

Chapter 5

Tissues

- ◆ A. Cells are arranged in **tissues** that provide specific functions for the body.
- ◆ B. Cells of different tissues are structured differently, which leads to their differences in function.

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- ◆ C. The tissues of the human body include four major types:
 1. **Epithelial**: covers and protects body surfaces and organs, lines body cavities
 2. **Connective**: binds and supports body parts
 3. **Muscular**: contracts and provides movement
 4. **Nervous**: responds to stimuli and transmits impulses from one body part to another

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◆ Epithelial Tissues:

- A. Epithelial tissues
 - anchored to a basement membrane,
 - tightly packed cells with little extracellular material,
 - generally lack blood vessels,
 - are replaced frequently.

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- ◆ C. Epithelial tissues are classified by shape of cells:
 - 1) **squamous** (thin, flat cells)
 - 2) **cubeoidal** (cube-like cells)
 - 3) **columnar** (elongated, column-like cells)

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- D. Epithelial tissues are classified by number of layers:
 - 1) **simple** (one layer)
 - 2) **stratified** (many layers)



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Characterizing Epithelial Tissue

simple epithelia

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stratified columnar

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1. Simple Squamous Epithelium

Location:

- air sacs of lungs
- lining of blood & lymph vessels
- membranes that line body cavities

Functions:

- Filtration
- Diffusion
- Osmosis

2. Simple Cuboidal Epithelium

Location:

- ◆ Kidney tubules,
- ◆ Ducts of glands
- ◆ Surface of ovaries

Functions:

- ◆ Secretion
- ◆ Absorption

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3. Simple Columnar Epithelium

May be ciliated

Location:

digestive tract,
uterine tubes

Functions:

secretion;
protection;
absorption;
movement of eggs

Goblet Cell Secreting Mucous in the Small Intestine

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5. Stratified Squamous Epithelium

Nonkeratinized

Location:

mouth, esophagus,
vaginal canal, and
anal canal

Function:

Prevent abrasion

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5. Stratified Squamous Epithelium

Keratinized

Function:
physical protection,
prevent water loss
prevent penetration

Location:
outer layer of skin

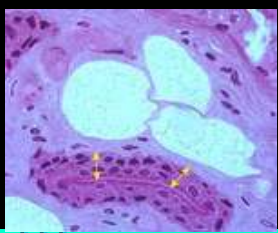



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6. Stratified Cuboidal Epithelium

◆ **Location:** Ducts of mammary glands, sweat glands, salivary glands, pancreas, ovarian follicles, seminiferous tubules

◆ **Function:**
Protection
Secretion

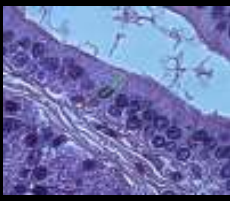


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7. Stratified Columnar Epithelium

◆ **Location:** vas deferens, male urethra, and pharynx

◆ **Function:**
Protection




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4. Pseudostratified Columnar Epithelium

◆ Appear layered
◆ Cilia may be present, along with goblet cells

Location:
Respiratory tract
(including nasal passages, trachea and bronchi)

Function:
Secretion
Protection
Movement of mucus





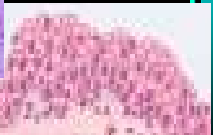
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8. Transitional Epithelium

◆ Round cells (appear cuboidal when relaxed and squamous when stretched)

◆ **Function:**
stretch

◆ **Location:**
urinary bladder
ureter
urethra

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