Epithelial Tissue

Lab. 5
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Classification of epithelia

1. **According to thickness**

(number of cell layers)

1.“**simple**” one-cell layer

2.“**stratified**” –more than one layer of cells (which are named according to the shape of the cells in the apical layer)

3. **Pseudostratified** –a single layer of cells that attach to a basement membrane but not all cells reach the surface.

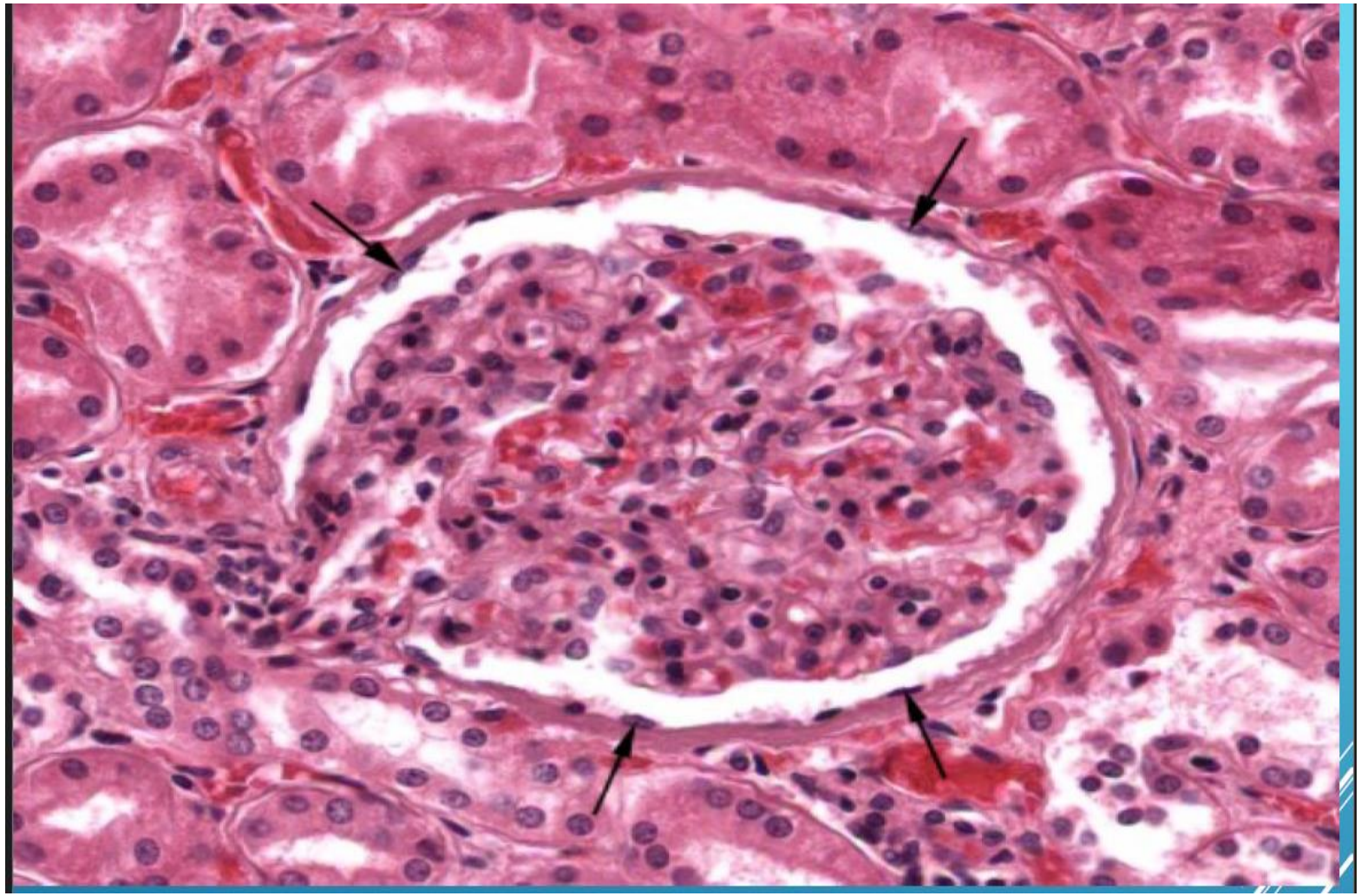
2. **According to the shape of the surface cells**

1.“**squamous**” –flat

2.“**cuboidal**” –round or as tall as wide

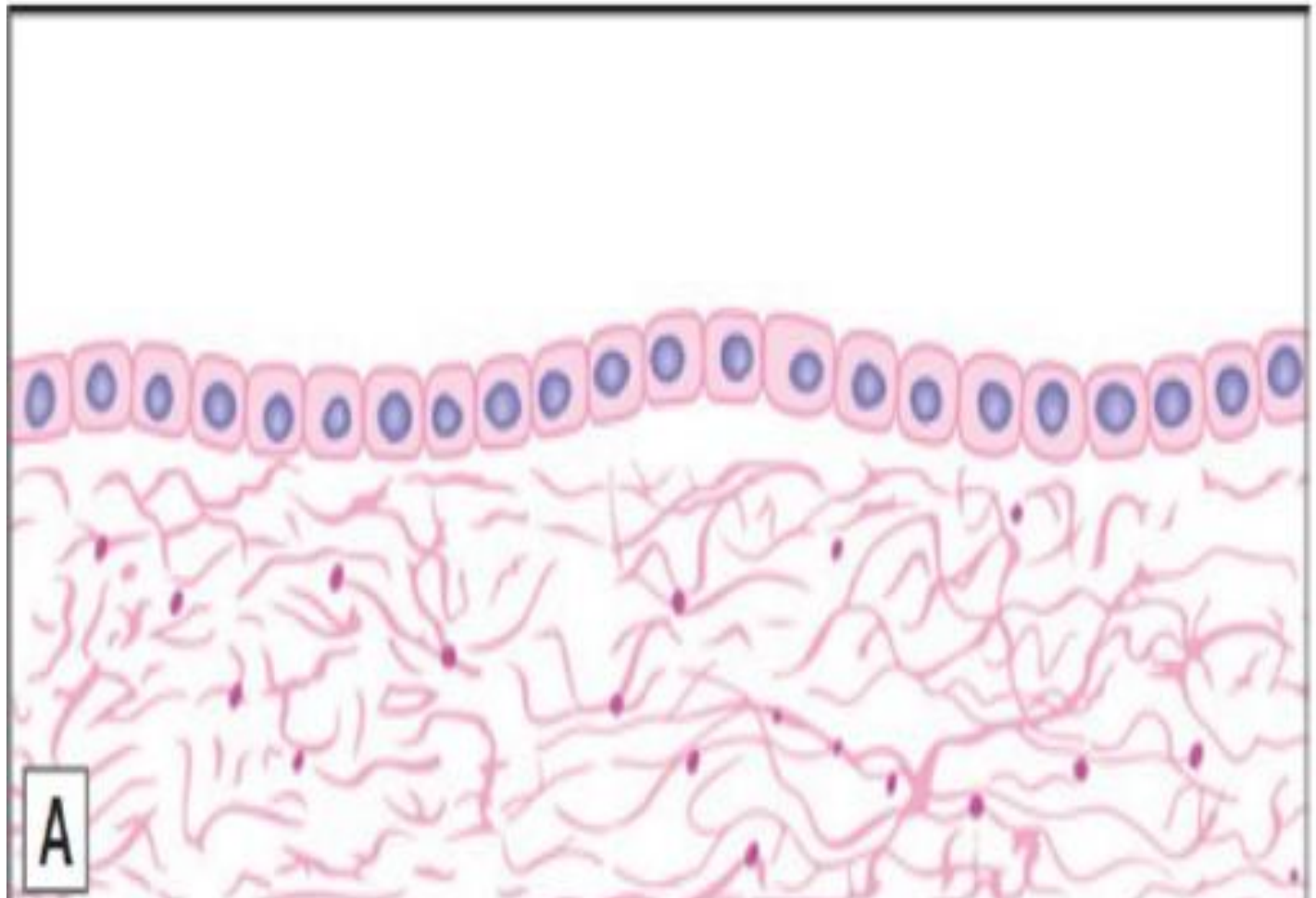
3.“**columnar**” **-**taller than wide

Simple squamous epithelium

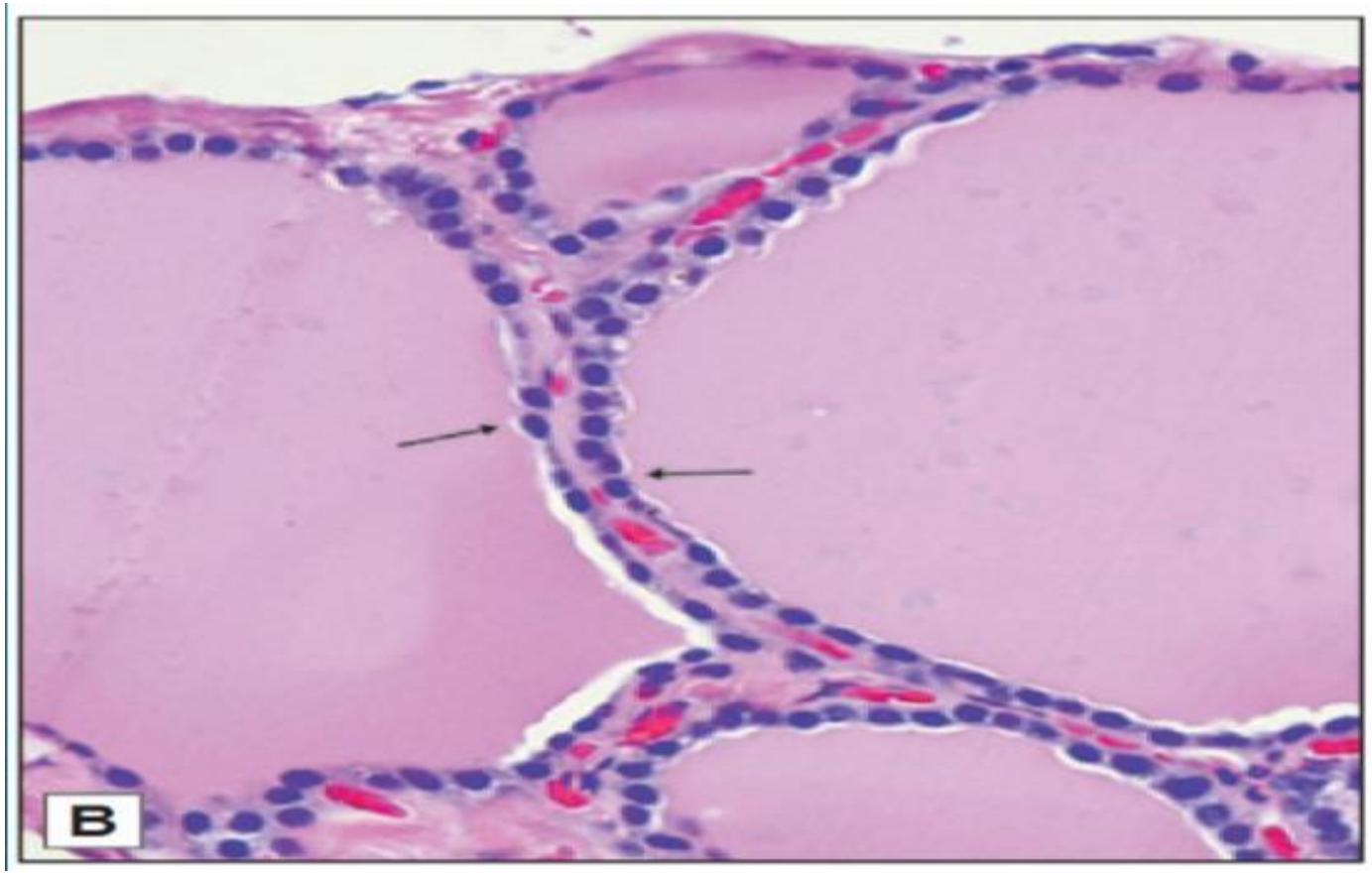


Simple cuboidal epithelium

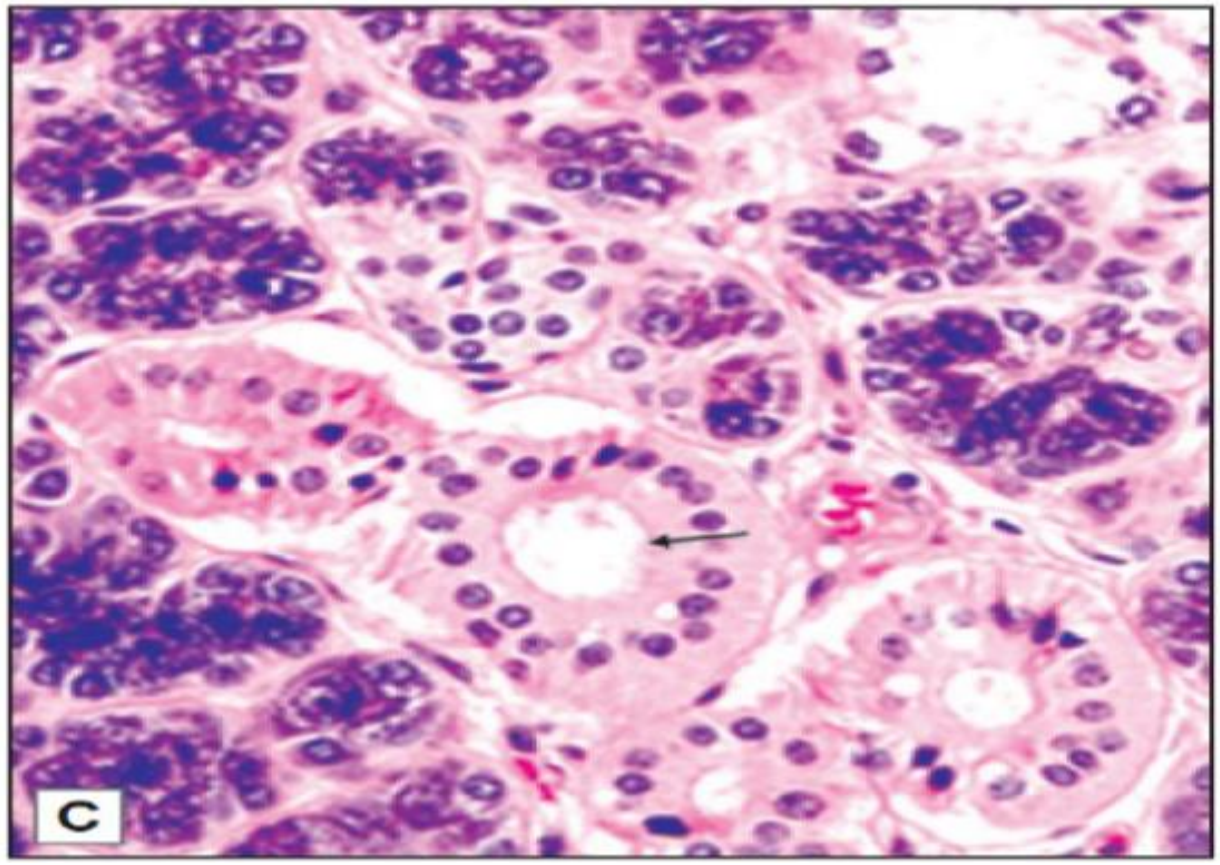
A. As seen in a section



B. Thyroid follicle lined by simple cuboidal epithelium



C. The duct of salivary gland



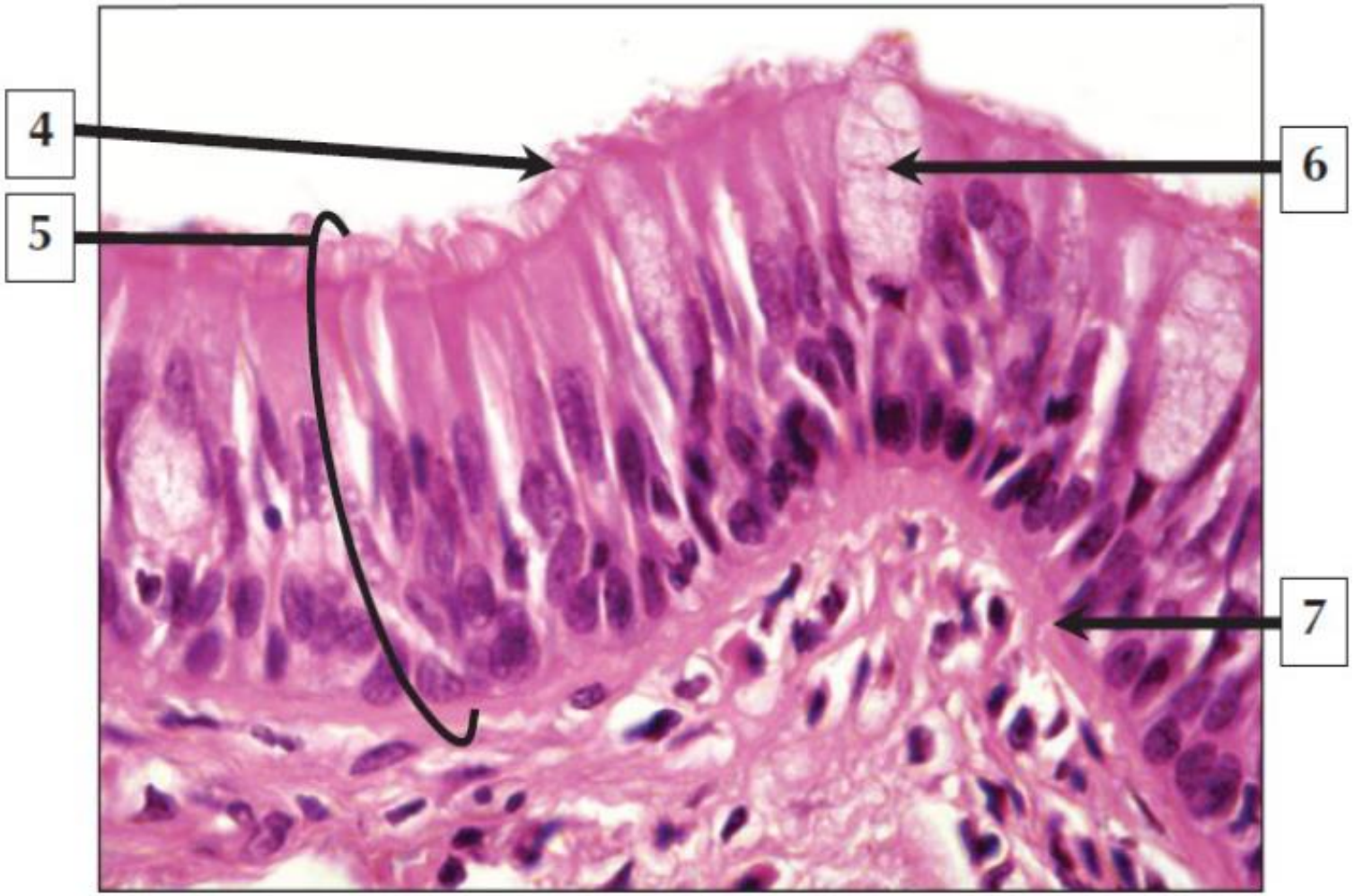
Simple Columnar Epithelium

1. Simple columnar epithelium
2. Nucleus of columnar epithelial cell
3. Lumen of venule



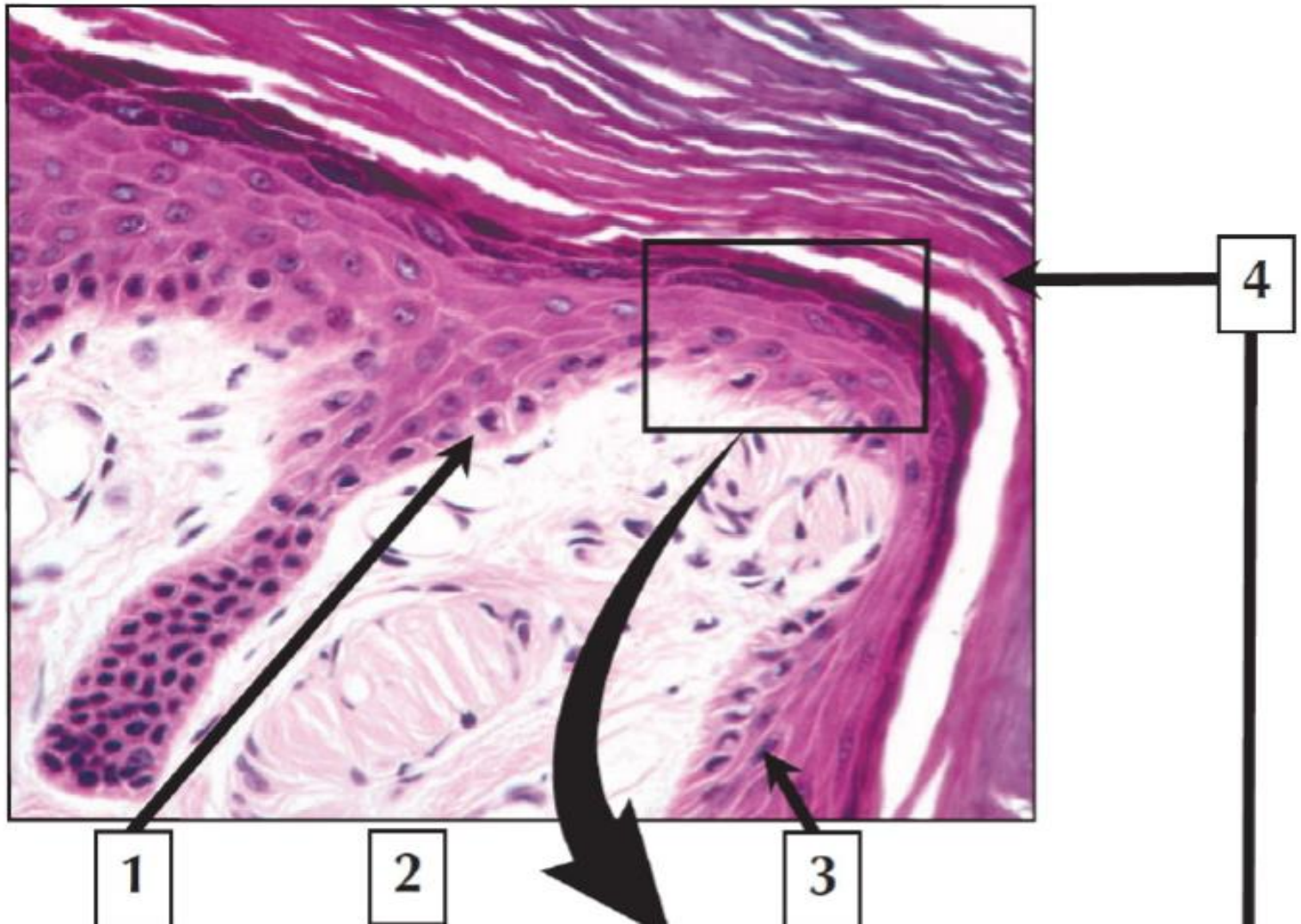
Pseudostratified (respiratory) epithelium

4. Ciliated border
5. Pseudostratified ciliated columnar (respiratory) epithelium
6. Goblet cell
7. Basement membrane

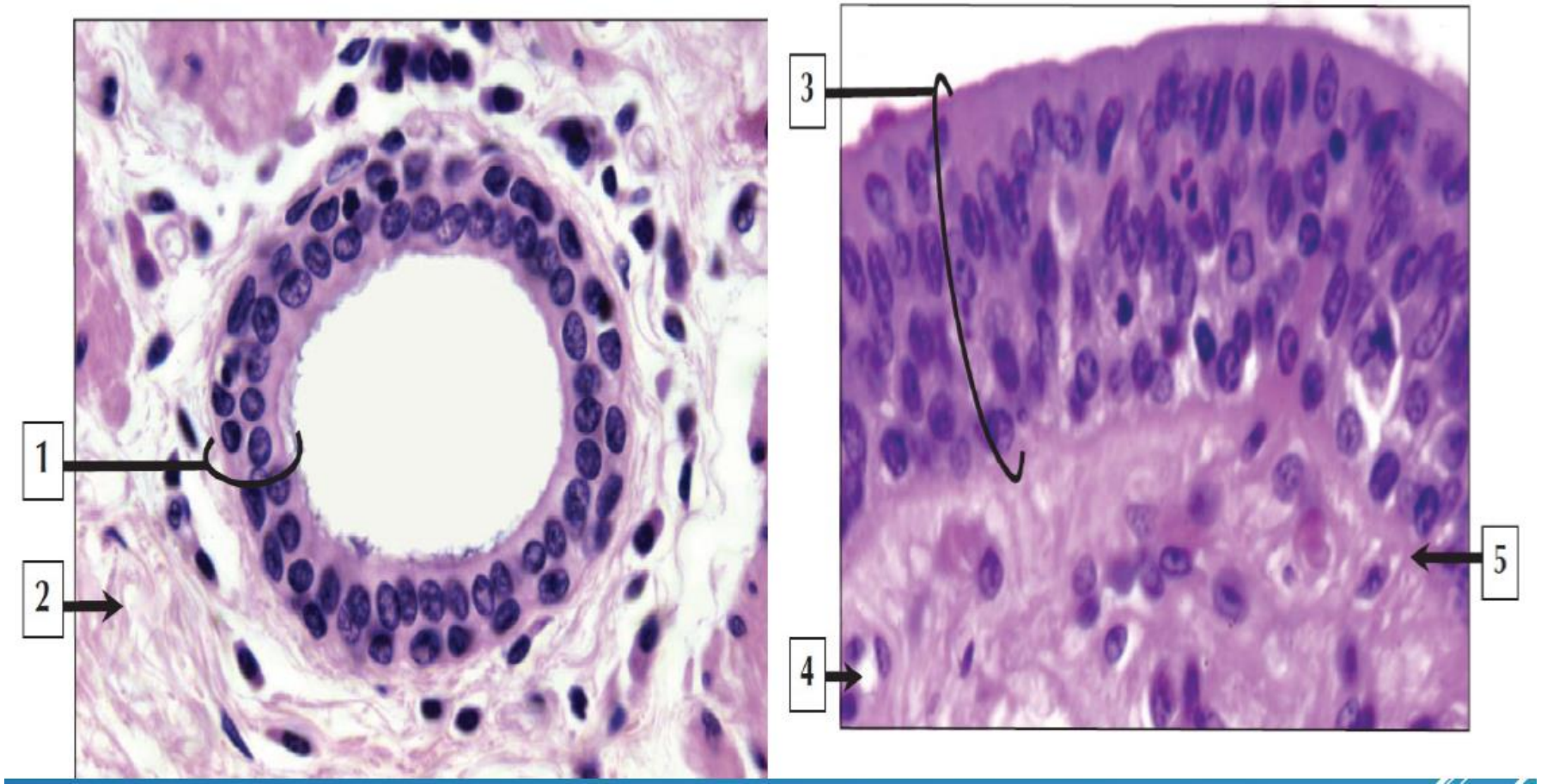


Stratified Squamous epithelium

1. Basal cell
2. Dermis (collagen)
3. Nucleus of keratinocyte
4. Keratin



1. Stratified cuboidal epithelium (duct of mucous gland)
2. Connective tissue (stroma)
3. Stratified columnar epithelium (of male urethra)
4. Capillary
5. Basement membrane



Glandular Epithelia:

Glandular epithelia consist of single cells or groups of cells specialized for secretion. They can be classified as **exocrine (secretions distributed by** duct systems) or **endocrine (secretions distributed** by blood vessels).

Endocrine Glands:

release secretions into surrounding interstitial fluid(into the bloodstream or lymphatics); they have no ducts.,Glands may line the digestive tract or be separate.

The major endocrine glands are **discrete glands** – pituitary, thyroid, parathyroid, adrenals gland.

Some endocrine glands share their space **with exocrine glands**.

a. **Pancreas** – secretory cells (exocrine, digestive enzyme) + Islets of Langerhans (endocrine,hormone)
b. **Ovary** (follicle, corpus luteum), and **testis** (Leydig cells).

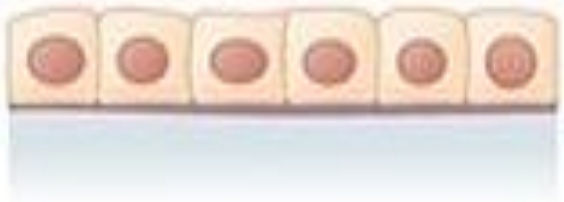
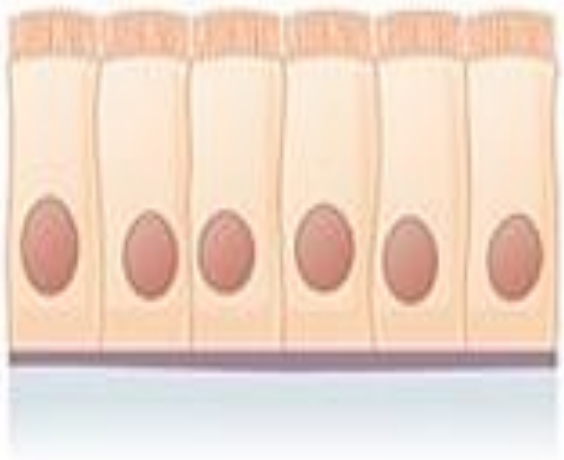
Exocrine Glands

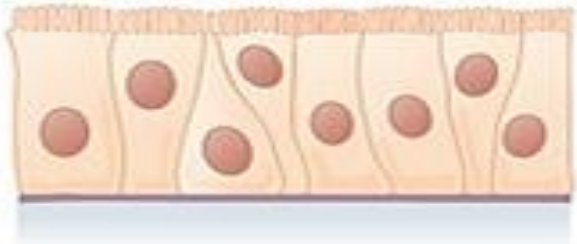
More numerous than endocrine glands Secrete their products onto body surfaces (skin) or into body cavities**. Exocrine gland** product is secreted via ducts onto an external or internal epithelial surface(secreted material is mucus or watery) (Examples , mucous, sweat, oil, and saliva).

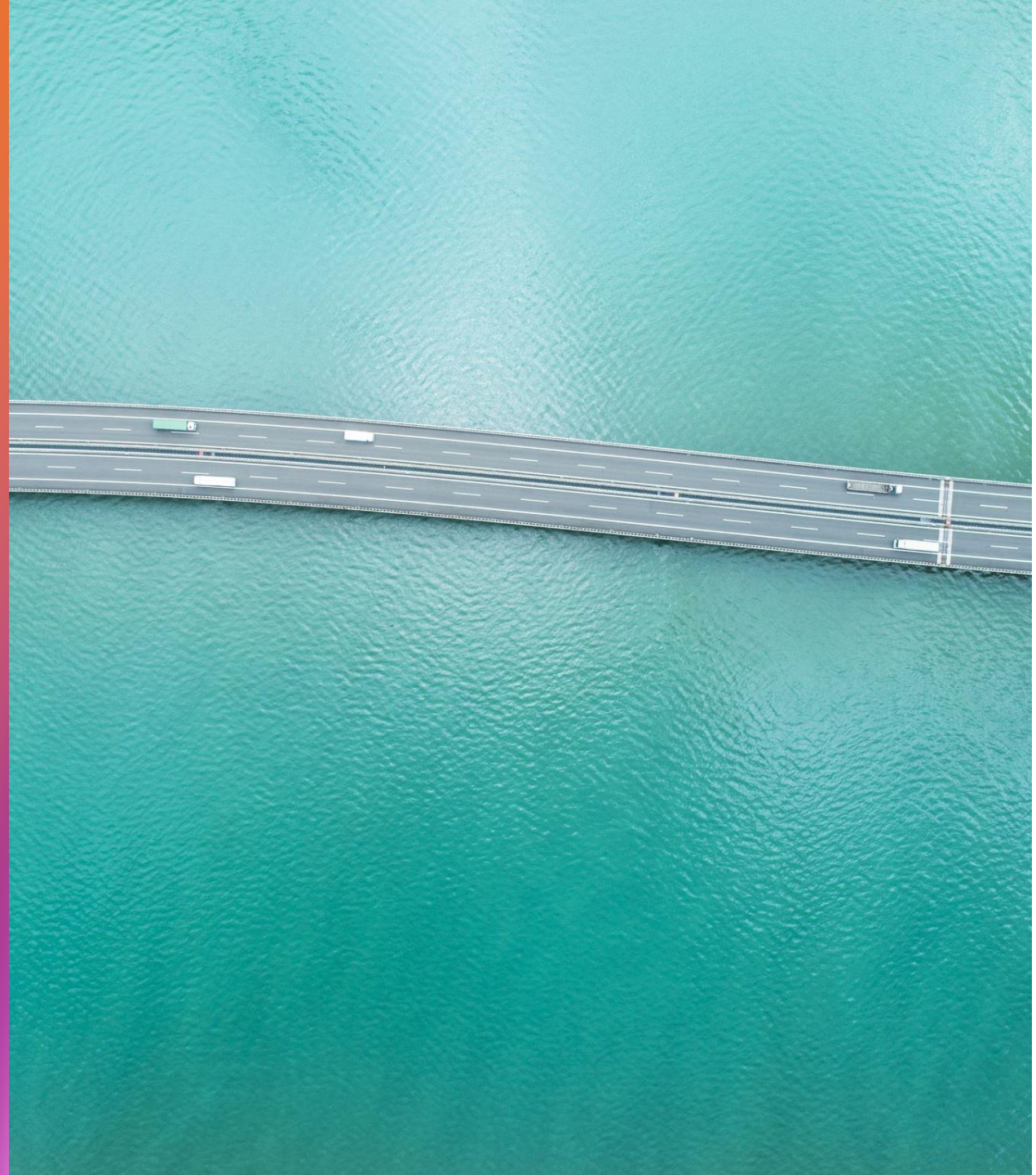
Classification of exocrine glands

A. Classified According to cell Number

1. **Unicellular** : consist of single cell, Example: goblet cells in digestive tract.
2. **Multicellular:** exocrine glands are composed of a duct and secretory unit,Example: salivary glands.

Cells	Location	Function
Simple squamous epithelium 	Air sacs of lungs and the lining of the heart, blood vessels, and lymphatic vessels	Allows materials to pass through by diffusion and filtration, and secretes lubricating substance
Simple cuboidal epithelium 	In ducts and secretory portions of small glands and in kidney tubules	Secretes and absorbs
Simple columnar epithelium 	Ciliated tissues are in bronchi, uterine tubes, and uterus; smooth (nonciliated tissues) are in the digestive tract, bladder	Absorbs; it also secretes mucous and enzymes

Pseudostratified columnar epithelium 	Ciliated tissue lines the trachea and much of the upper respiratory tract	Secretes mucus; ciliated tissue moves mucus
Stratified squamous epithelium 	Lines the esophagus, mouth, and vagina	Protects against abrasion
Stratified cuboidal epithelium 	Sweat glands, salivary glands, and the mammary glands	Protective tissue
Stratified columnar epithelium 	The male urethra and the ducts of some glands	Secretes and protects
Transitional epithelium 	Lines the bladder, uretha, and the ureters	Allows the urinary organs to expand and stretch



Thank you