

Al-Mustaqbal University college
Department of pharmacy



1 st Class, 1 st Semester

Human biology

Lab 2: Tissues

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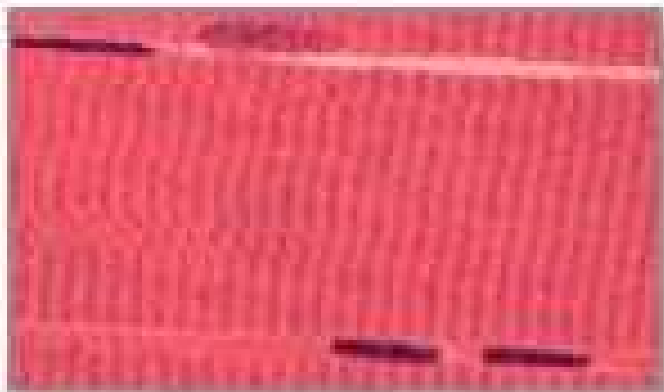
Four types of tissue



Connective tissue



Epithelial tissue



Muscle tissue



Nervous tissue

A. Epithelial tissues:

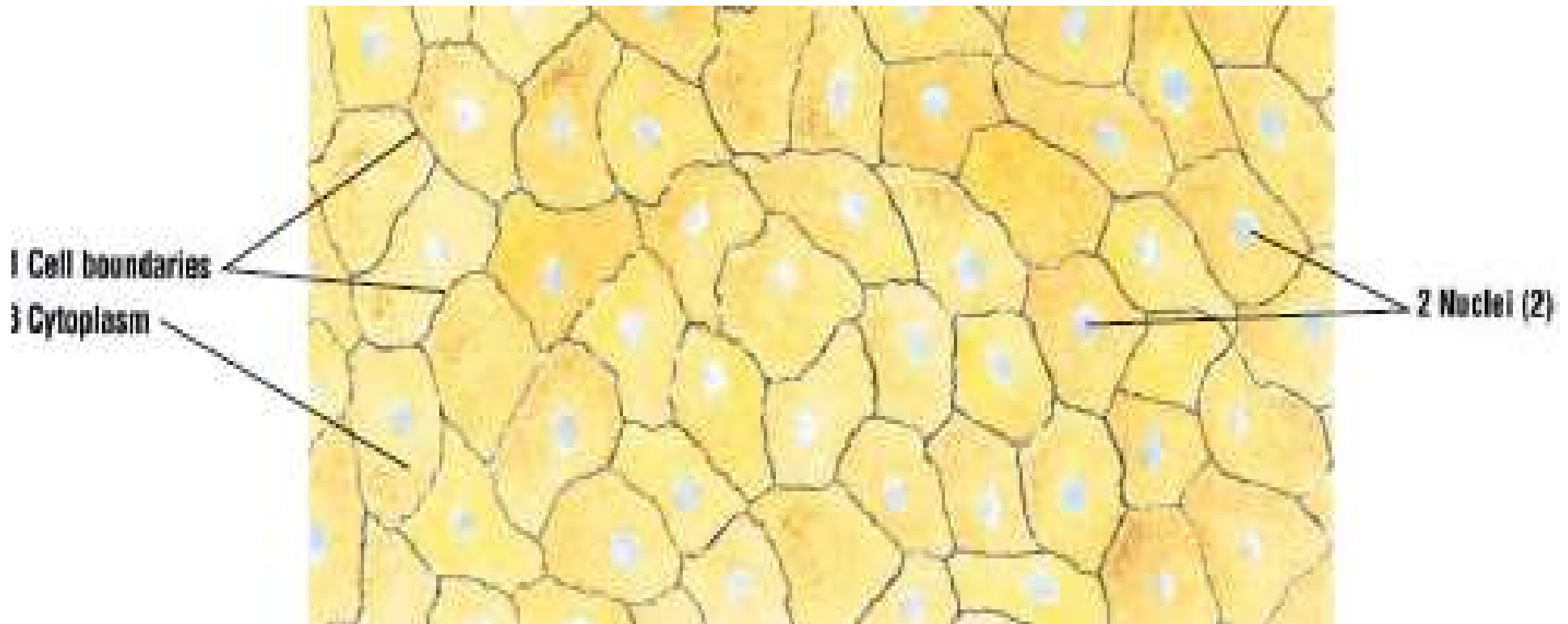
	no. of cell layers	According to the form of cell	example
a	Simple (one layer)	squamous	Lining of vascular system, Bowman's capsule (Kidney) Lining of respiratory system
		cuboidal	Covering the ovary, thyroid
		columnar	Lining of small intestine, Gall bladder
b	Pseudostratified (layers of cells with nuclei at different levels: not all cells reach surface but all adhere to basement membrane.)		Lining of trachea, nasal cavity, epididymis
c	Stratified (two or more layers)	Squamous keratinized	epidermis
		Squamous non-keratinized	Lining of oral cavity, esophagus, larynx, vagina
		cuboidal	Sweat gland
		columnar	Largest ducts of exocrine glands
		transitional	Renal calyces, bladder, urethra, ureters

A. Epithelial tissues: (simple) one layer of cell

1. Simple squamous Epithelial tissues

Lining of vascular system, bowman's capsule (Kidney)

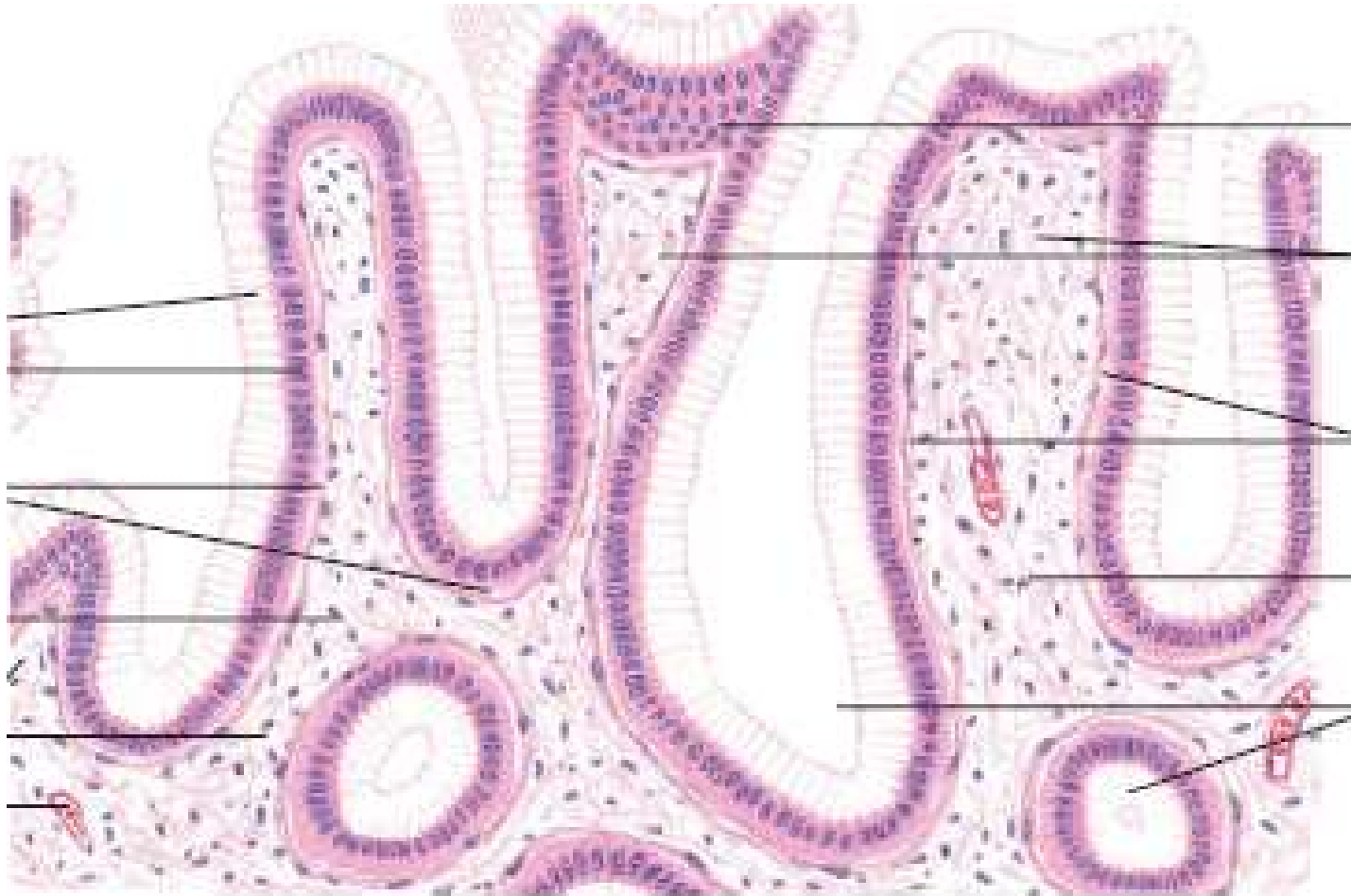
Lining of respiratory system



A. Epithelial tissues: (simple) one layer of cell

2. Simple columnar epithelial tissues

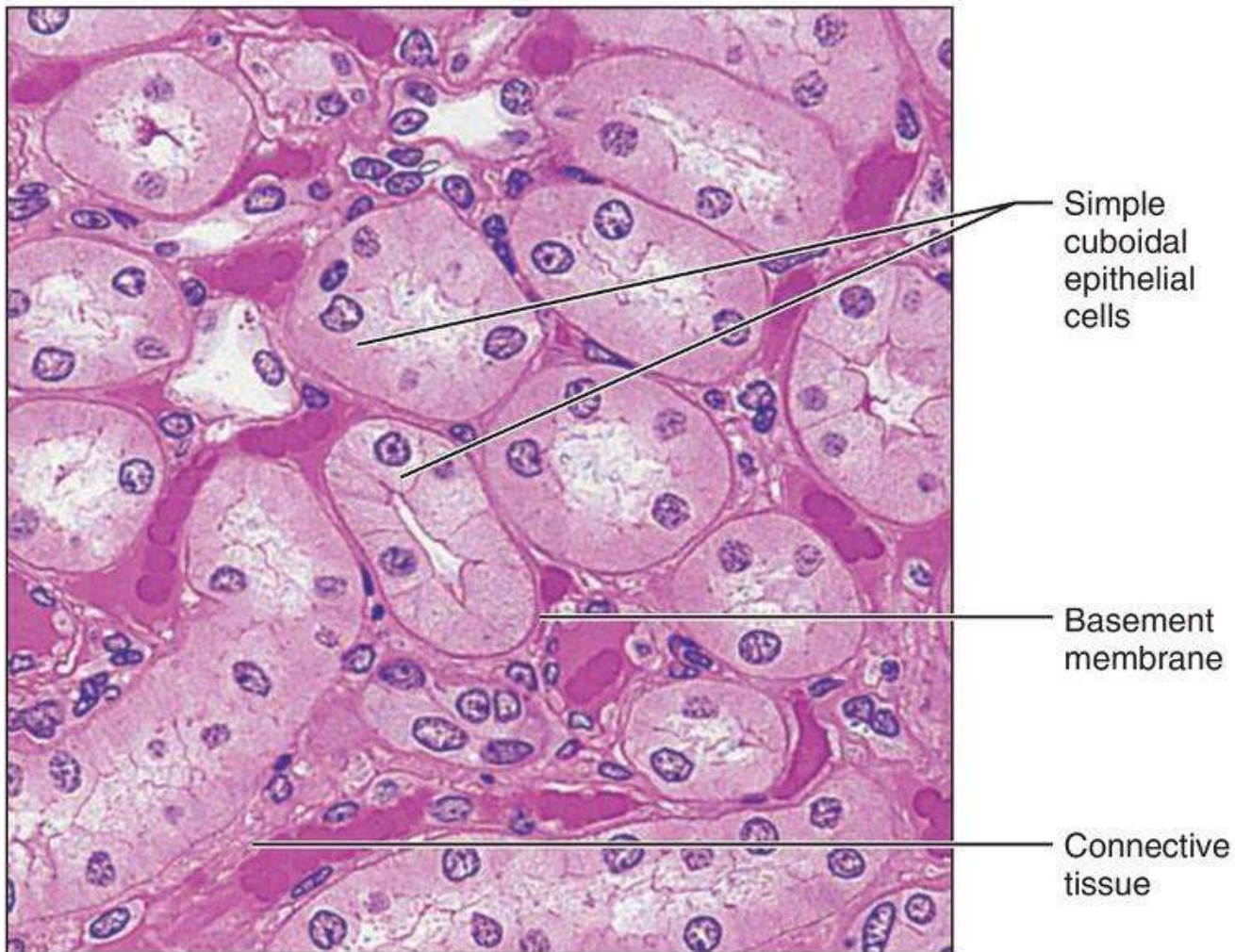
Lining of small intestine, Gall bladder



A. Epithelial tissues: (simple) one layer of cell

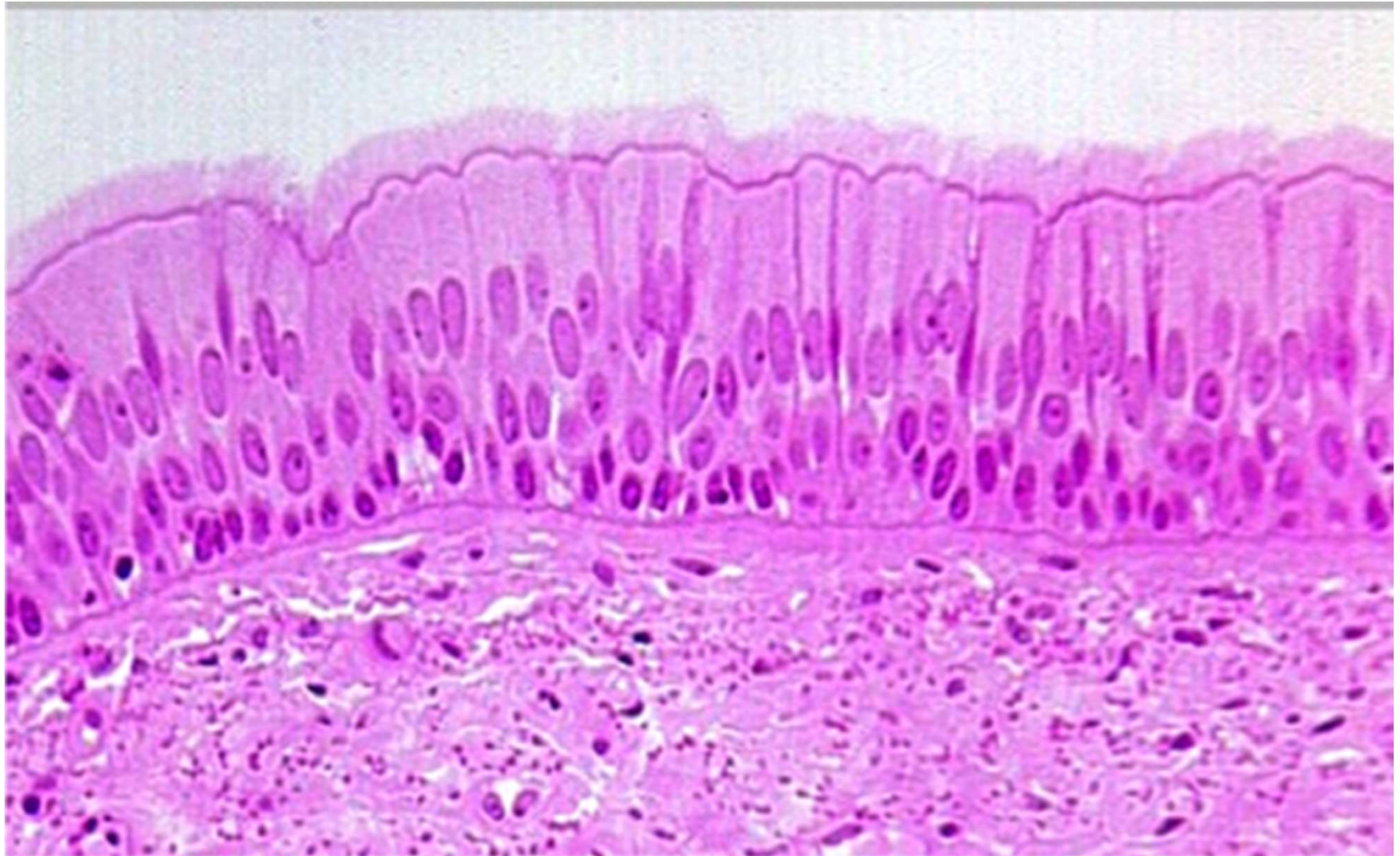
3. Simple cuboidal epithelial tissues

Covering the ovary, thyroid



A. Epithelial tissues: (pseudostratified)

lining of trachea, nasal cavity and epididymes

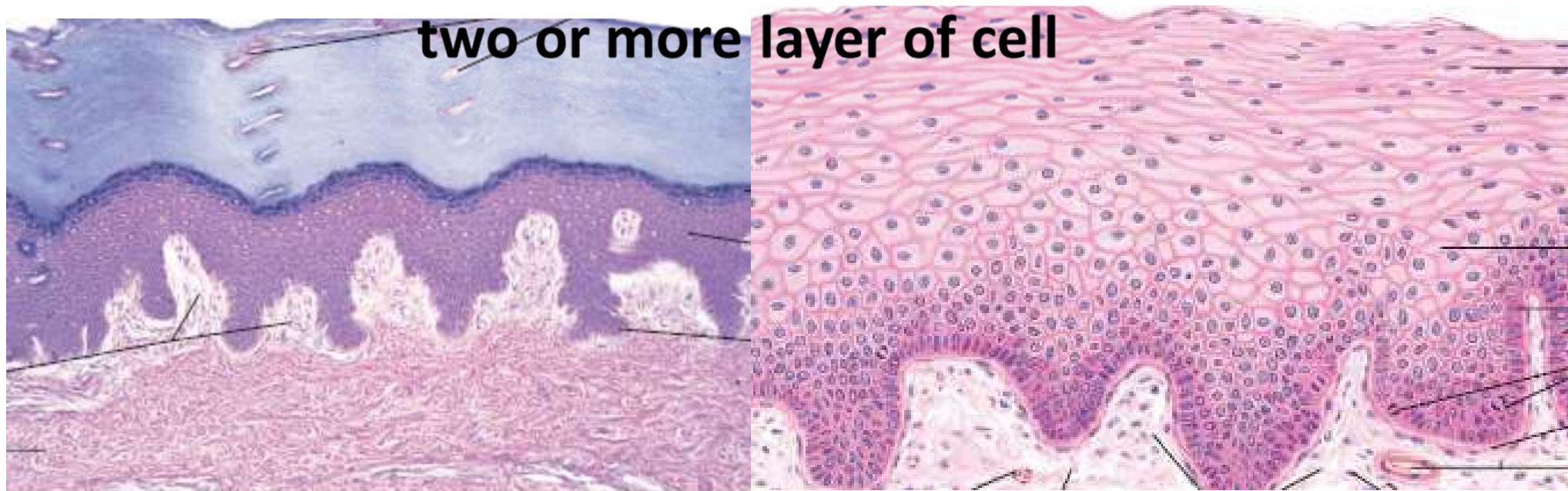


A. Epithelial tissues: (stratified)

1. stratified squamous Epithelial tissues:

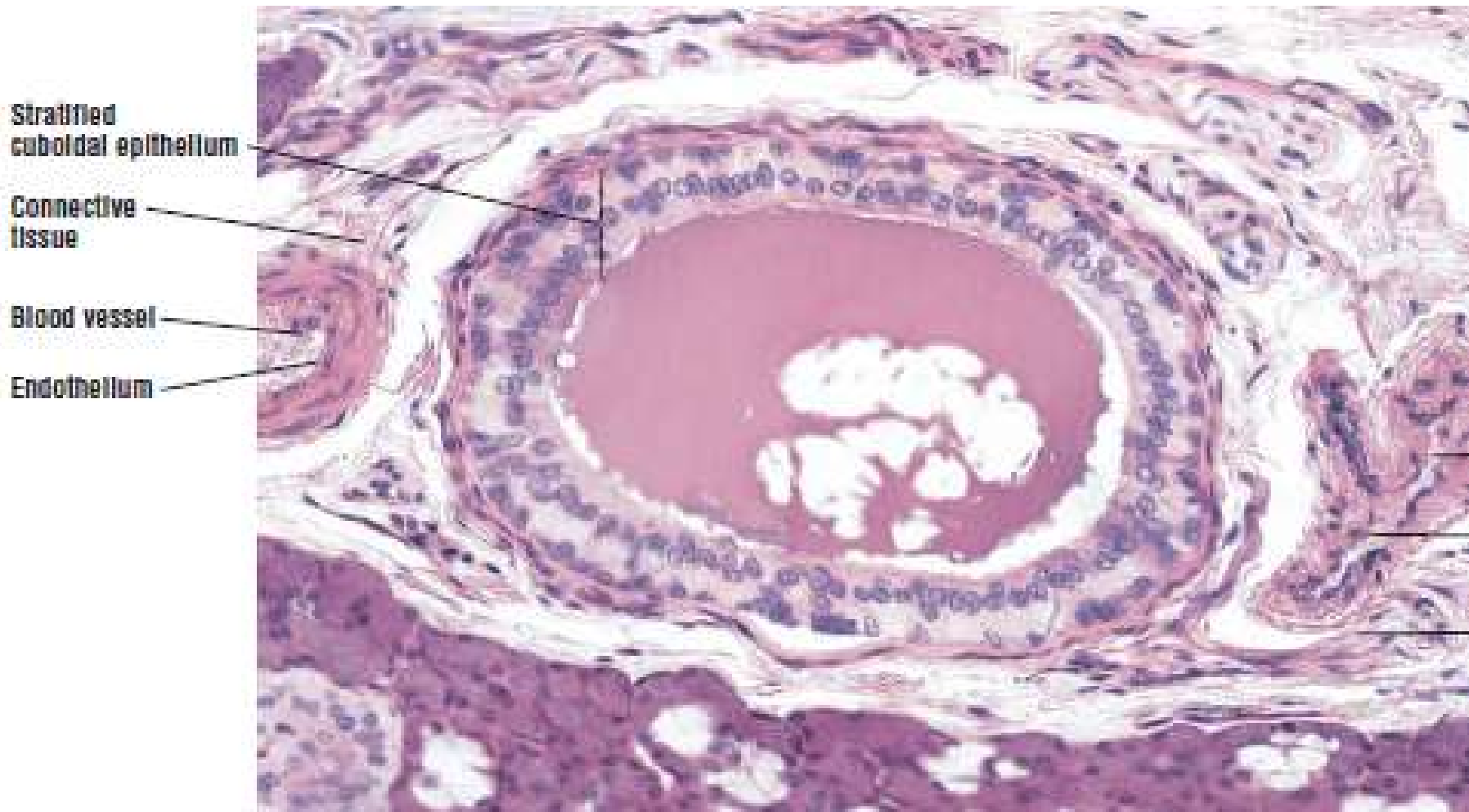
a. keratinized (epidermis)

b. non keratinized
(lining of oral cavity,
larynx, esophagus)



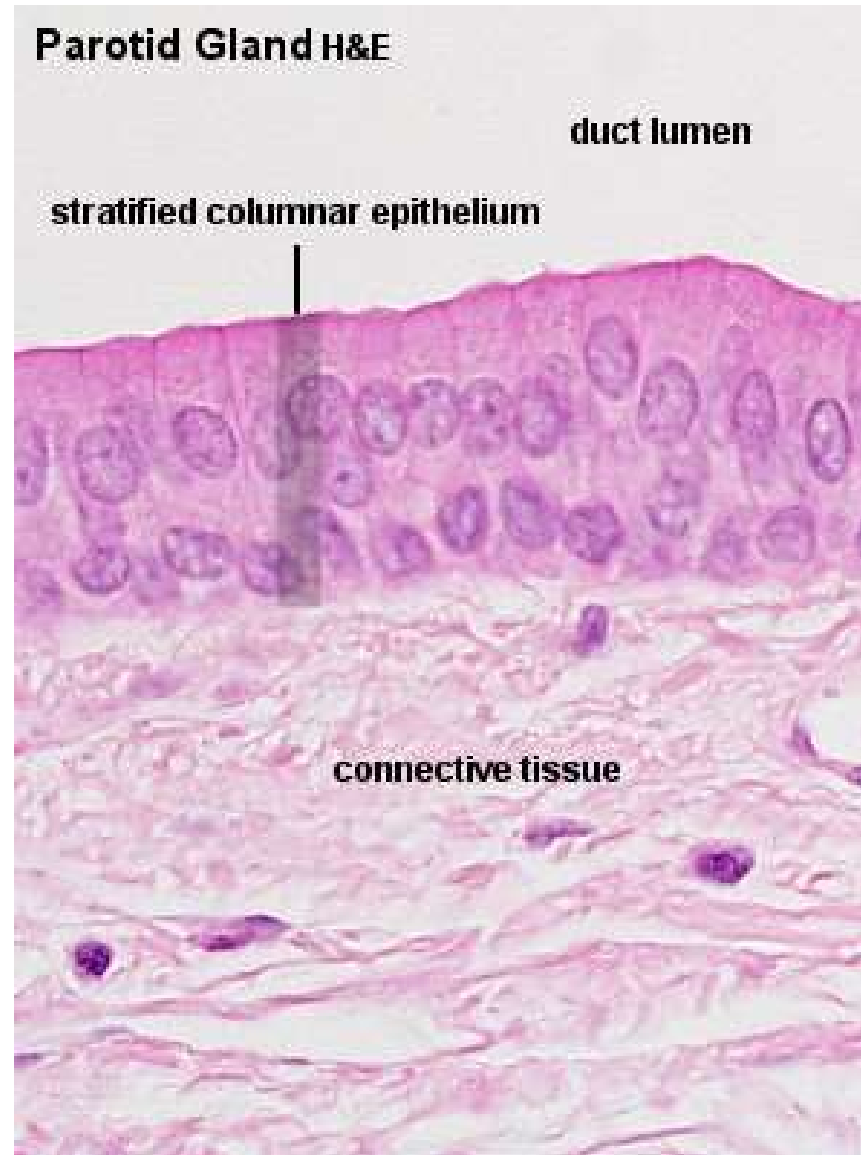
A. Epithelial tissues: (stratified)

2. stratified cuboidal Epithelial tissues: sweat gland



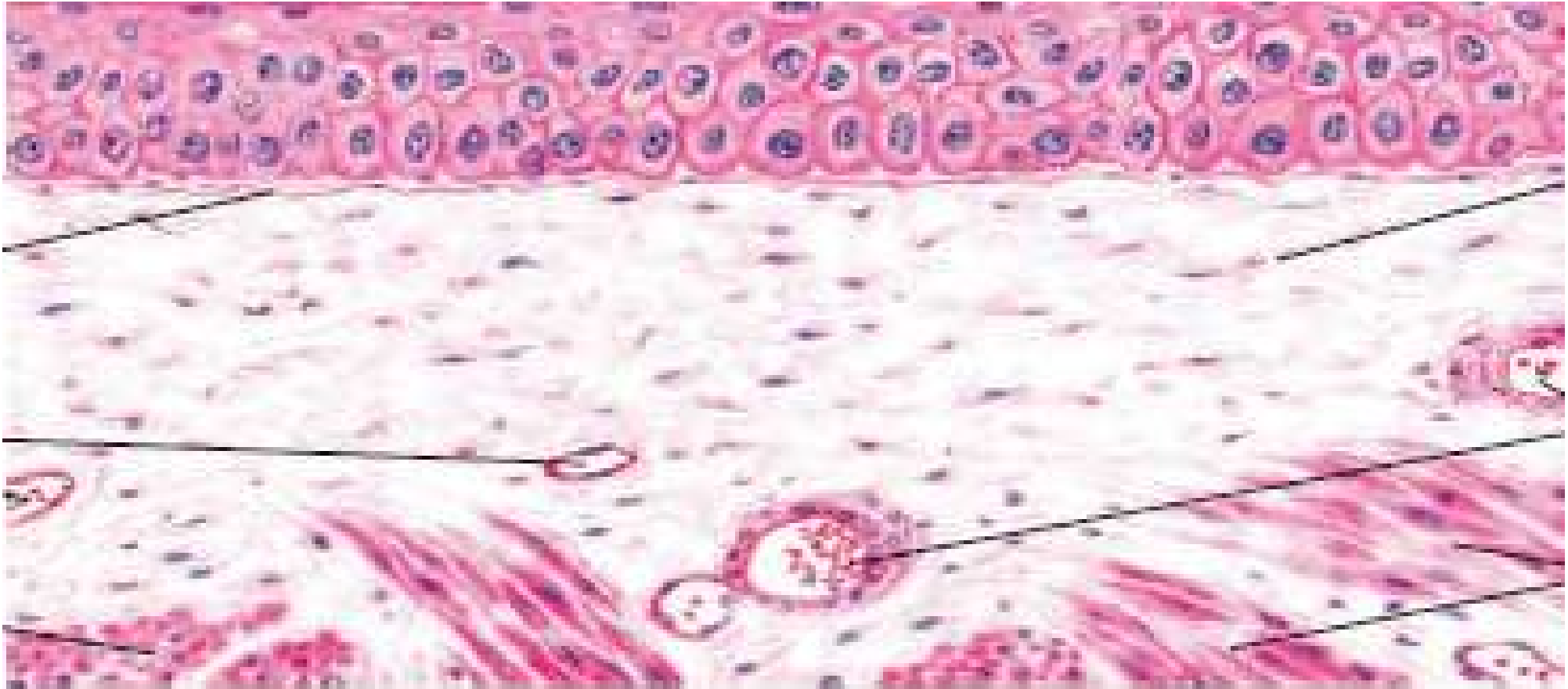
A. Epithelial tissues: (stratified)

3. stratified columnar Epithelial tissues: largest ducts of exocrine glands



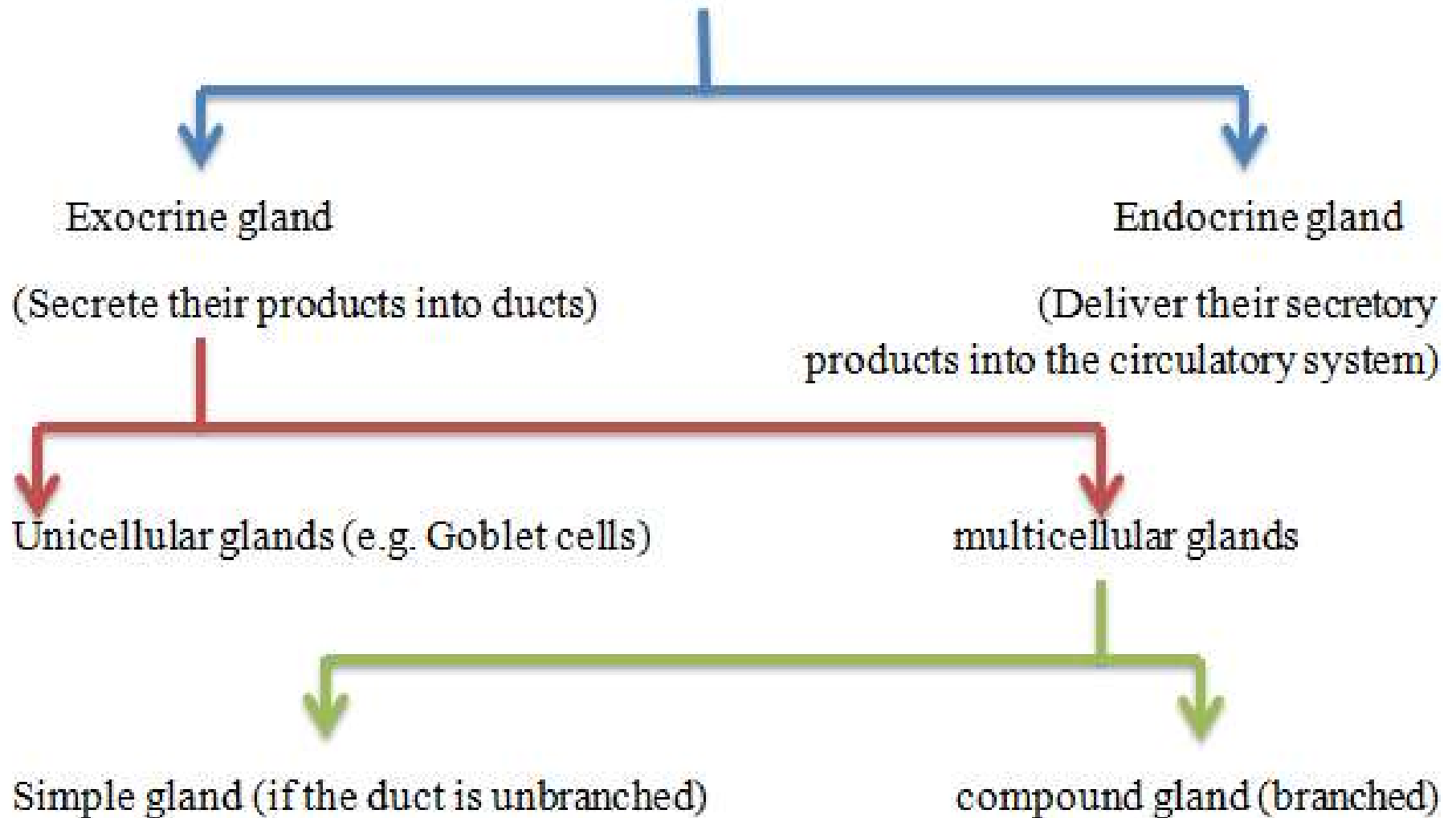
A. Epithelial tissues: (stratified)

3. stratified transitional Epithelial tissues: bladder, ureters, urethra



Glandular epithelia

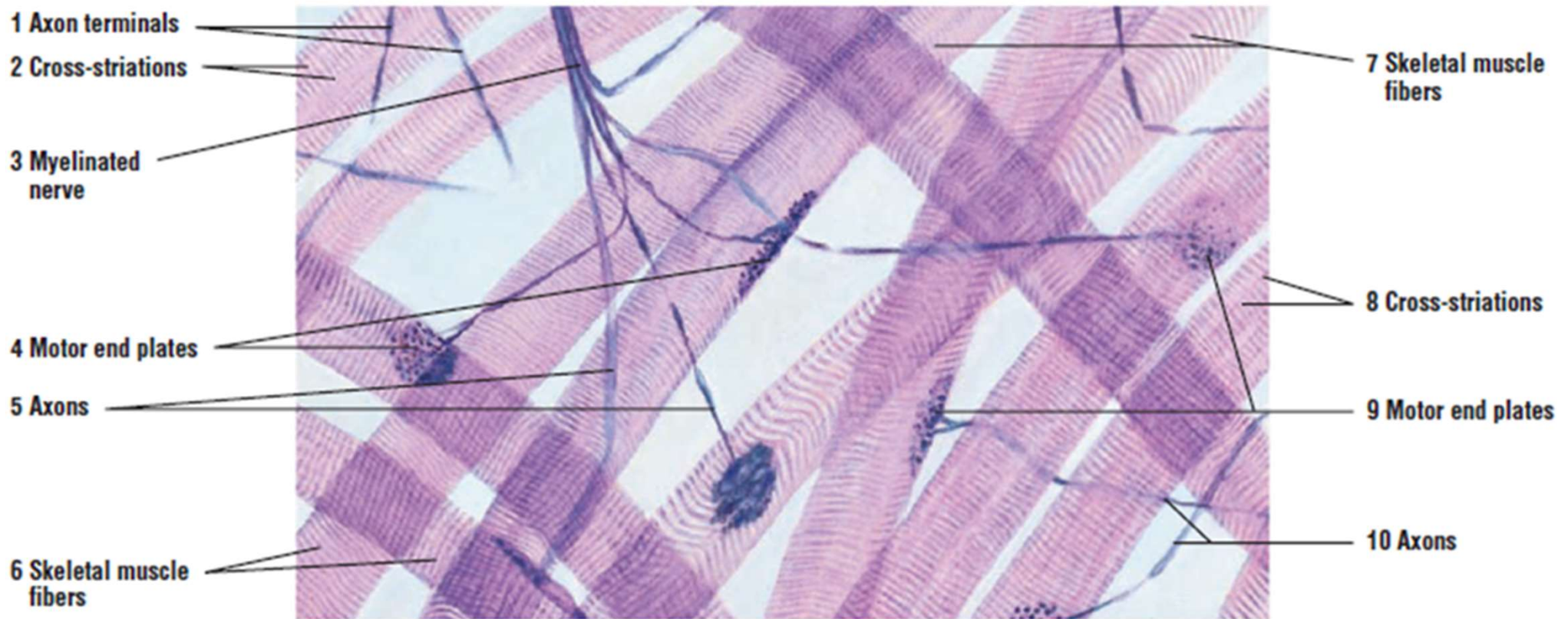
Glandular epithelia tissues are those formed by cells specialized in producing a fluid secretion. They are classified into



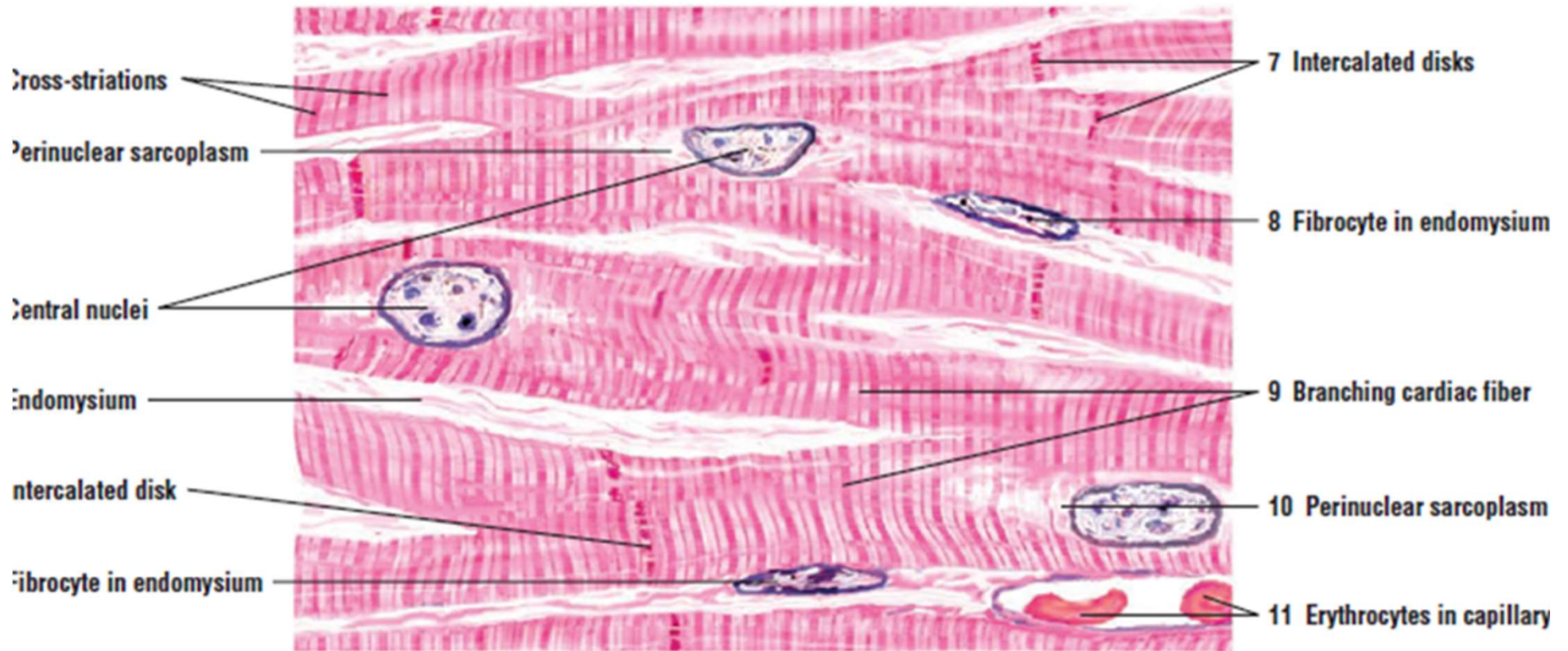
- 1- Simple tubular gland: as in the intestinal glands of colon.
- 2- Simple coiled tubular gland: as in the sweat gland.
- 3- Simple branched tubular gland: as in the submucosal gland of duodenum.
- 4- Simple branched acinar gland: as in the cardiac gland of stomach.
- 5- Compound acinar gland: as in the pancreas.
- 6- Compound tubuloacinar gland: as in the submandibular gland.

B. Muscular tissues

a. skeletal muscular: Skeletal muscle fibers are long, cylindrical, multinucleated cells, with peripheral nuclei, voluntary muscles



- **b. Cardiac muscle:** Cardiac muscle fibers are also cylindrical. They are primarily located in the walls and septa of the heart and in the walls of the large vessels attached to the heart. In contrast to skeletal muscles, cardiac muscle fibers exhibit only one or two central nuclei, are shorter, and are branched. Involuntary muscle.



- **c. Smooth muscular:** The muscle fibers are small and spindle or fusiform in shape, and contain a single central nucleus. Smooth muscles are predominantly found in the walls of blood vessels, stomach, and intestines. In digestive tract organs, uterus, ureters, and other hollow organs, smooth muscles occur in large sheets or layers. Involuntary muscle.

