



# Descriptive Histology



# Objectives

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- ▶ Understand what is descriptive histology
- ▶ Review the cell and its structure
- ▶ Learn about the 4 type of tissues.
- ▶ Learn the epithelial tissue and its location
- ▶ Explain the different type of epithelial tissue
- ▶ Introduce to the connective tissue



**Describe what  
do you see**



**Describe  
what you see**



# Definitions

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- ▶ Descriptive: to describe
- ▶ Histology: The study of the microscopic structure of tissues.
- ▶ Tissue: An aggregate of cells in an organism that have similar structure and function.
- ▶ Cell: A membrane bound structure containing biomolecules, such as nucleic acids, proteins, and polysaccharides.



# Cell

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Cells are the basic structural and functional units of organisms

Animal cells are **eukaryotic**

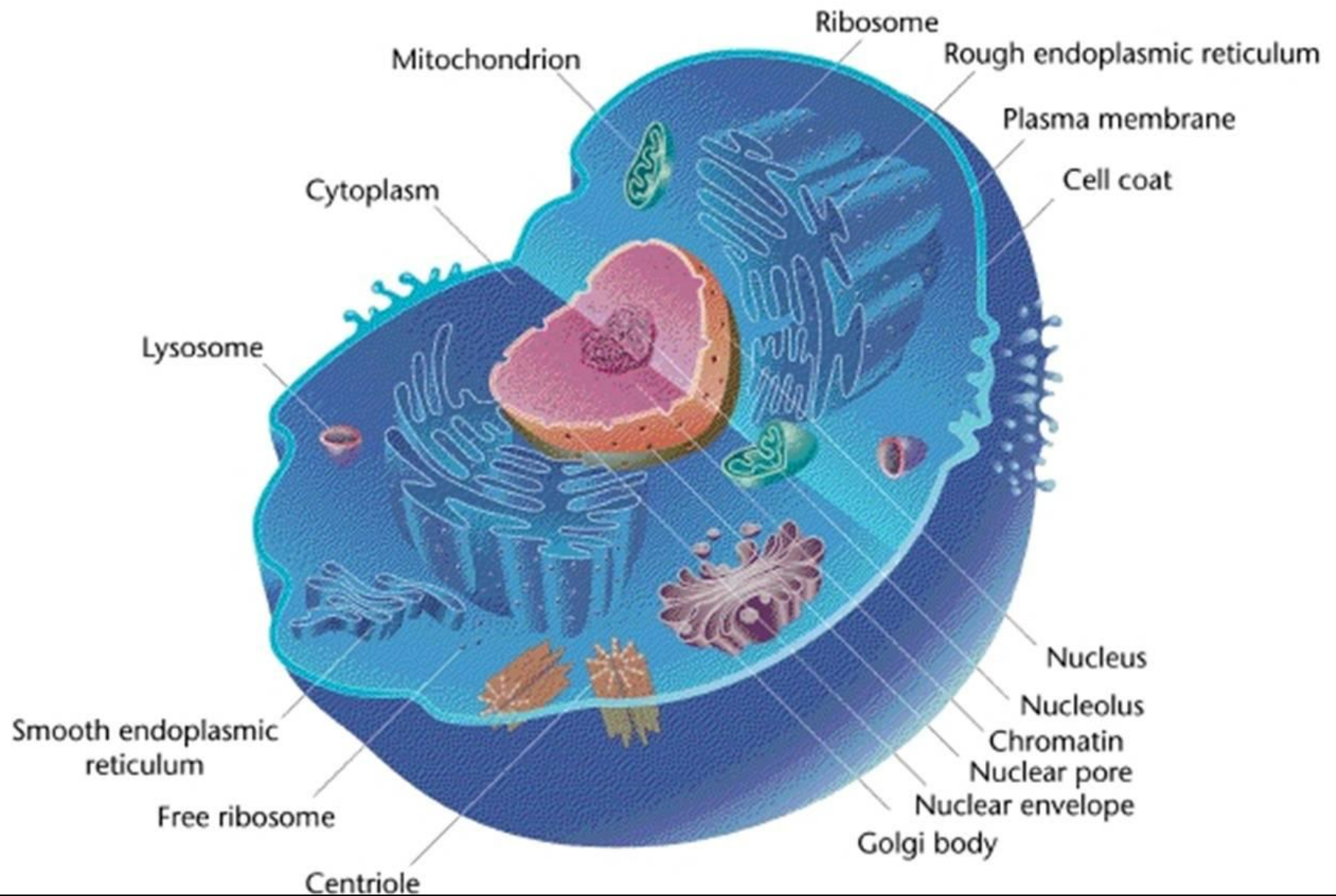
**Prokaryote** is bacterial cells

The human organism consists of hundreds of different cell types

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# Type of tissue

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- ▶ Epithelial
- ▶ Connective
- ▶ Muscular
- ▶ Nervous





## Main characteristics of the four basic types of tissues.

<b>Tissue</b>	<b>Cells</b>	<b>Extracellular Matrix</b>	<b>Main Functions</b>
Epithelial	Aggregated polyhedral cells	Small amount	Lining of surface or body cavities, glandular secretion
Connective	Several types of fixed and wandering cells	Abundant amount	Support and protection
Muscle	Elongated contractile cells	Moderate amount	Movement
Nervous	Intertwining elongated processes	None	Transmission of nervous impulses



# Epithelial Tissue

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**What do you know about Epithelial Tissue?**



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**Epithelial cells line all external  
and internal surfaces of the  
body**



# Functions of Epithelial

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**The principal functions of epithelial tissues are:**

- ▶ Covering, lining, and protecting surfaces (eg, skin)
- ▶ Absorption (eg, the intestines)
- ▶ Secretion (eg, the epithelial cells of glands)
- ▶ Contractility (eg, myoepithelial cells).

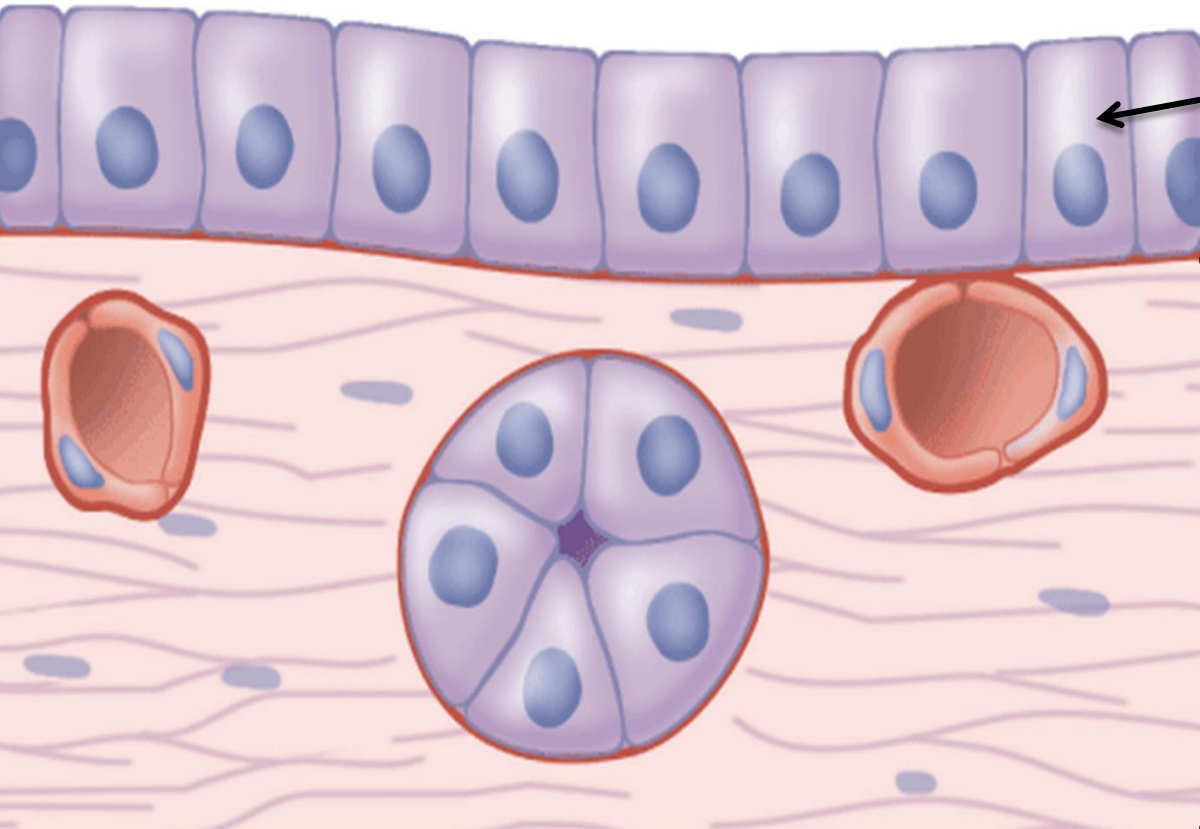


# Basement Membranes

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- ▶ All epithelial cells in contact with subjacent connective tissue have at their basal surfaces a specialized, felt-like sheet of extracellular material referred to as the **basement membrane**





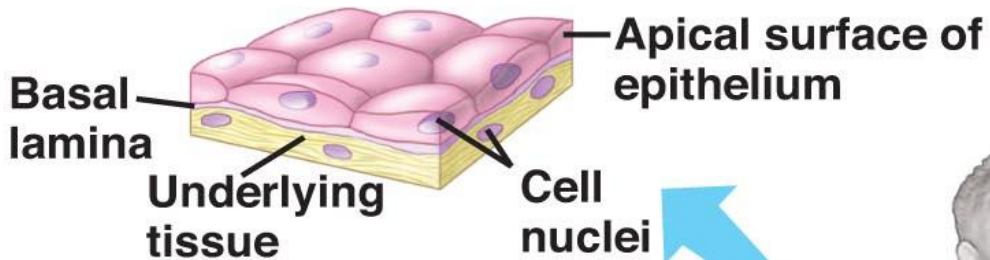
**Epithelial cells**

**Basement  
membrane**

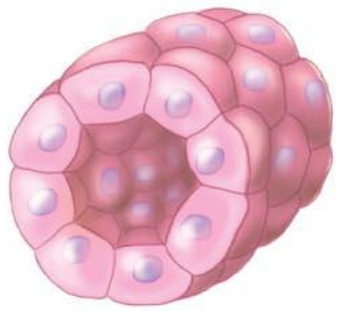
**Connective tissue**



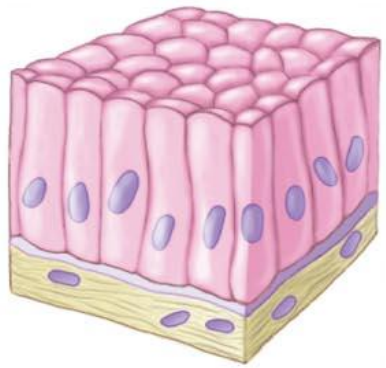
Layers	Cell Shape	Location
Simple (One layer)	Squamous (flat)	Capillary and air sac linings
	Cuboidal (cube)	Kidney tubules and thyroid gland
	Columnar (column)	Intestinal lining
Stratified (More than one layer)	Squamous (flat)	Skin
	Cuboidal (cube)	Sweat glands and mammary glands
	Columnar (column)	Pharynx and anus
Pseudostratified (one layer but	Columnar	Upper respiratory tract



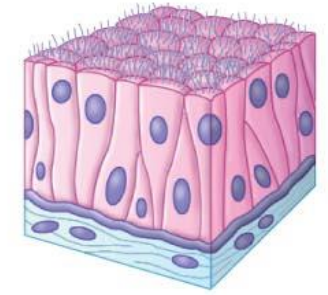
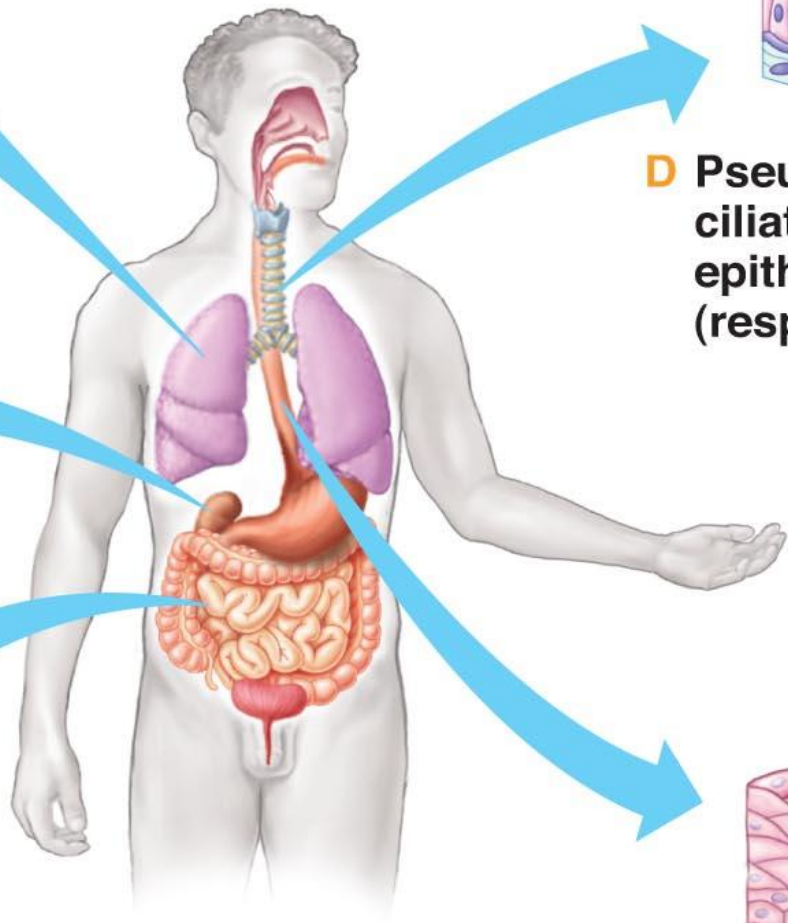
**A** Simple squamous epithelium (air sacs of the lung)



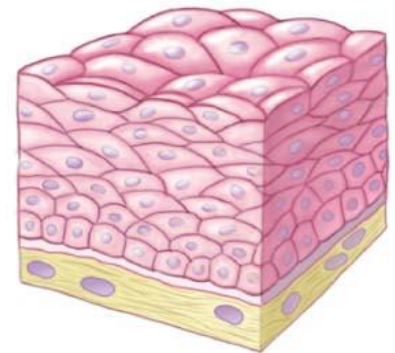
**B** Simple cuboidal epithelium (kidney)



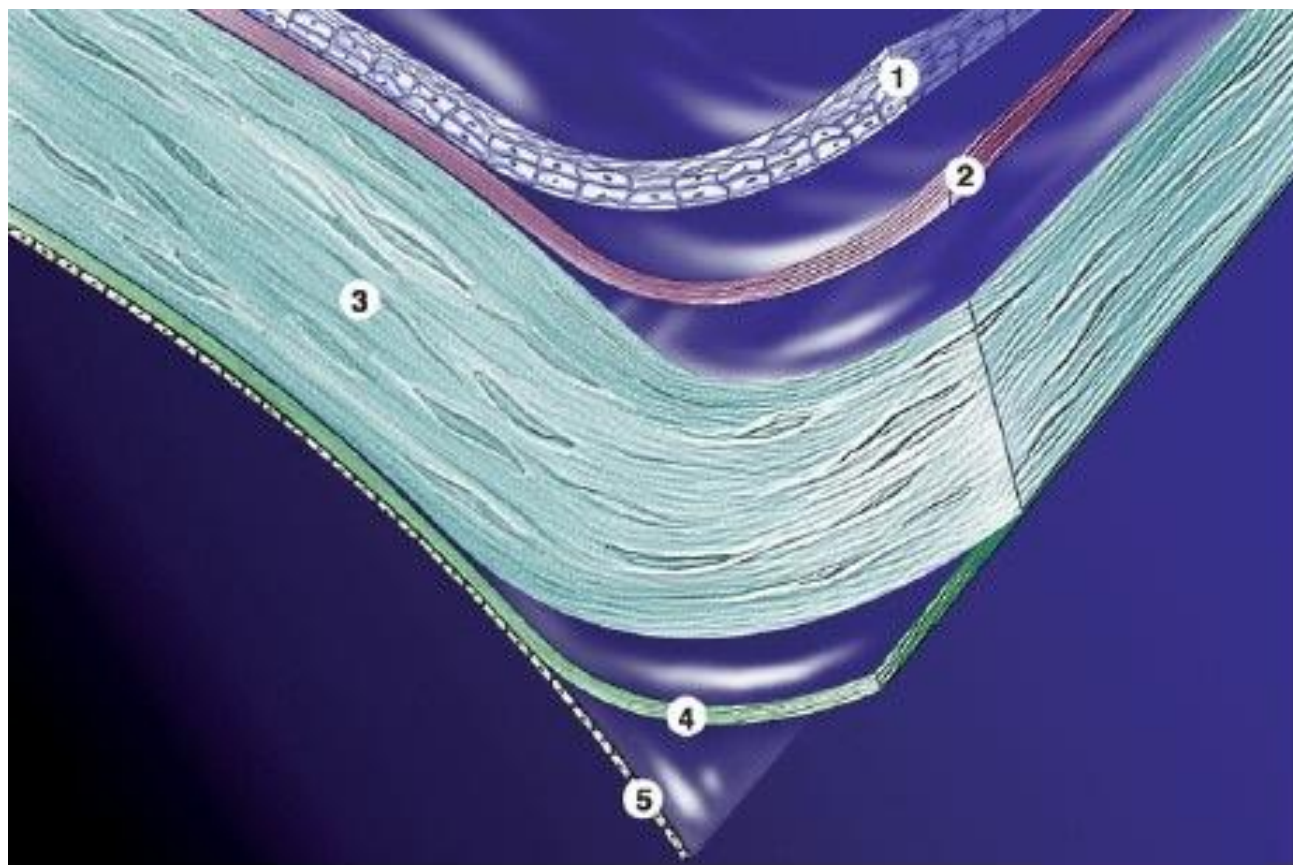
**C** Simple columnar epithelium (intestine)



**D** Pseudostratified ciliated columnar epithelium (respiratory tract)



**E** Stratified squamous epithelium (esophagus)



# Transitional Epithelial

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**Transitional:** Multiple layers of cells, but surface cells change from rounded to flat to permit expansion when needed. Transitional epithelium is found in the urinary bladder, renal pelvis and ureters.

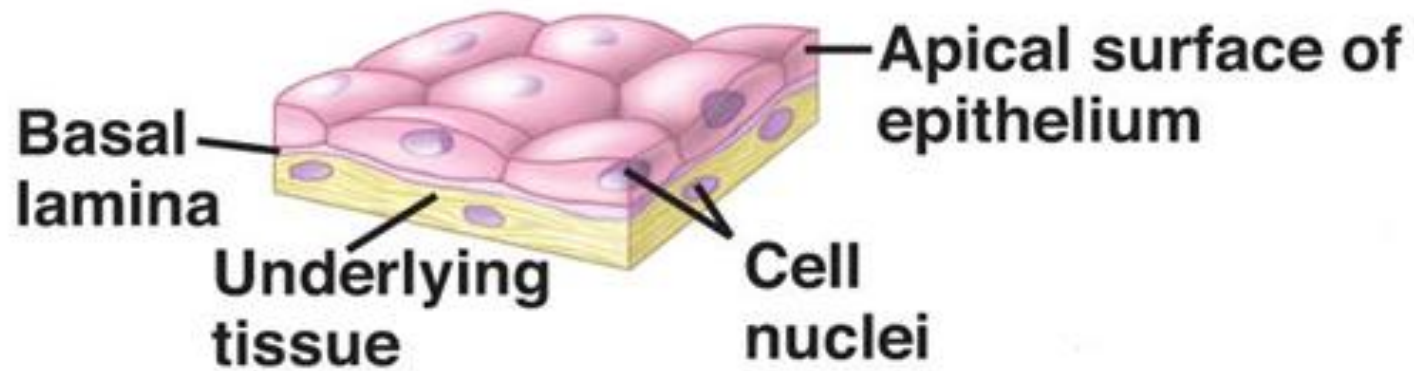


# Glandular Epithelial

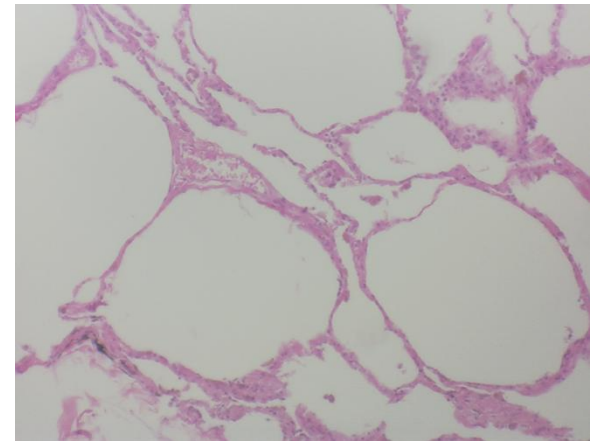
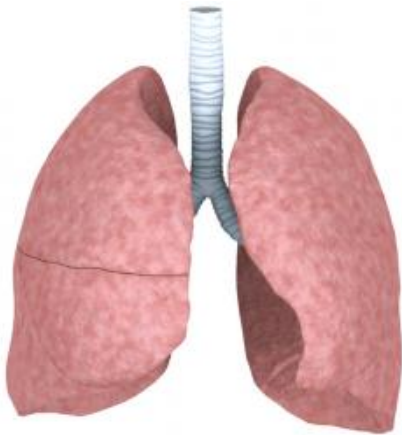
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**Glandular:** Columnar and cuboidal cells often become specialized as gland cells which are capable of secreting substances such as enzymes, hormones, mucus, sweat and saliva. Examples include the salivary, sweat and adrenal glands

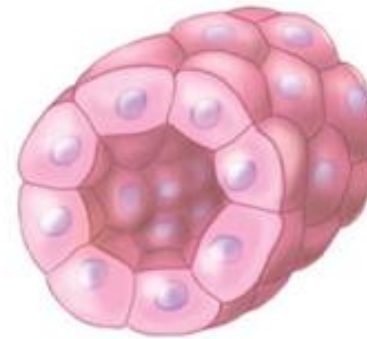
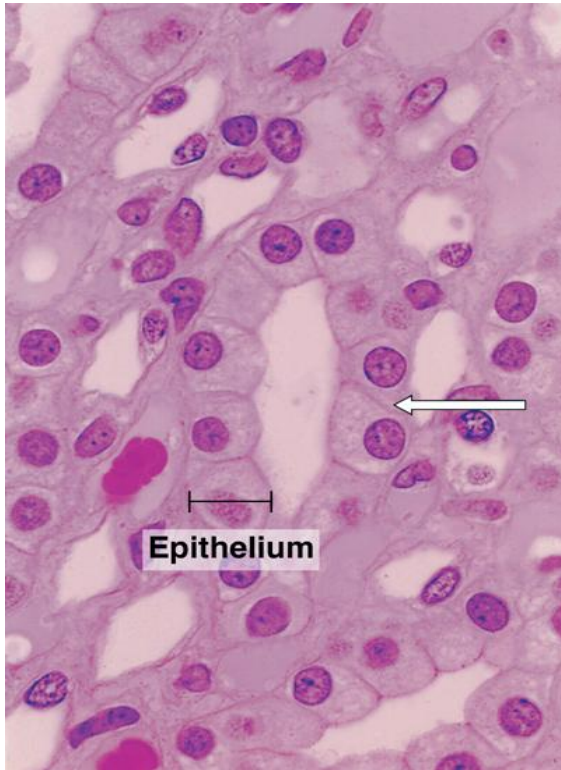




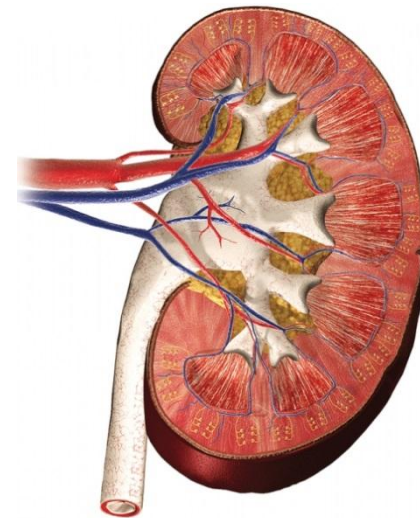
**Simple squamous epithelium  
(air sacs of the lung)**

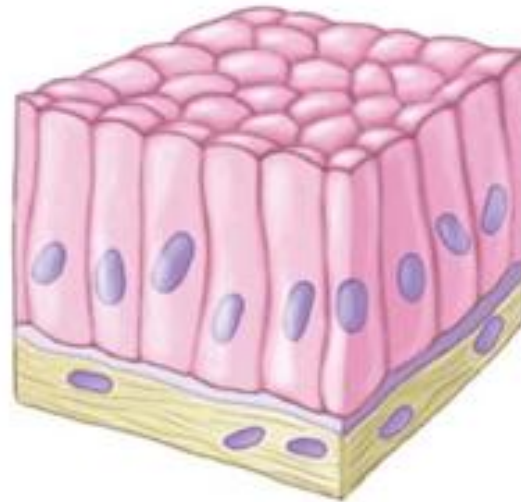




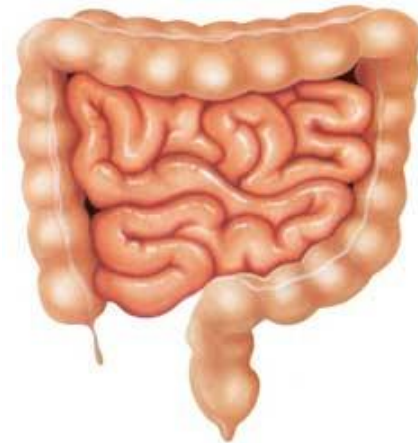


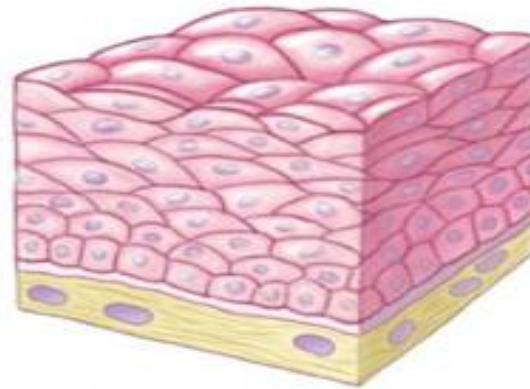
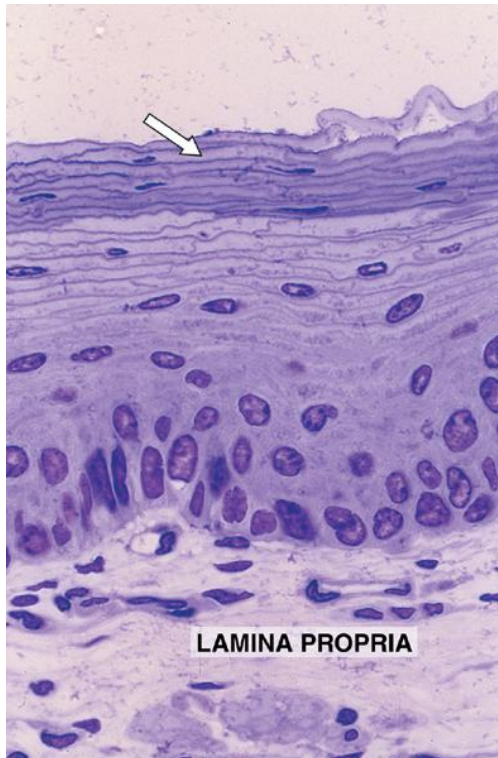
**Simple cuboidal epithelium  
(kidney)**



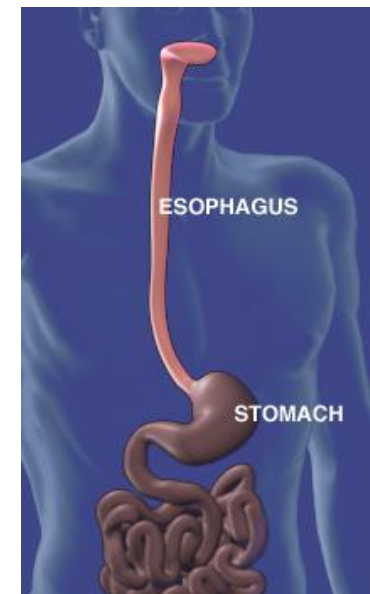


**Simple columnar epithelium  
(intestine)**

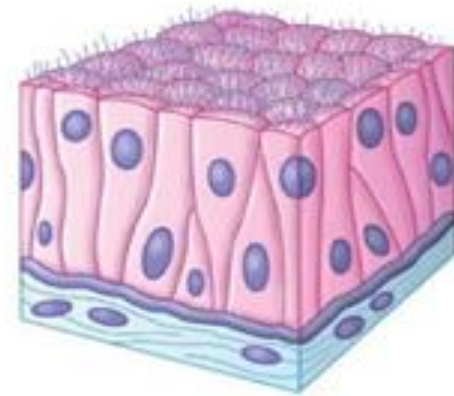




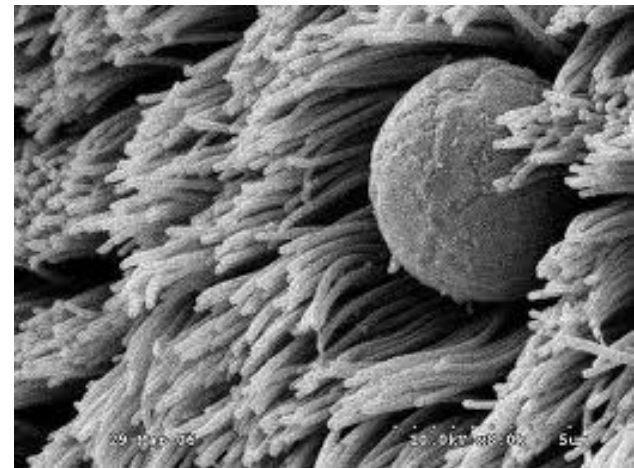
**Stratified squamous  
epithelium  
(esophagus)**

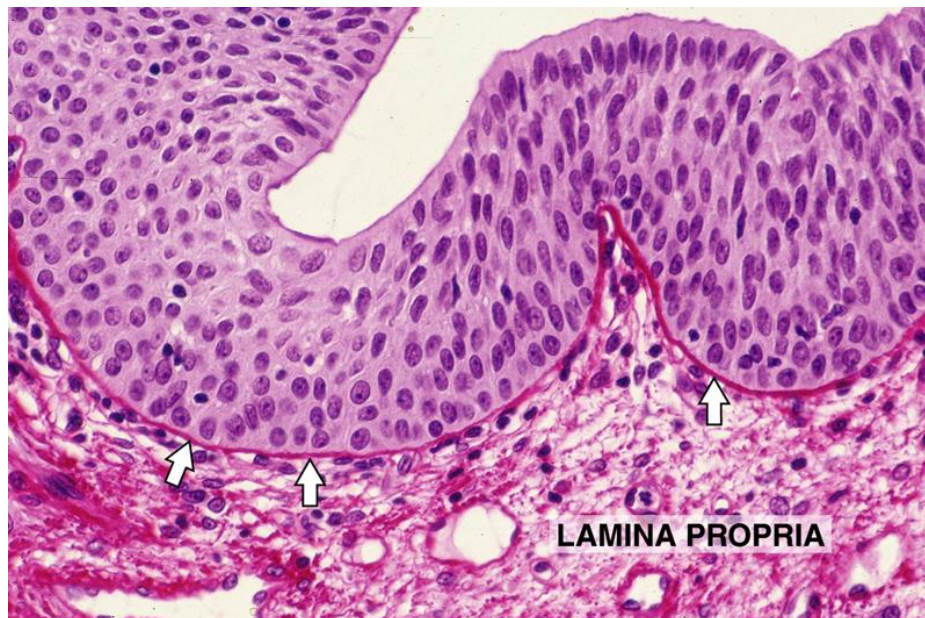
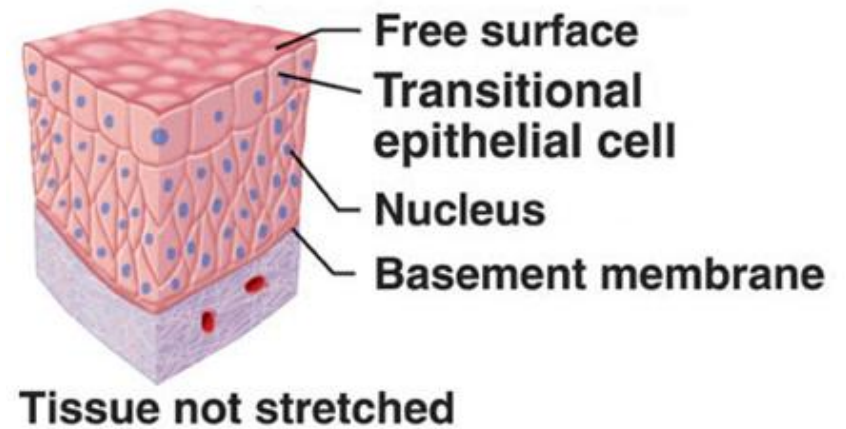
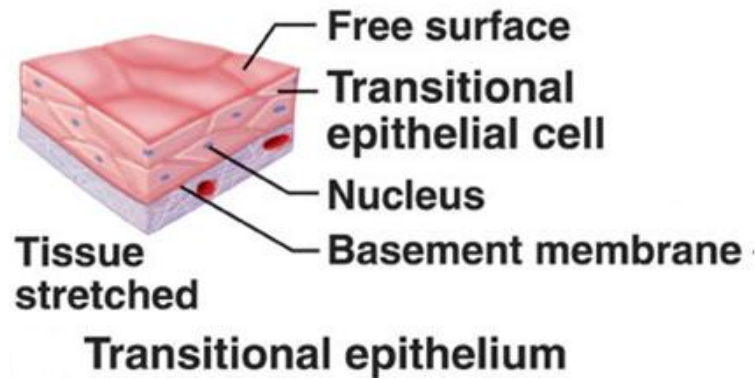






**Pseudostratified  
ciliated columnar  
epithelium  
(respiratory tract)**



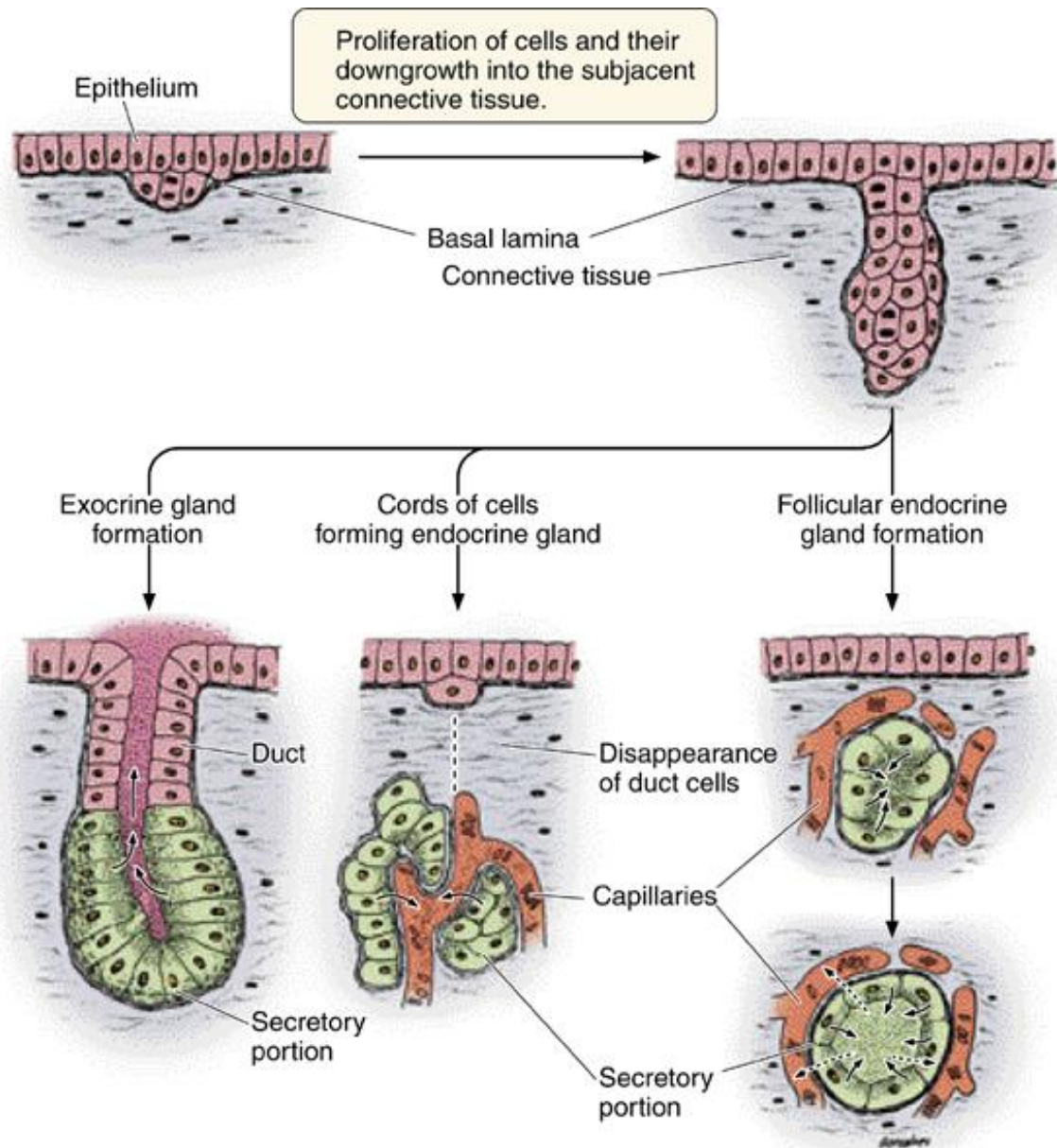


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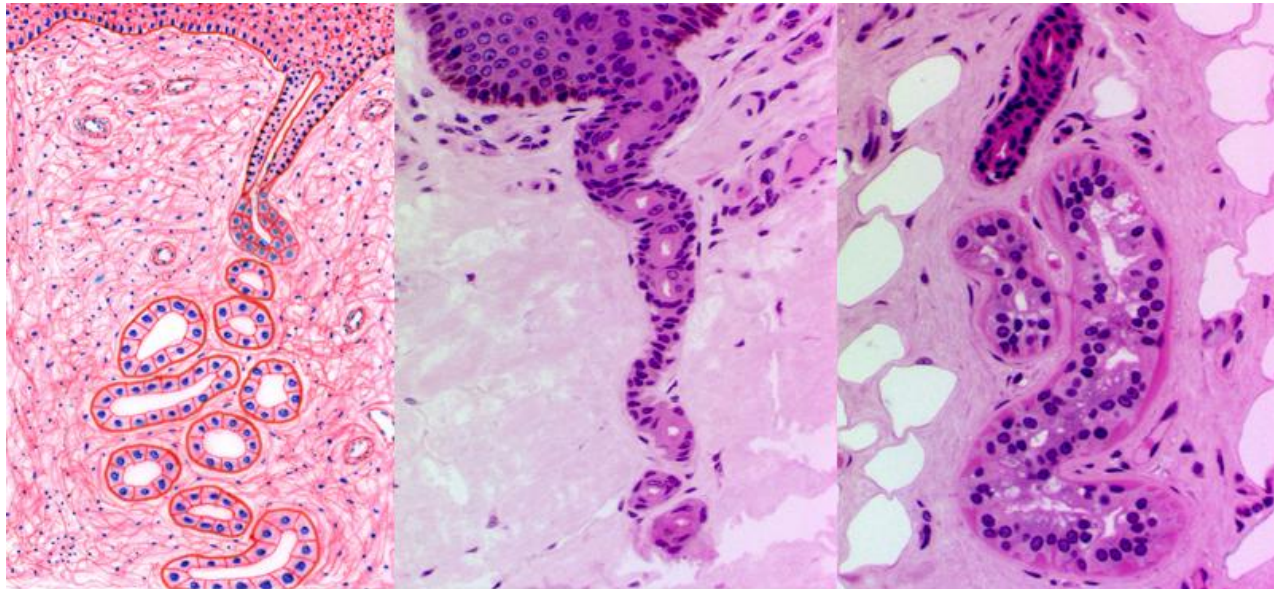
# **Glandular Epithelial**







## Sweat Gland





# Connective tissue

