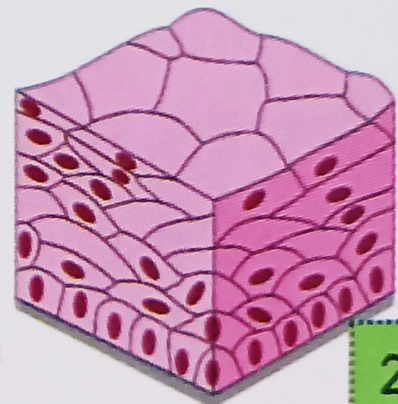
Ciliated epithelium	Glandular epithelium
<ul style="list-style-type: none"> • Cilia(+) • Move mucus in particular direction • Bronchioles, fallopian tubes 	<ul style="list-style-type: none"> • Specialised for secretion 1. Unicellular (goblet cells) 2. Multicellular (Salivary glands)



Compound Epithelial (Multi-layered)

- Provide protection against chemical & mechanical stress
- Structural & Functional link b/w cells

- **Tight junctions** → stop leakage
- **Adhering junctions** → performs cementing
- **Gap junctions** → communication & molecule exchange



Connective Tissue

- Linking & supporting tissues
- Cells secrete fibres of collagen/elastin (except blood)
- Cells secrete polysaccharides (forms matrix)

Loose connective tissue		Dense Connective tissue	
Loose fibers, semi-fluid matrix		Compact fibers & fibroblasts	
Areolar tissue	Adipose tissue	Regular	Irregular
support fibroblasts(+) macrophages(+) mast cells(+)	Store Fats	-Collagen fibers in rows e.g.-Tendons (Joins muscle to bone)	-oriented differently -present in skin

Specialised Connective tissue

1. **Cartilage** : Solid, Pliable, Resist compression, Secreted by chondrocytes. eg. : tip of nose, outer ear joint, b/w bones of vertebral column
2. **Bones** : Hard; rich in Ca; Non-pliable; Provides structural framework to body; Osteocytes are present in bones spaces(Lacunae); Long bones-weight bearers; Bone marrow-site of RBC production
3. **Blood** : Fluid connective tissue; Contains plasma, RBC, WBC, platelets; Main circulating fluid

Muscle Tissue

Parallel arrays of long, cylindrical fibres [Formed by Myofibrils]

- They contract & expand as required (movement of body)
- 3 Types- **Skeletal, Smooth, Cardiac**

Skeletal Muscles

- Attached to bones, Striations (+)
- Form bundles & surround by connective tissue

Smooth Muscles

- Taper at ends, striations (-)
- Cell junctions hold them together
- Bundled with the help of connective tissue
- Involuntary in function
- Present in organs (Stomach, intestine) & blood vessels.

Cardiac Muscles

- Contractile tissue of heart
- Cell junction fuses to the plasma membrane of Cardiac muscles

Neural Tissue

(unit) Neurons + Neuroglial cells = neural systems

- **Note** (controls responsiveness of body)
Tissues $\xrightarrow{\text{organize}}$ Organs $\xrightarrow{\text{organize}}$ Organ system

(more than one type)