



Epithelial Tissues

Muhammad Zubair Hassan

Microtechniques



Classification by Layers

- **Simple epithelium** → One single layer of cells
- **Function:** thin barrier for exchange, absorption, secretion
- **Example:** lining of blood vessels (thin layer helps smooth blood flow)
- 💡 *Example:* Like a **single glass pane** in a window – allows light to pass easily.



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- **Stratified epithelium** → Many layers of cells
- **Function:** protection from damage and friction
- **Example:** skin, urinary tract
- 💡 *Example:* Like a **stack of blankets** – gives more protection than one thin sheet.



Functions of Epithelial Tissue

- **Protection** → Shields from injury, pathogens, and chemicals
Example: Skin = a shield against dust and germs
- **Absorption & Secretion** → Takes in useful substances, releases mucus/hormones
Example: Kitchen sponge soaking water + bottle spraying perfume
- **Sensation** → Detects touch, temperature, pressure, taste
Example: Mobile touchscreen sensing finger
- **Selective Permeability** → Controls entry/exit of substances, maintains balance
Example: Security gate allowing only authorized entry



Types of Epithelial Tissue

- **Simple Squamous Epithelium**
- Thin, flat cells → rapid diffusion & filtration
- Found in alveoli (lungs), lining of blood vessels
- Example: **Tissue paper** allowing air to pas



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- **Simple Cuboidal Epithelium**
- Cube-shaped cells with central nucleus
- Found in glands, kidney tubules
- **Function:** secretion & absorption
- Example: **Small storage boxes** holding and releasing things



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- **Simple Columnar Epithelium**
- Tall, rectangular cells
- Found in digestive tract lining
- **Function:** absorption & secretion
- Example: **Test tubes** holding and pouring liquids



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- **Stratified Squamous Epithelium**
- Multiple flat layers → strong protection
- Found in skin, oral cavity, esophagus, vagina
- **Function:** protects from abrasion & germs
- Example: **Stack of blankets** giving extra safety



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- **Stratified Cuboidal & Columnar Epithelium**
- Less common
- Found in larger glands & ducts
- **Function:** protection & secretion
- Example: **Double wall container** for extra safety



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- **Pseudostratified Columnar Epithelium**
- Appears layered, but single layer
- Found in respiratory tract
- Has cilia → moves mucus & debris
- Example: **Broom sweeping dust** from a floor



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- **Transitional Epithelium**
- Can stretch & shrink
- Found in urinary bladder
- **Function:** allows expansion when bladder fills
- Example: **Balloon stretching when filled with air**

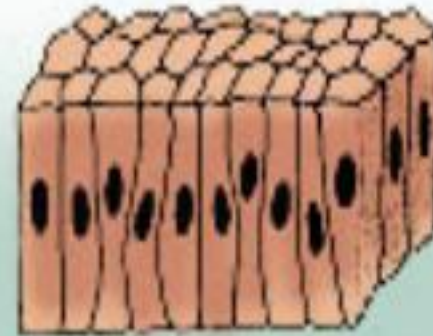
Types of Epithelium



Simple squamous

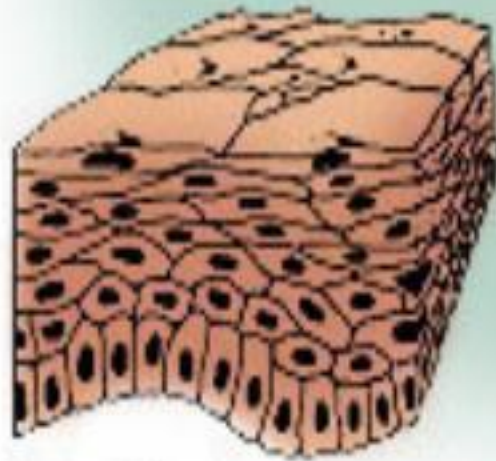
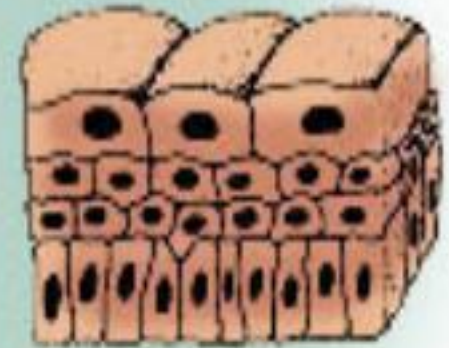


Simple cuboidal

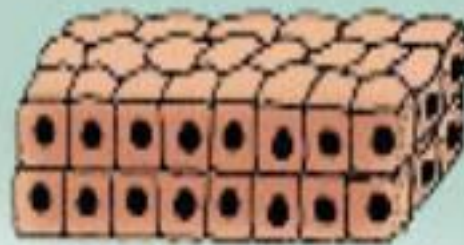


Simple columnar

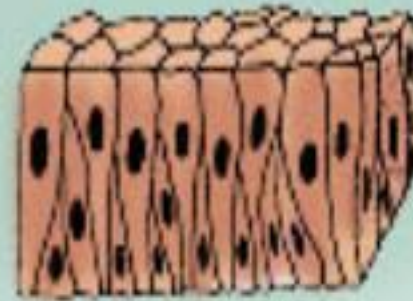
Transitional



Stratified squamous



Stratified cuboidal



Pseudostratified columnar



Next Lecture

- Connective tissues
- Structure
- Classification
- Functions
- Types



Quiz

- Tissue processing
- Cytopathology
- Hematopathology
- Anatomical Pathology
- Experimental Pathology



Any Questions?





THANK
YOU