

# Chapter 4 Tissues

◆ 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,
- easily divide.

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◆ C. Epithelial tissues are classified by shape of cells:

- 1) **squamous** (thin, flat cells)
- 2) **cuboidal** (cube-like cells)
- 3) **columnar** (elongated, column-like cells)

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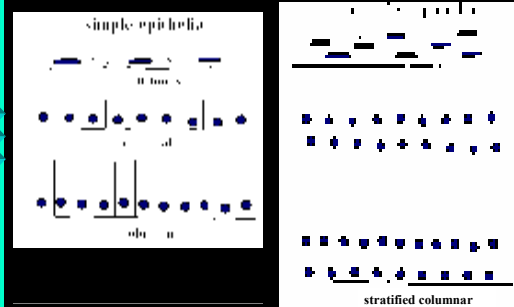
D. Epithelial tissues are classified by number of layers:

- 1) **simple** (one layer)
- 2) **stratified** (many layers)




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## Characterizing Epithelial Tissue



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### 1. Simple Squamous Epithelium




**Location:**

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



**Functions:**

- Filtration
- Diffusion
- Osmosis



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### 2. Simple Cuboidal Epithelium

**Location:**


- ◆ Kidney tubules,
- ◆ Glands and ducts,
- ◆ 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

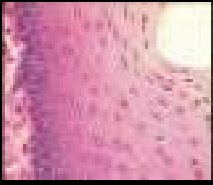
### Goblet Cell Secreting Mucous in the Small Intestine




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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



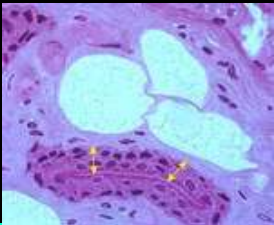
**Location:**  
outer layer of skin

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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, pharynx and salivary gland ducts
- ◆ **Function:**
  - Protection

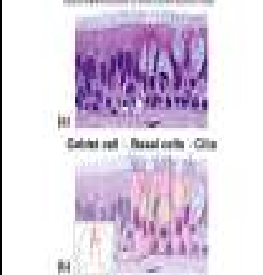


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### 4. Pseudostratified Columnar Epithelium

- ◆ Appear layered
- ◆ Cilia may be present, along with goblet cells
- Location:**
  - Respiratory tract
- Function:**
  - Secretion
  - Protection
  - Movement of mucus

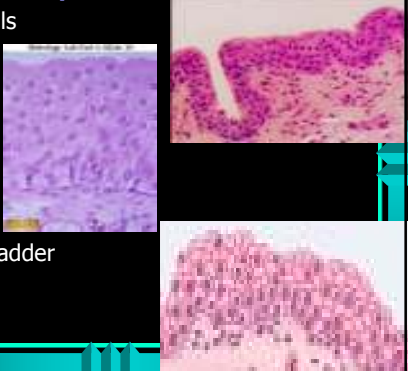


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### 8. Transitional Epithelium

- ◆ Round cells
- ◆ **Function:**
  - stretch
- ◆ **Location:**
  - urinary bladder
  - ureter
  - urethra



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