

Module 2 – L03

Epithelial Tissue

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3. Epithelial Tissue

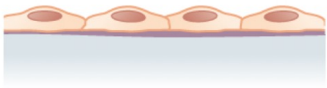
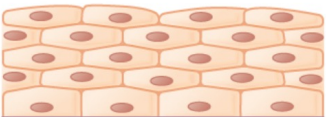

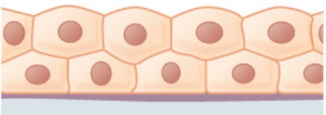
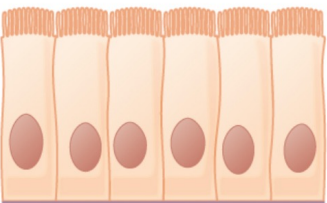
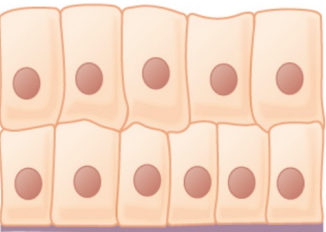
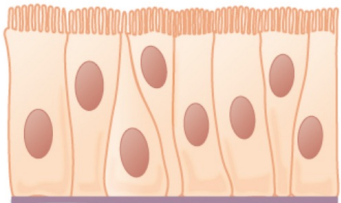
A. Covers body surfaces

- Exterior surface
 - Skin
- Internal surface
 - Lining of digestive tract
 - Lining of respiratory tract
 - Heart
 - Blood vessels
 - Lining of body cavities

B. Forms glands

- Derived developmentally from body surfaces

A. Types of Epithelial Tissues

	Simple	Stratified	
Squamous	 Simple squamous epithelium	 Stratified squamous epithelium	
Cuboidal	 Simple cuboidal epithelium	 Stratified cuboidal epithelium	
Columnar	 Simple columnar epithelium	 Stratified columnar epithelium	 Pseudostratified columnar epithelium

- Number of cell layers
- Shape of cells

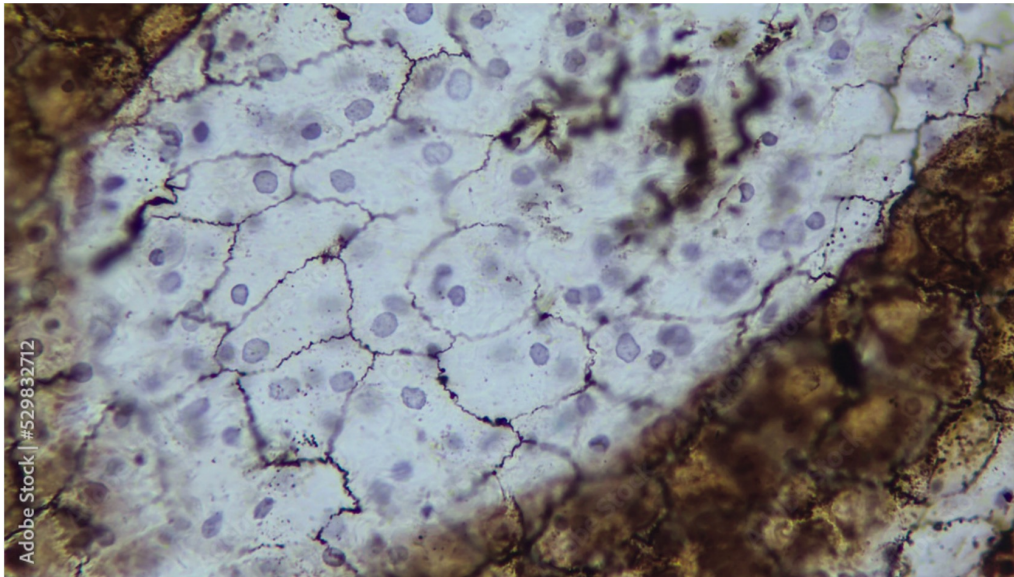
Examples of Epithelial Tissue

Identify examples of each type of epithelial tissue.

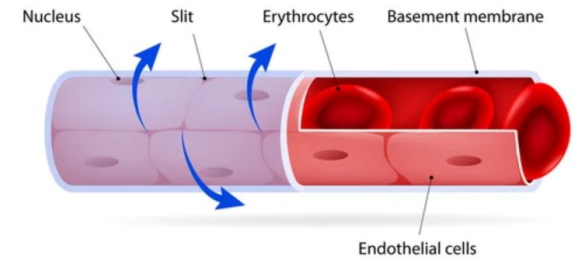
Main examples

- a. Functions in diffusion and filtration
- b. Functions in protection
- c. Functions in secretion and absorption
- d. Changes shape as the tissue stretches
- e. Produces movement of material

a. Functions in Diffusion and Filtration

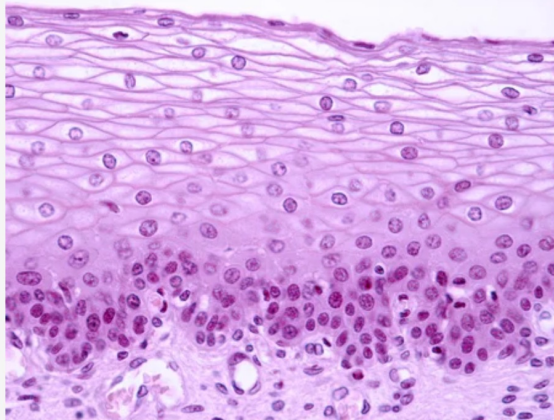
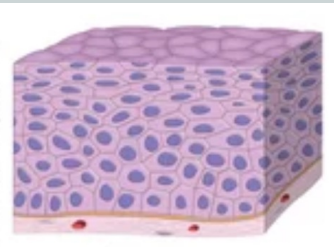


CAPILLARY

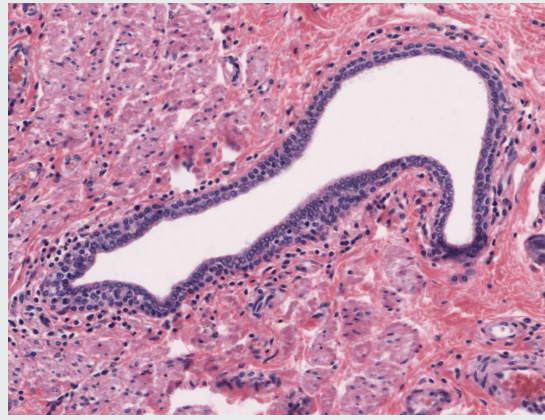
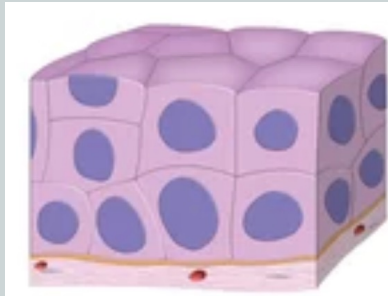


b. Functions in Protection

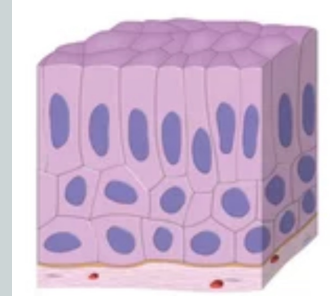
Stratified Squamous Epithelium



Stratified Cuboidal Epithelium

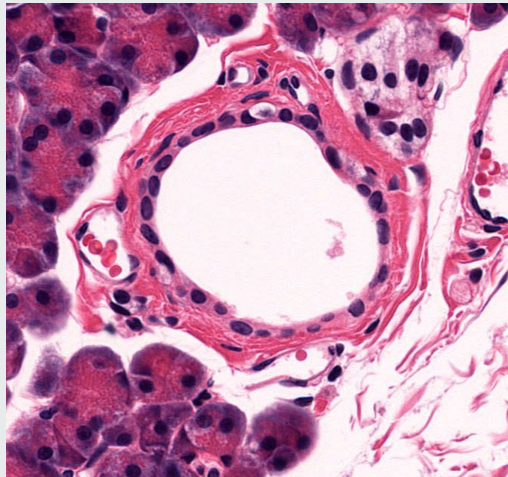


Stratified Columnar Epithelium

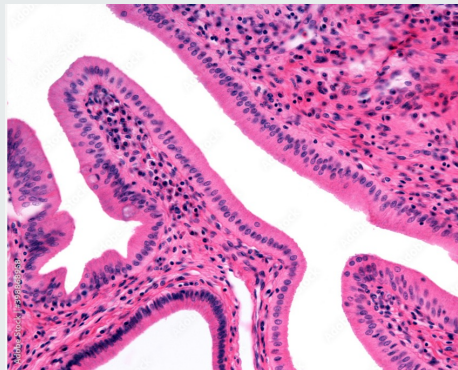
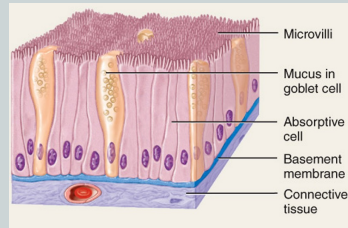


c. Functions in Secretion and Absorption

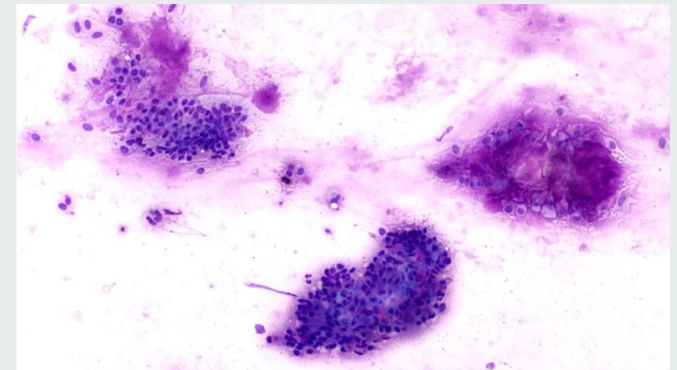
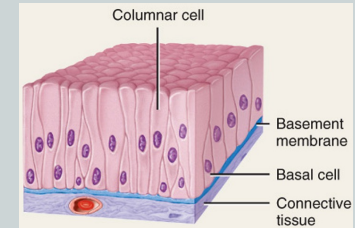
Simple Cuboidal Epithelium



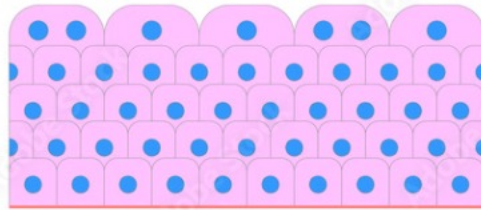
Nonciliated Simple Columnar Epithelium



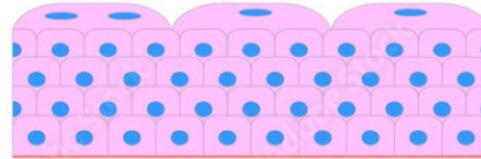
Nonciliated Pseudostratified Columnar Epithelium



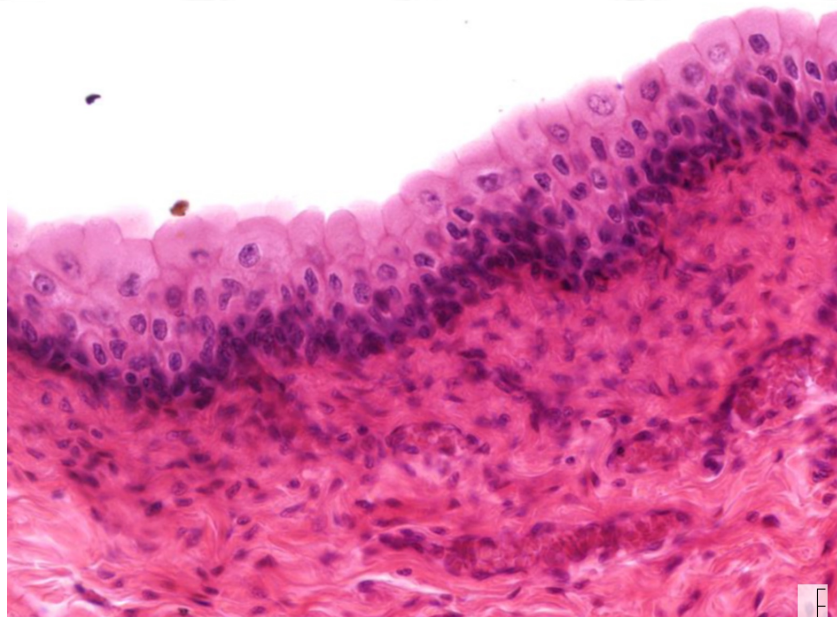
d. Changes Shape as Tissue Stretches & Protects



Transitional (urothelium)
in relaxed state

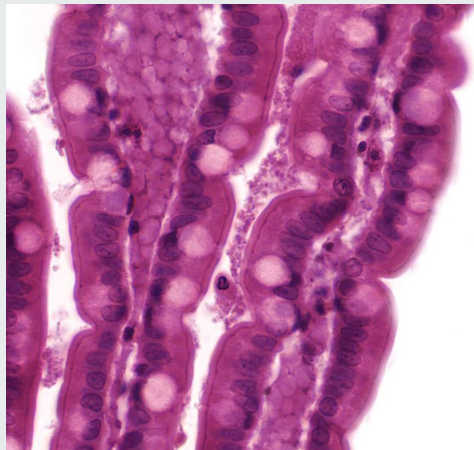
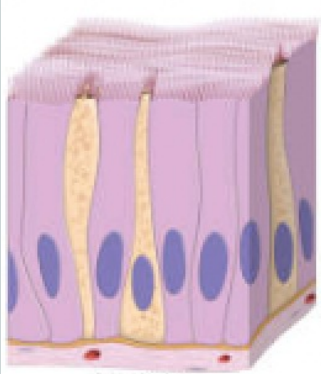


Transitional (urothelium)
in distended state

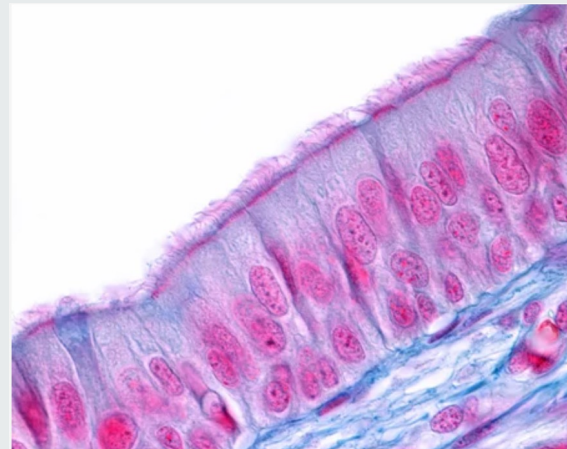
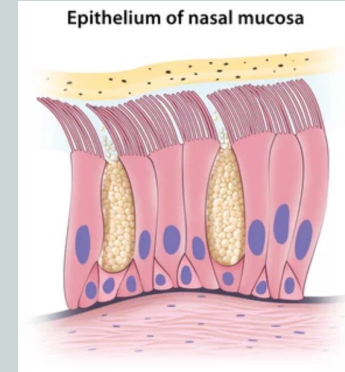


e. Produces Movement of Material

Ciliated Simple Columnar Epithelium



Ciliated Pseudostratified Columnar Epithelium



Summary of Epithelial Tissue

Cells	Location	Function
Simple squamous epithelium	Mesothelia lining ventral body cavities; endothelia lining heart and blood vessels; thin nephron loops; inner lining of cornea; lung alveoli	Reduces friction; controls vessel permeability; performs absorption and secretion
Simple cuboidal epithelium	Glands; ducts; portions of kidney tubules	Secretes and absorbs; limited protection
Simple columnar epithelium	Lining of stomach, intestine, gallbladder, uterine tubes, and kidney collecting ducts	Protection, secretion; absorption
Pseudostratified columnar epithelium	Ciliated tissue lines the bronchi, trachea, and much of upper respiratory tract	Protection; secretion
Stratified squamous epithelium	Skin surface; lining of oral cavity, throat, esophagus, rectum, anus and vagina	Provides physical protection against abrasion, pathogens, and chemical attack
Stratified cuboidal epithelium	Lining of some ducts (rare)	Protection; secretion; absorption
Stratified columnar epithelium	Small areas of pharynx, epiglottis, anus, mammary gland, salivary gland ducts, urethra	Protection.
Transitional epithelium	Lines urinary bladder, renal pelvis, and ureters	Permits expansion and recoil after stretching

B. Exocrine and Endocrine Glands

a. Endocrine Glands

- Hormones enter interstitial fluid and then diffuse directly into bloodstream without flowing through a duct
- Regulate metabolic and physiological activities to maintain homeostasis

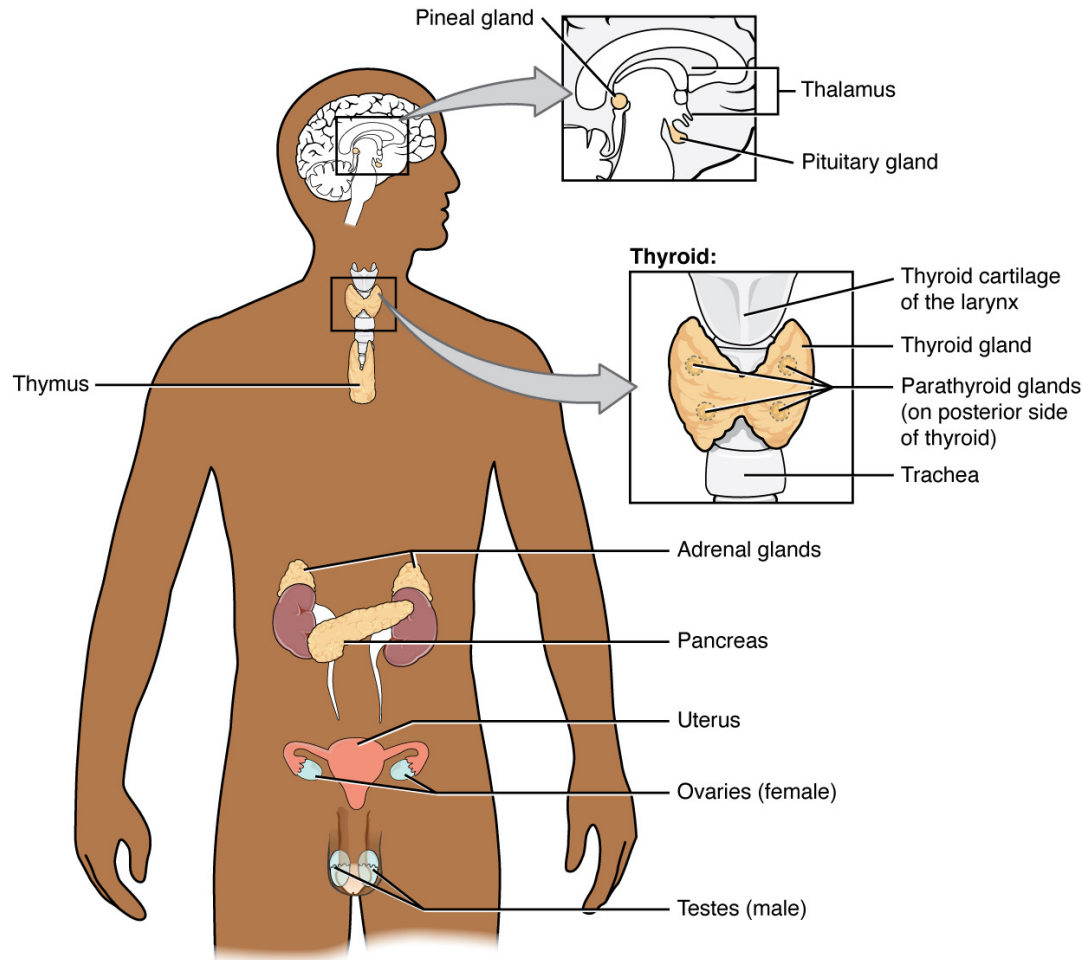
b. Exocrine Glands

- Secretory products released into ducts

Produce:

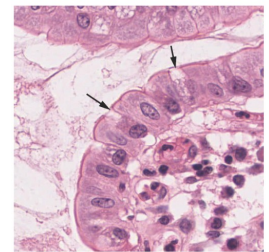
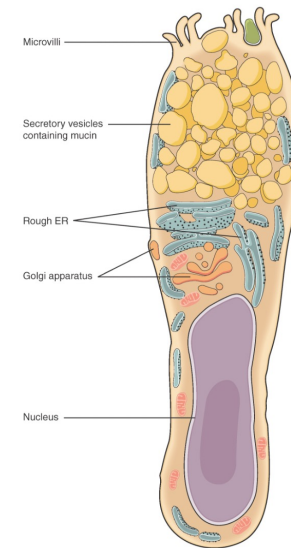
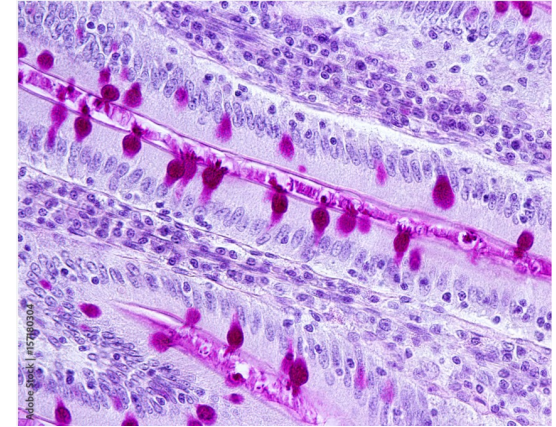
- Sweat
- Oil
- Earwax
- Saliva
- Digestive enzymes

a. Endocrine Glands



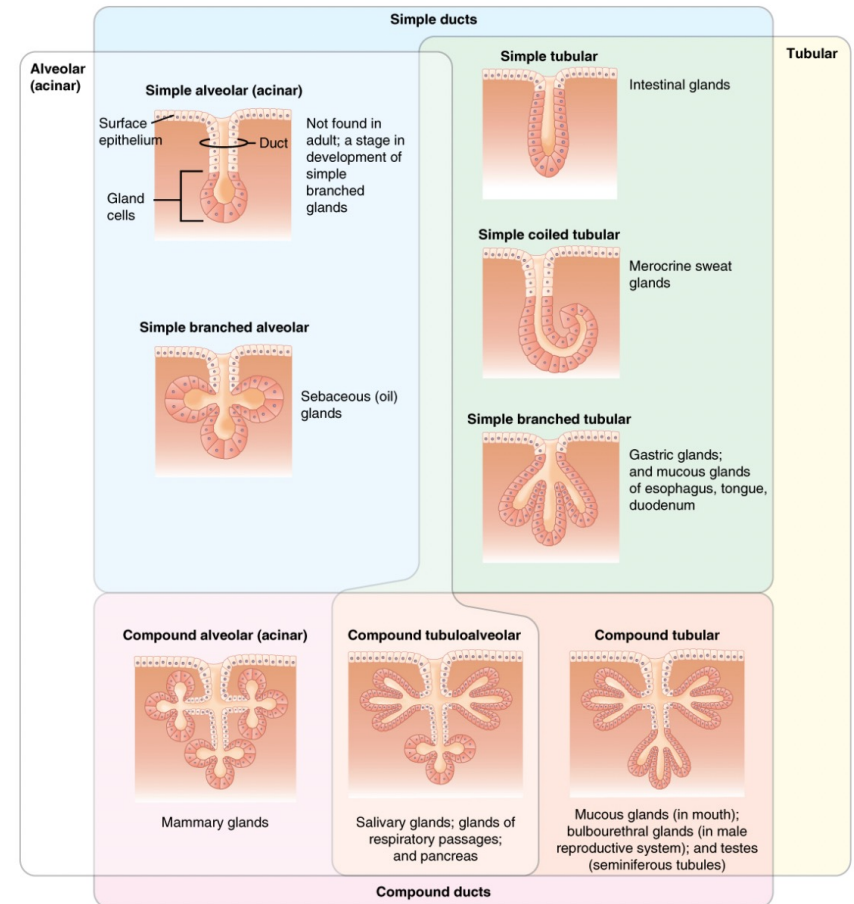
b. Exocrine Glands: Structural Classification

- Unicellular
 - Single-celled glands
- Multicellular (most common)
 - Composed of many cells



Multicellular Exocrine Glands - *Structural* Classification: Simple and Compound

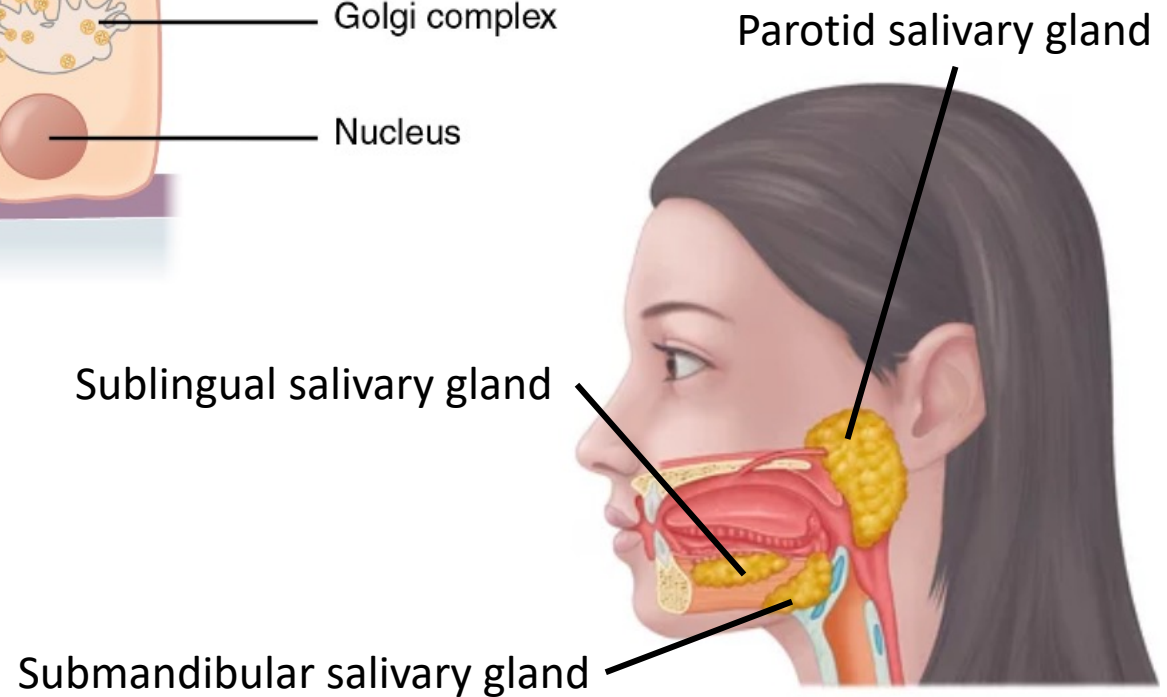
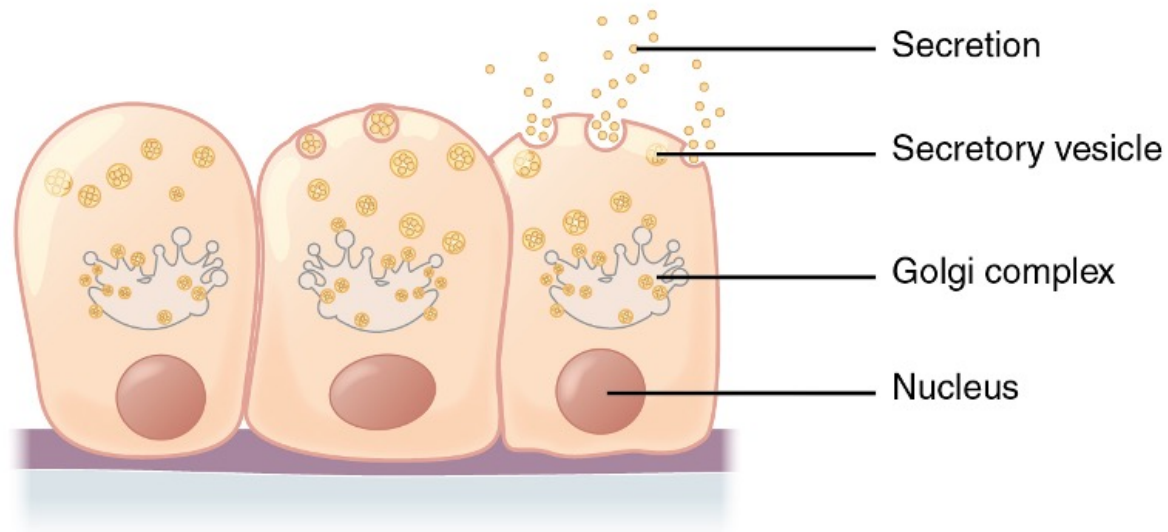
- a. Simple tubular
- b. Simple branched tubular
- c. Simple coiled tubular
- d. Simple acinar
- e. Simple branched acinar
- f. Compound tubular
- g. Compound acinar
- h. Compound tubuloacinar



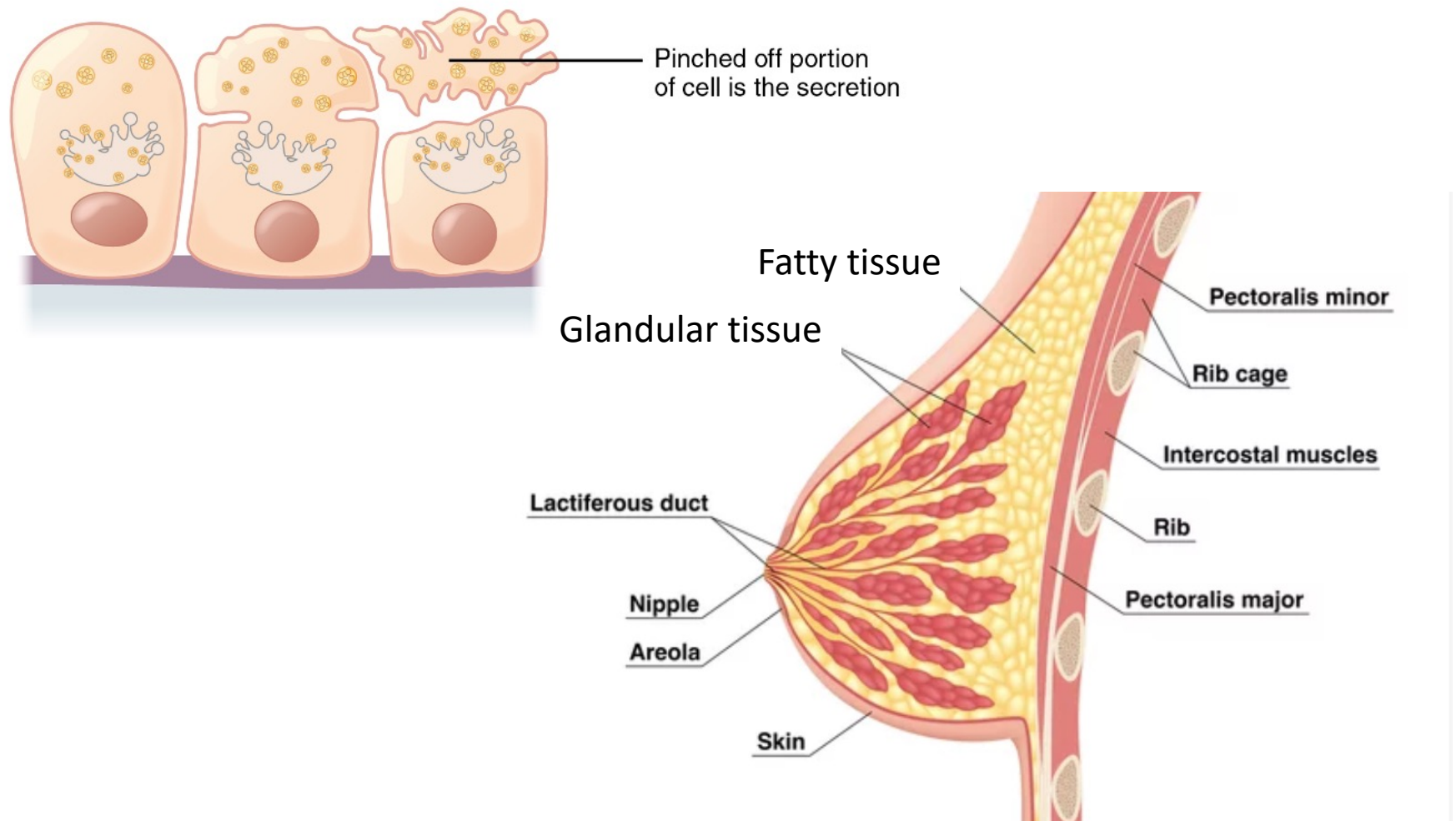
Functional Classification of Exocrine Glands

- a. Merocrine
- b. Apocrine
- c. Holocrine

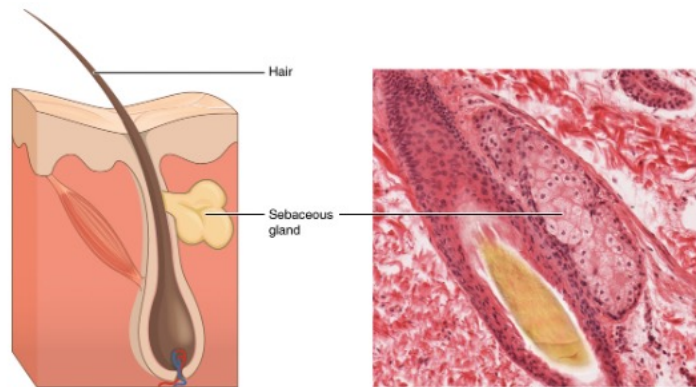
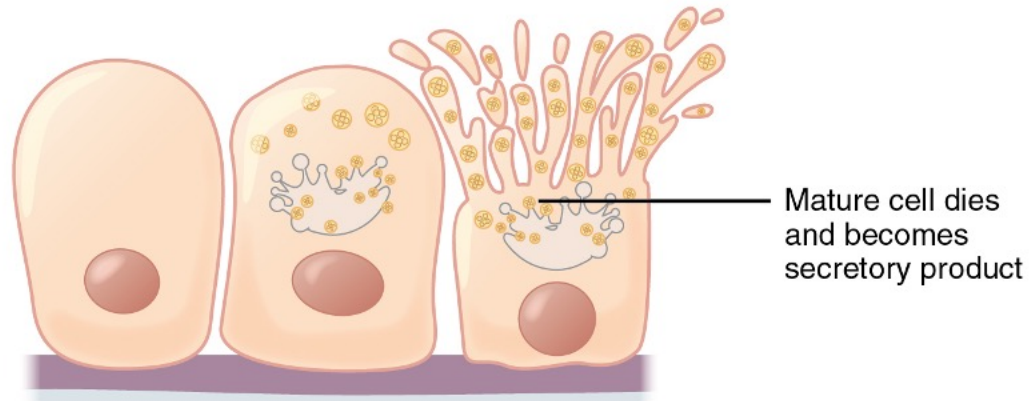
a. Merocrine



b. Apocrine



c. Holocrine

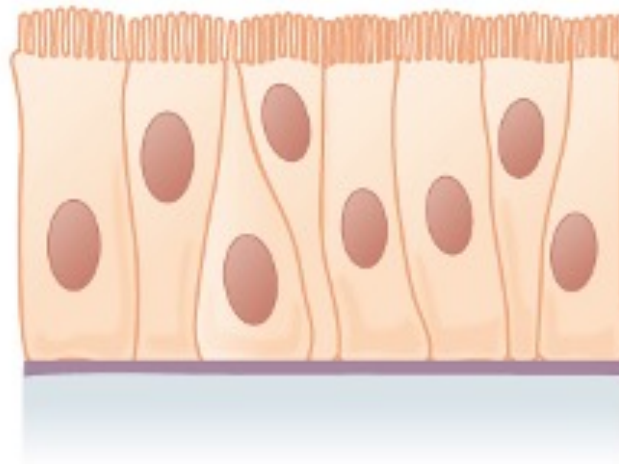


Epithelia Common Structural Characteristics

- A. Cellularity
- B. Polarity
- C. Attachment
- D. Avascularity
- E. Regeneration
- F. Covers Body Surfaces

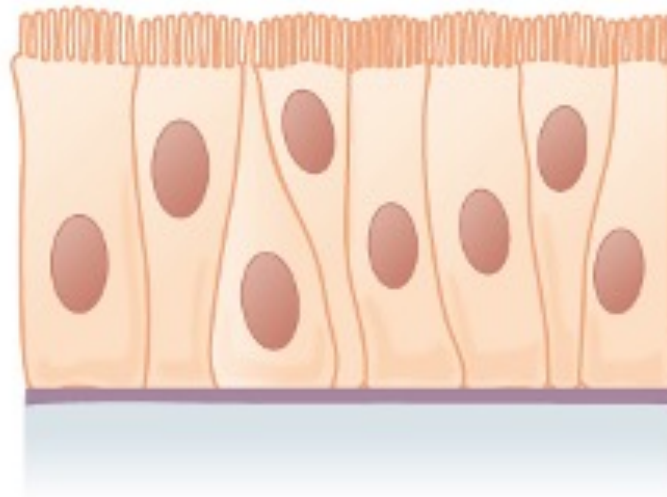
A. Cellularity

- Consists mostly of cells bound together by specialized junctions
- Little or no space between the cells

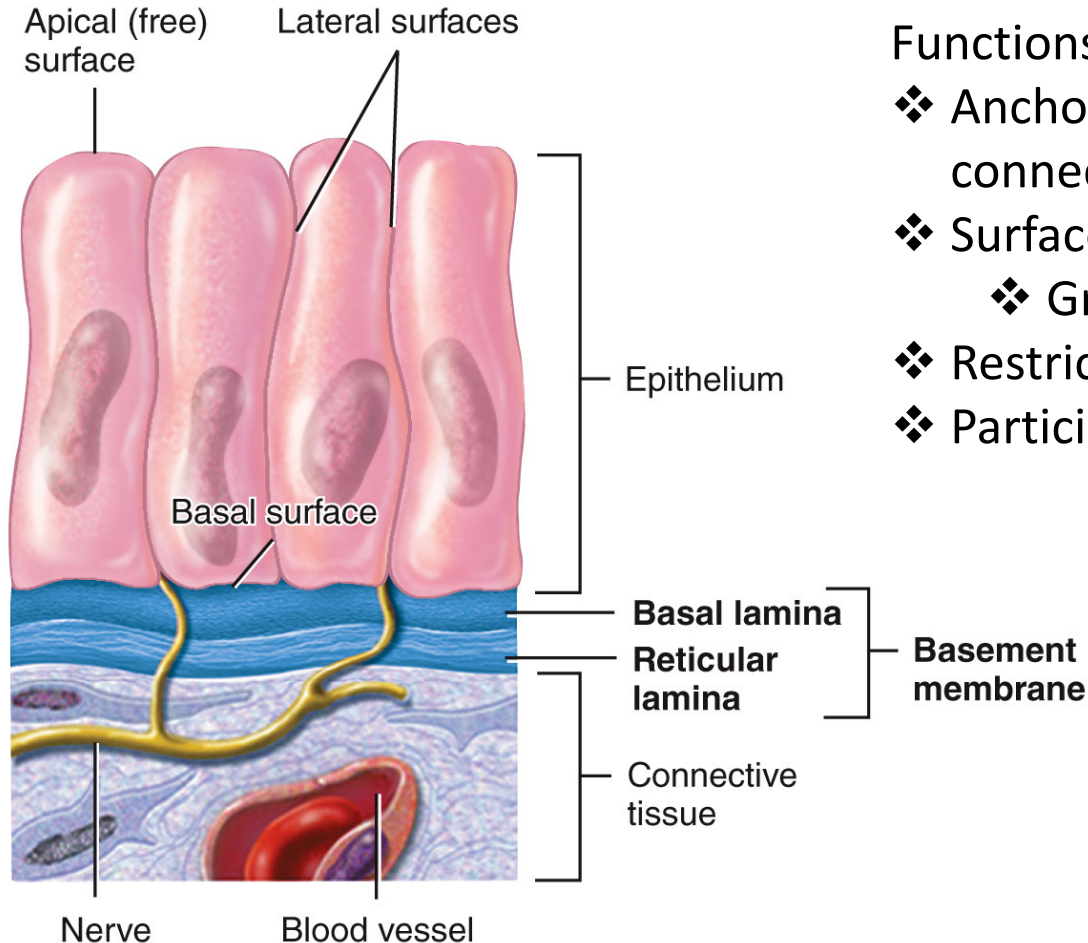


B. Polarity

- Exposed apical surface
- Attached basal surface
- Organelles not evenly distributed between apical and basal surfaces



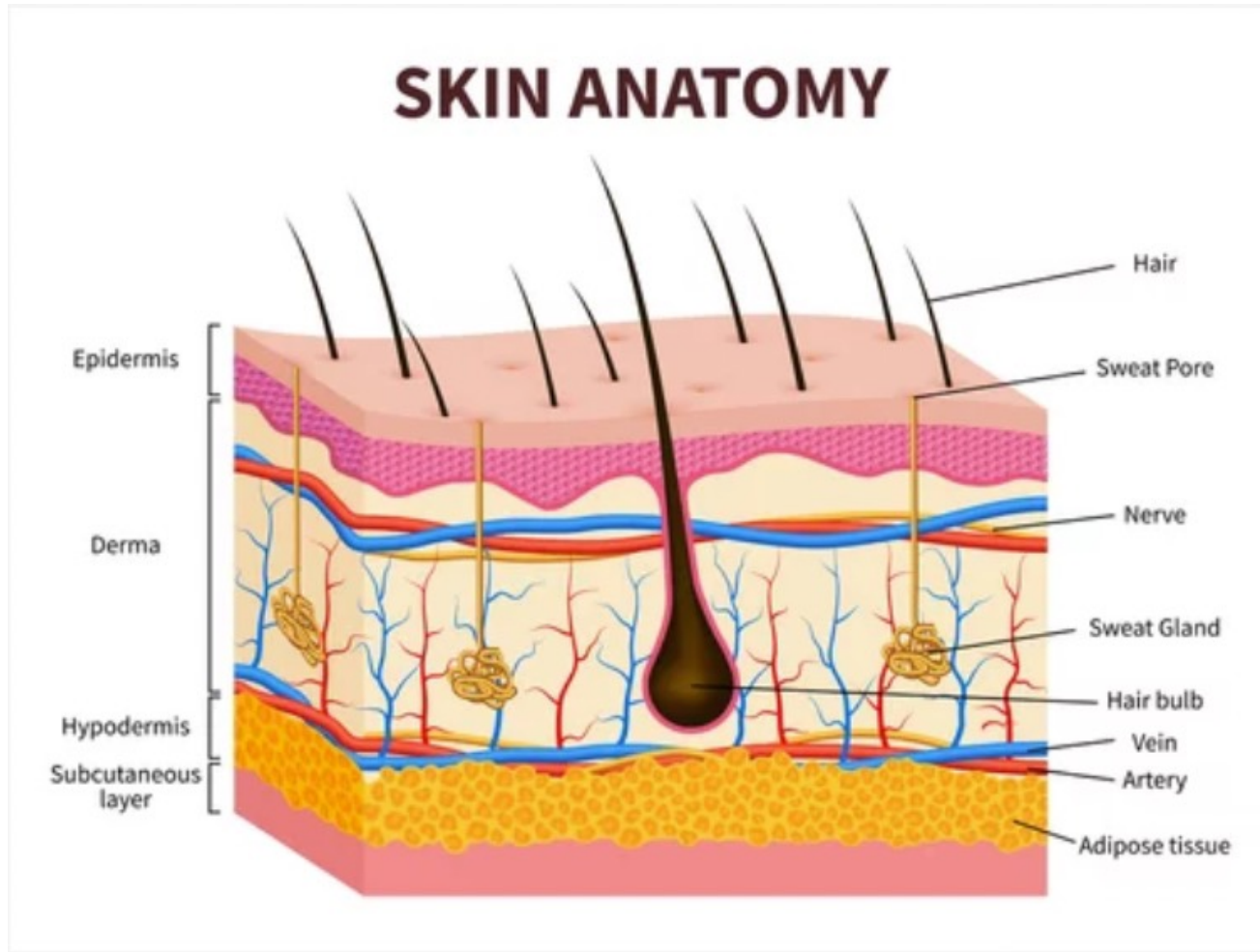
C. Attachment



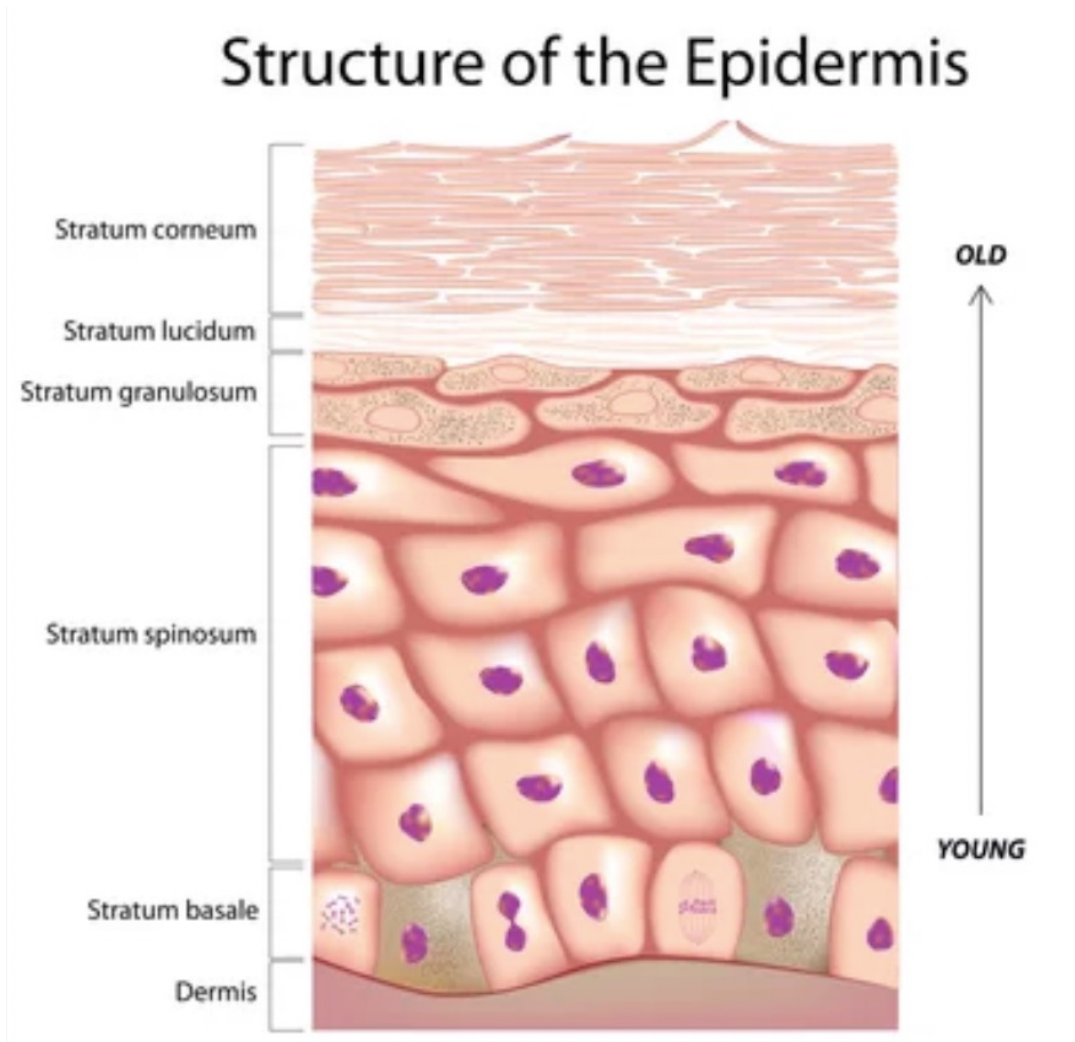
Functions:

- ❖ Anchoring the epithelium to the connective tissue
- ❖ Surface for epithelial cell migration
 - ❖ Growth and wound healing
- ❖ Restrict passage of larger molecules
- ❖ Participates of kidneys blood filtration

D. Avascularity



E. Regeneration



F. Covers Body Surfaces

- Exterior surface
 - Skin
- Internal surface
 - Lining of digestive tract
 - Lining of respiratory tract
 - Heart
 - Blood vessels
 - Lining of body cavities