MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
TARAS SHEVCHENKO NATIONAL UNIVERSITY OF KYIV

HISTOLOGY, CYTOLOGY, EMBRYOLOGY

Workbook for foreign students of specialization "Medicine"

Part 3: Special Histology

2021

Compliers:
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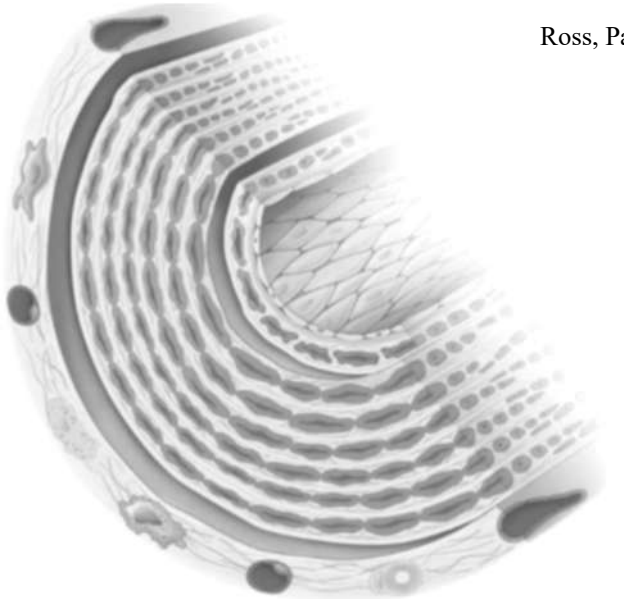
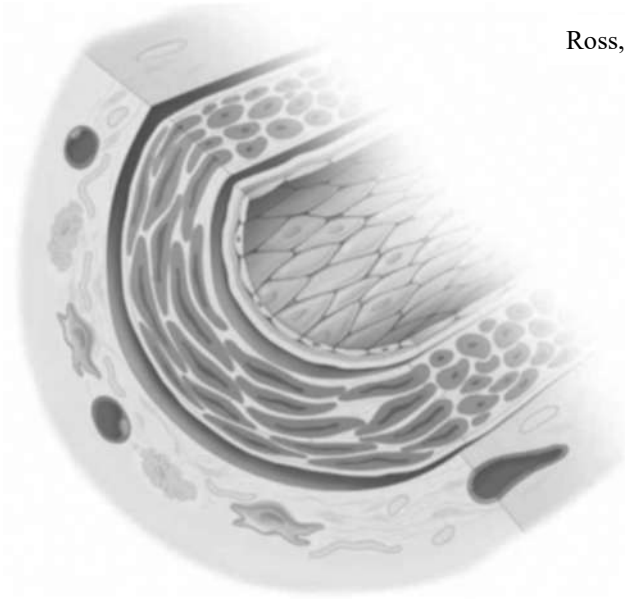
CARDIOVASCULAR SYSTEM

Ross, Pawlina 2016; Fig.13.14



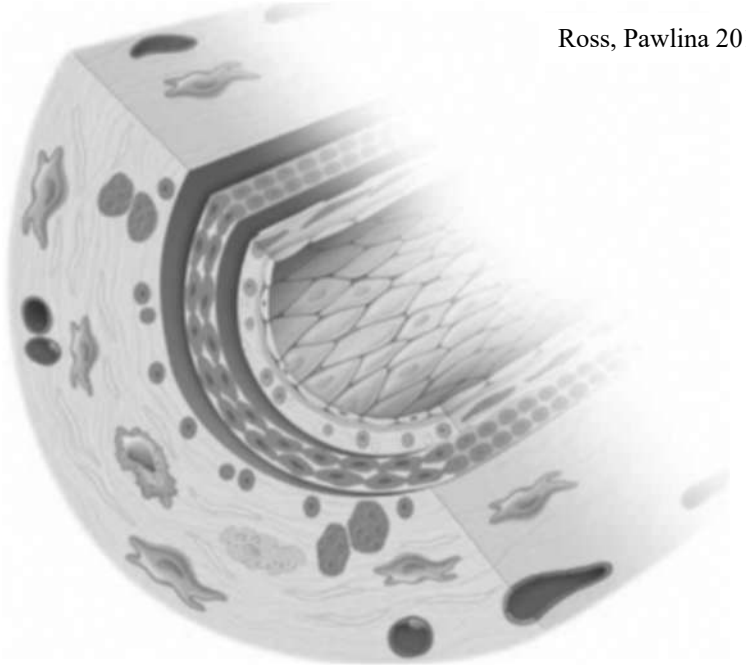
Check on the picture of the elastic artery:
1 – tunica intima;
2 – tunica media;
3 – tunica adventitia;
4 – endothelial cells;
5 – basement membrane;
6 – subendothelial layer;
7 – internal elastic membrane;
8 – elastic lamellae in the tunica media;
9 – vascular smooth muscle cells in the tunica media;
10 – external elastic membrane;
11 – collagen fibers and elastic fibers in the tunica adventitia;
12 – fibroblasts in the tunica adventitia;
13 – macrophages in the tunica adventitia;
14 – *vasa vasorum*;
15 – *nervi vasorum*.

Ross, Pawlina 2016; Fig.13.17



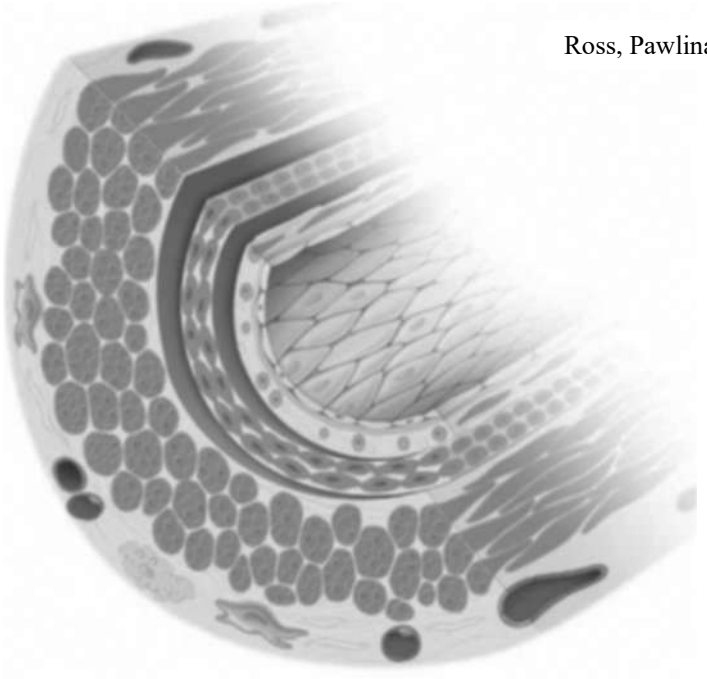
Check on the picture of the muscular artery:
1 – tunica intima;
2 – tunica media;
3 – tunica adventitia;
4 – endothelial cells;
5 – basement membrane;
6 – subendothelial layer;
7 – internal elastic membrane;
8 – elastic lamellae in the tunica media;
9 – vascular smooth muscle cells in the tunica media;
10 – external elastic membrane;
11 – collagen fibers in the tunica adventitia;
12 – elastic fibers in the tunica adventitia;
12 – fibroblasts in the tunica adventitia.

Ross, Pawlina 2016; Fig.13.24



Check on the picture of the medium vein:
1 – tunica intima;
2 – tunica media;
3 – tunica adventitia;
4 – endothelial cells;
5 – basement membrane;
6 – subendothelial layer;
7 – collagen fibers in the tunica media;
8 – vascular smooth muscle cells in the tunica media;
9 – collagen fibers in the tunica adventitia;
10 – elastic fibers in the tunica adventitia;
11 – fibroblasts in the tunica adventitia.

Ross, Pawlina 2016; Fig.13.25



Check on the picture of the large vein:
1 – tunica intima;
2 – tunica media;
3 – tunica adventitia;
4 – endothelial cells;
5 – basement membrane;
6 – subendothelial layer;
7 – collagen fibers in the tunica media;
8 – vascular smooth muscle cells in the tunica media;
9 – collagen fibers in the tunica adventitia;
10 – elastic fibers in the tunica adventitia;
11 – fibroblasts in the tunica adventitia;
12 – smooth muscle cells in the tunica adventitia;
13 – *vasa vasorum*.

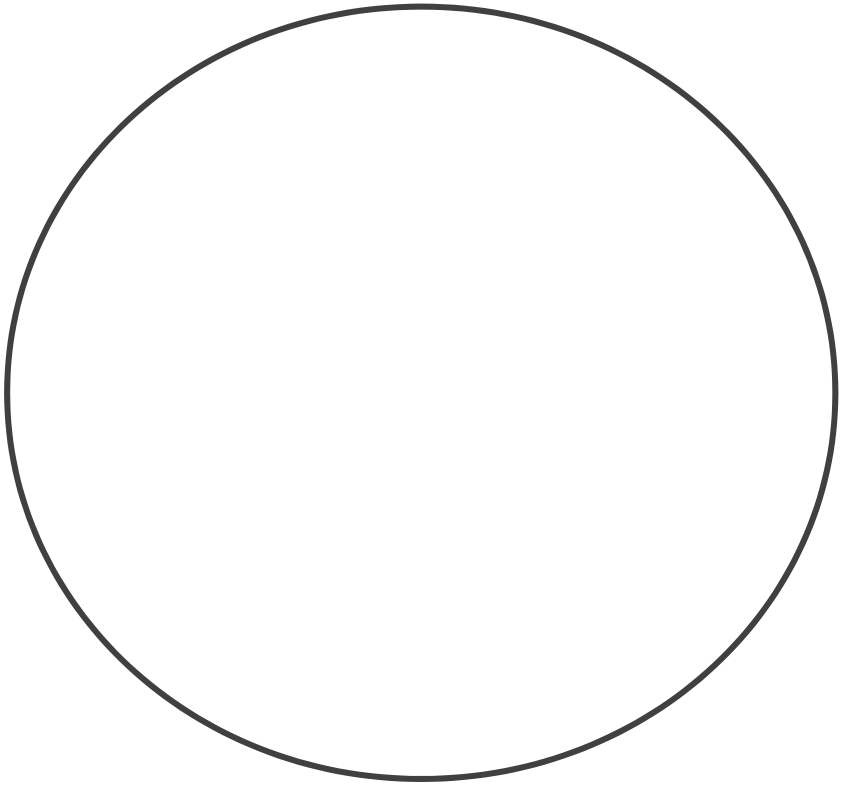
Fill in the table the main features of the wall of each type of the blood vessel:

Type of the blood vessel	Tunica intima	Tunica media	Tunica adventitia
Elastic arteries			
Intermediate (muscular-elastic) arteries			
Muscular arteries			
Small arteries			
Arterioles			
Capillaries			

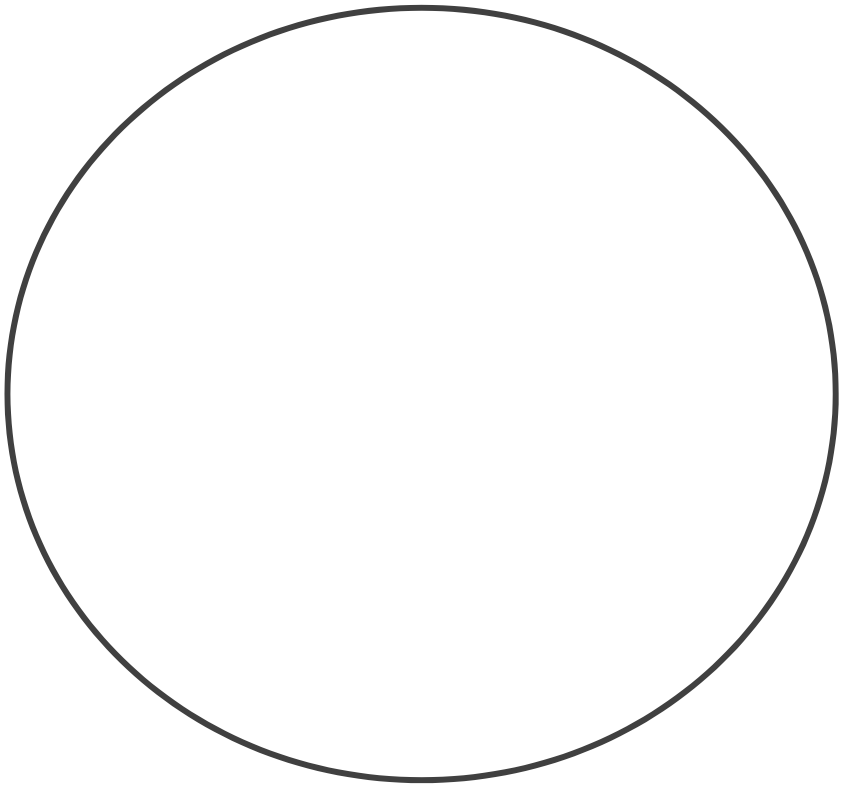
Postcapillary venules			
Muscular venules			
Small veins			
Medium veins			
Large veins			

Explain the differences between continuous, fenestrated and discontinuous (sinusoidal) capillaries:

	Continuous capillaries	**Fenestrated capillaries**	**Discontinuous (sinusoidal) capillaries**
Endothelium			
Basal lamina			
Permeability			
Location			



Specimen 1. Artery, muscular (hematoxylin and eosin stain, ×400):
1) endothelium
2) subendothelial layer
3) internal elastic membrane
4) tunica intima
5) smooth muscle cells
6) external elastic membrane
8) tunica media
7) tunica adventitia



Specimen 2. Artery, elastic (hematoxylin and eosin stain, ×400):
1) endothelium
2) subendothelial layer
3) internal elastic membrane
4) tunica intima
5) elastic lamellae in media
6) external elastic membrane
7) tunica adventitia
8) vasa vasorum in tunica adventitia

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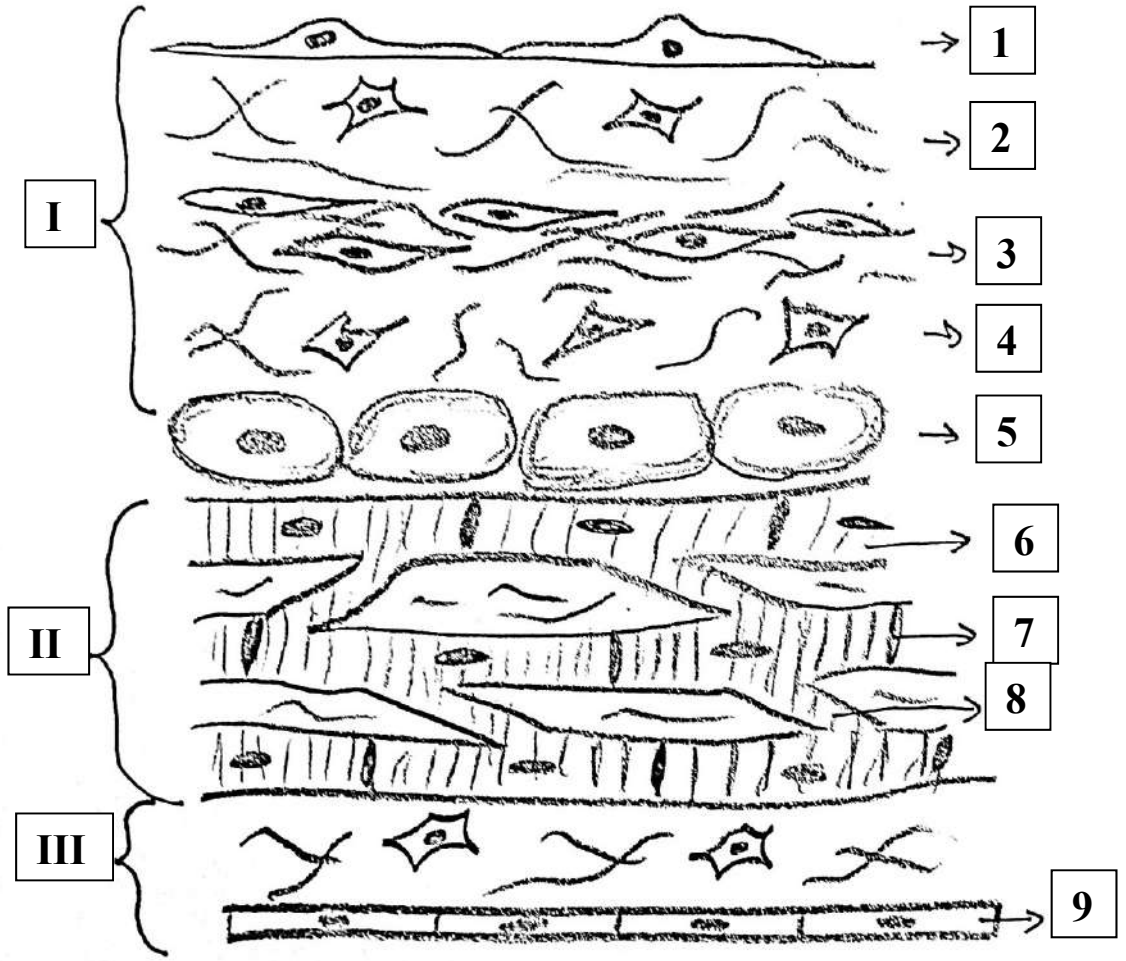
SCHEMATIC PICTURE OF HUMAN HEART



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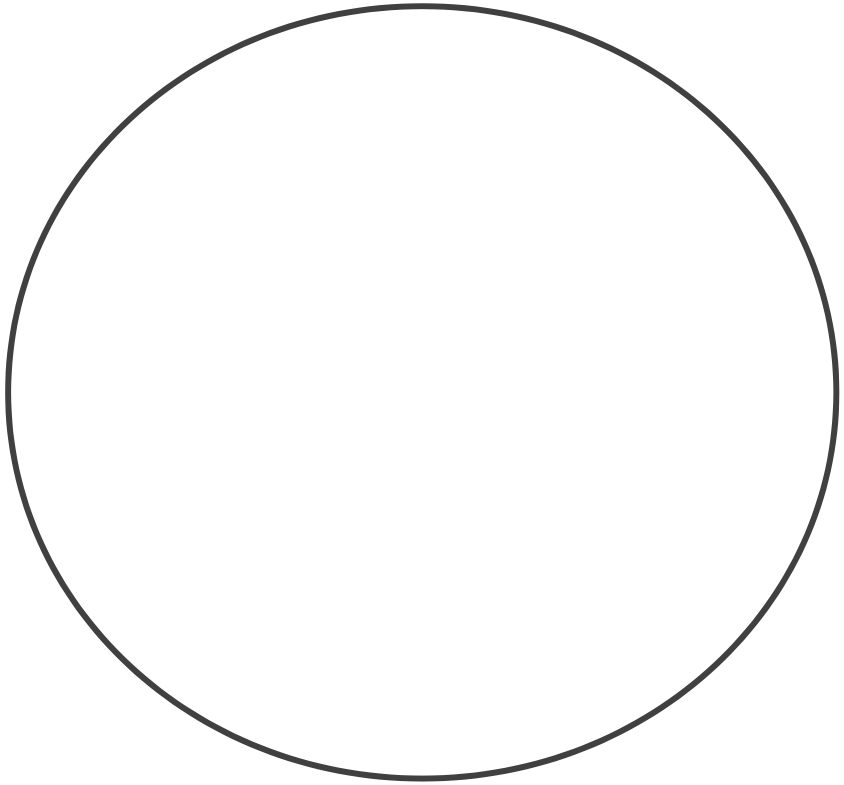
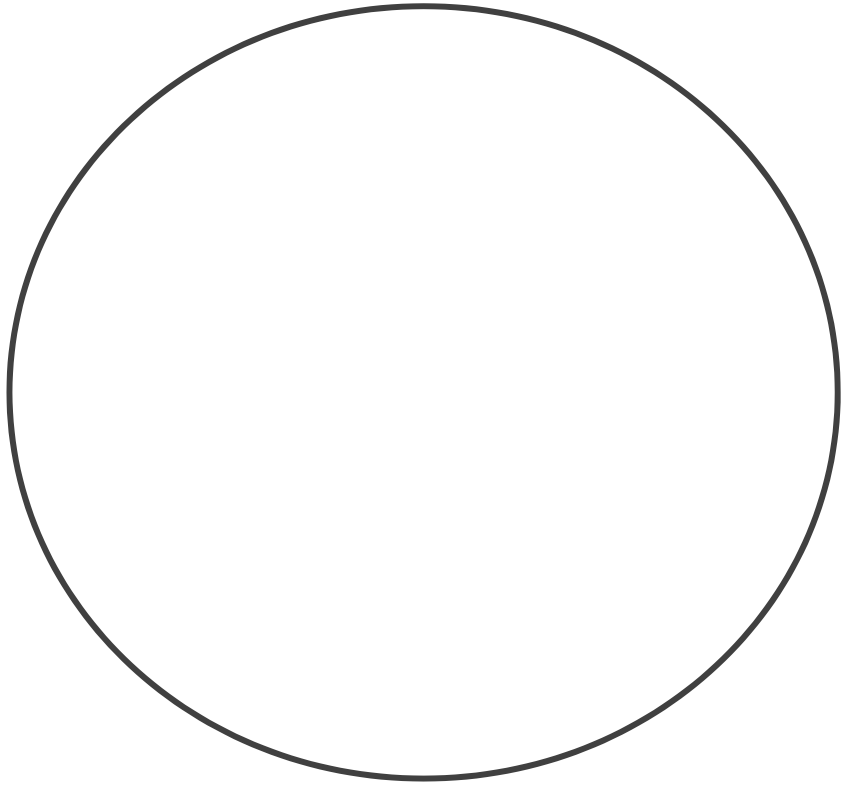


Specimen 3. Heart (hematoxylin and eosin stain, ×400):
1) myocardium; 2) myocardiocytes; 3) intercalated disc.



Specimen 4. Vein (hematoxylin and eosin stain, ×400):
1) endothelium; 2) subendothelial layer; 3) tunica intima;
4) smooth muscle cells; 5) tunica media; 6) tunica adventitia.

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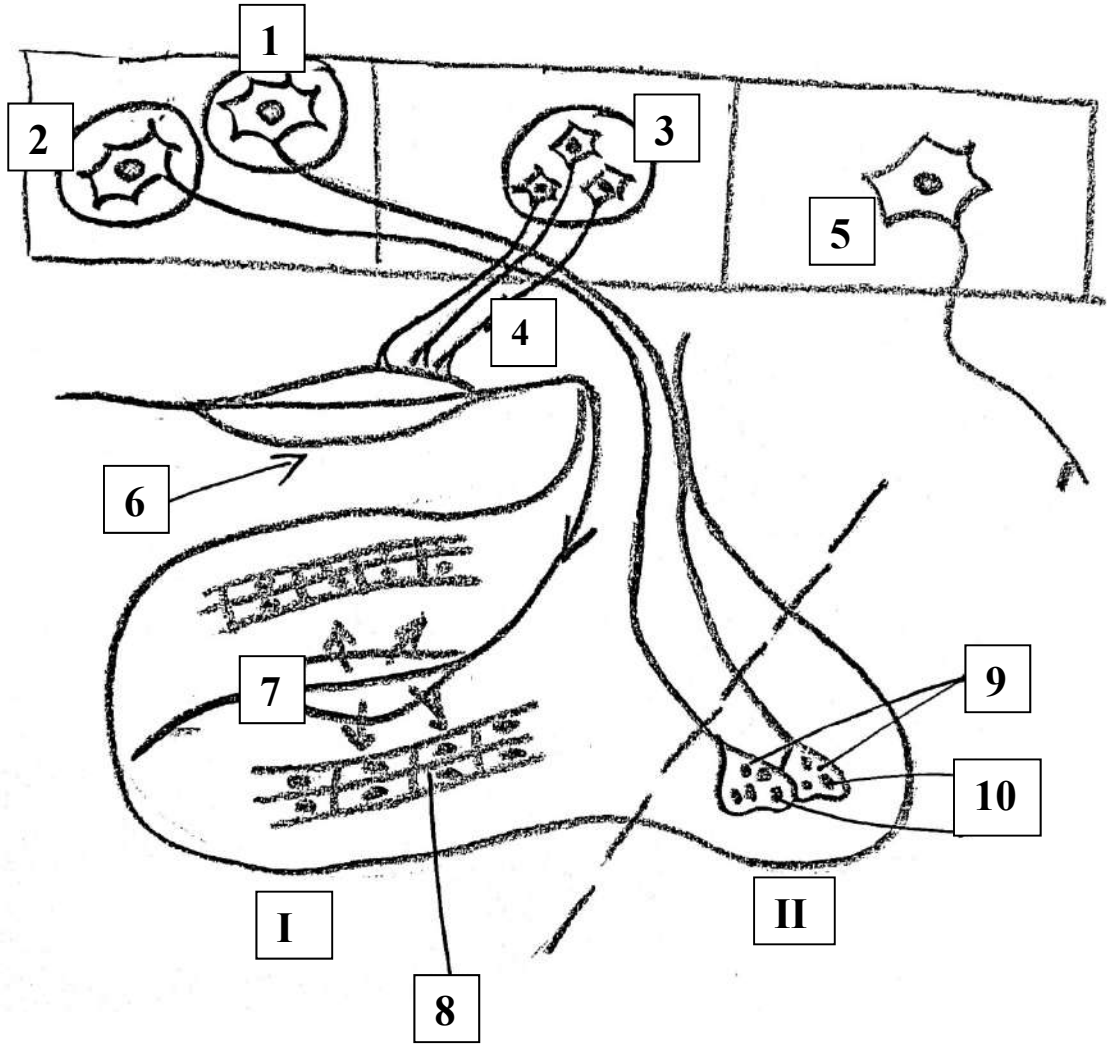
ENDOCRINE SYSTEM

MAJOR ENDOCRINE GLANDS, Hypothalamic hormones

Liberins	Statins

SCHEMATIC PICTURE OF HYPOPHYSEAL PORTAL SYSTEM



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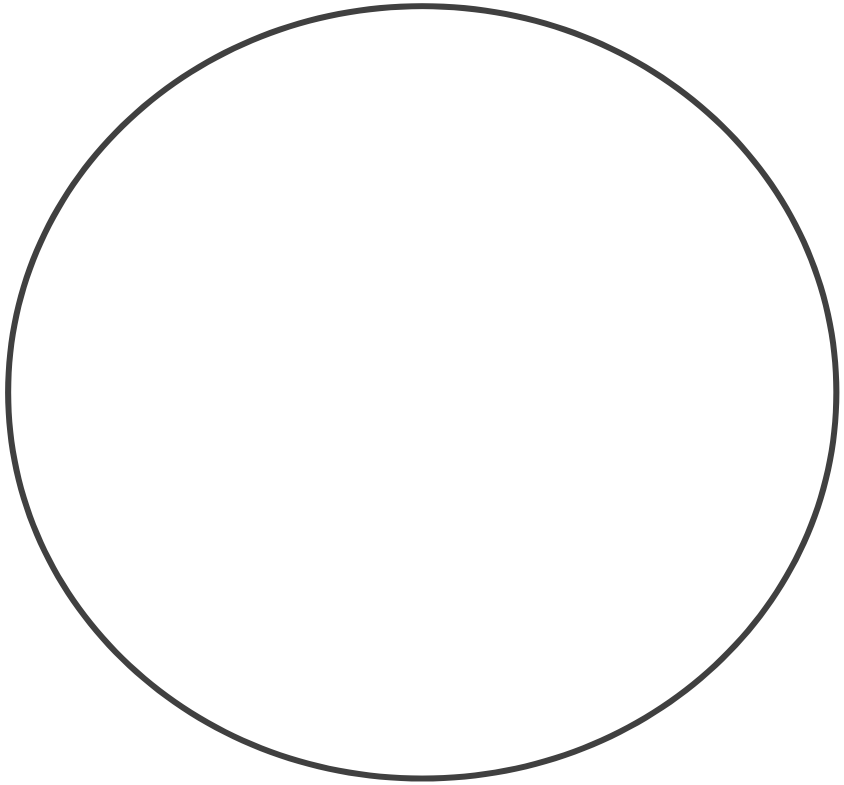
CELLS OF PITUITARY GLAND AND THEIR FUNCTION

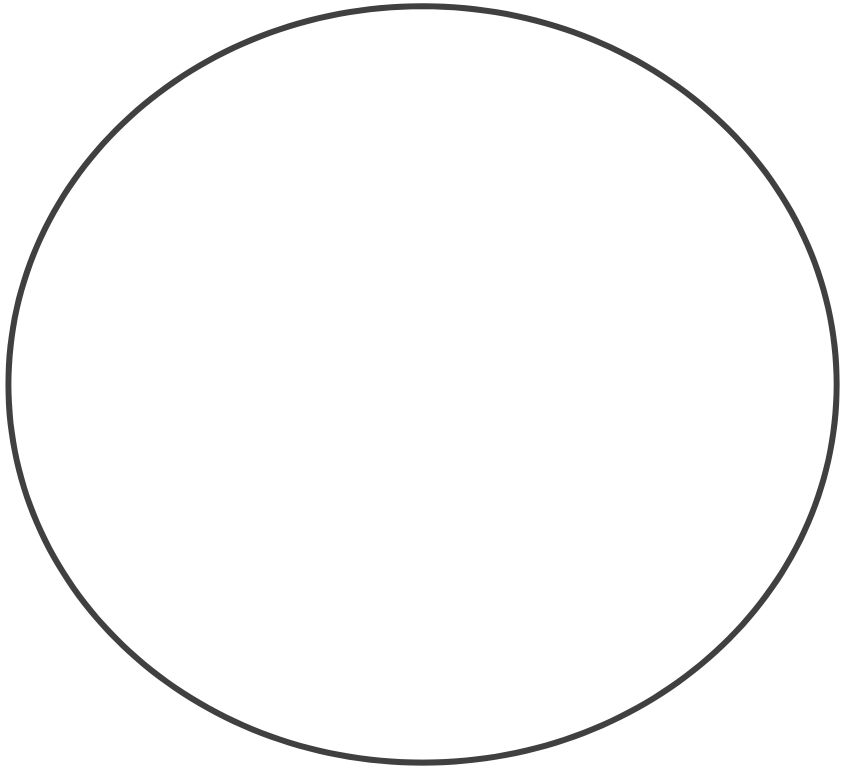
Part of pituitary gland	Type of cells	Type of cells	Hormones	Function
Pars distalis	**Chromophils**			
	Basophils			
	Acidophils			
	Chromophobes			
Pars intermediate	**Basophils**			
Pars neurosa				

CELLS AND HORMONES OF ADRENAL GLAND

Part of adrenal gland	Zona of cortex	Type of cells	Hormones	Function of hormones
Cortex	Zona glomerulosa			
	Zona fasciculata			
	Zona reticularis			
MEDULA				



Specimen 1. Pituitary gland; **(hematoxylin and eosin stain, ×400):**
1) anterior pituitary; 2) group of acidophilic cells of anterior pituitary; 3) group of basophilic cells of anterior pituitary; 4) sinusoidal capillaries; 5) pars intermedia; 6) group of small basophilic cells; 7) colloid filled cyst; 8) posterior pituitary (neurohypophysis); 9) nucleus of pituicytes; 10) neuropil; 11) capsule.



Specimen 2. Thyroid gland; **(hematoxylin and eosin stain, ×400):**
1) thyrocytes; 2) follicle; 3) colloid; 4) resorption lacunae; 5) lobe; 6) interlobular loose connective tissue; 7) capsule.

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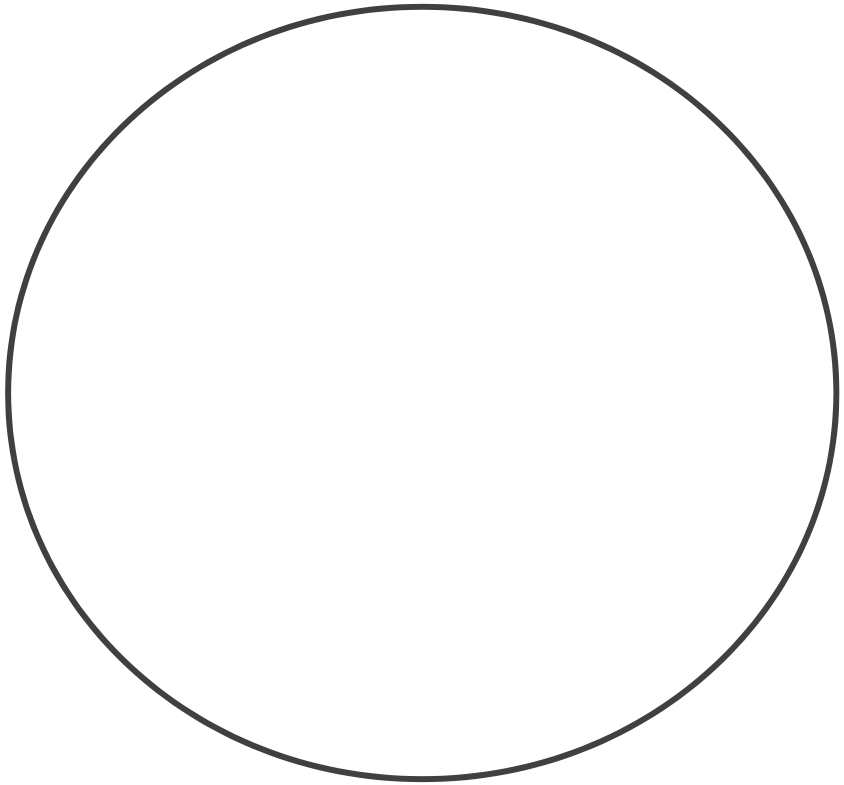
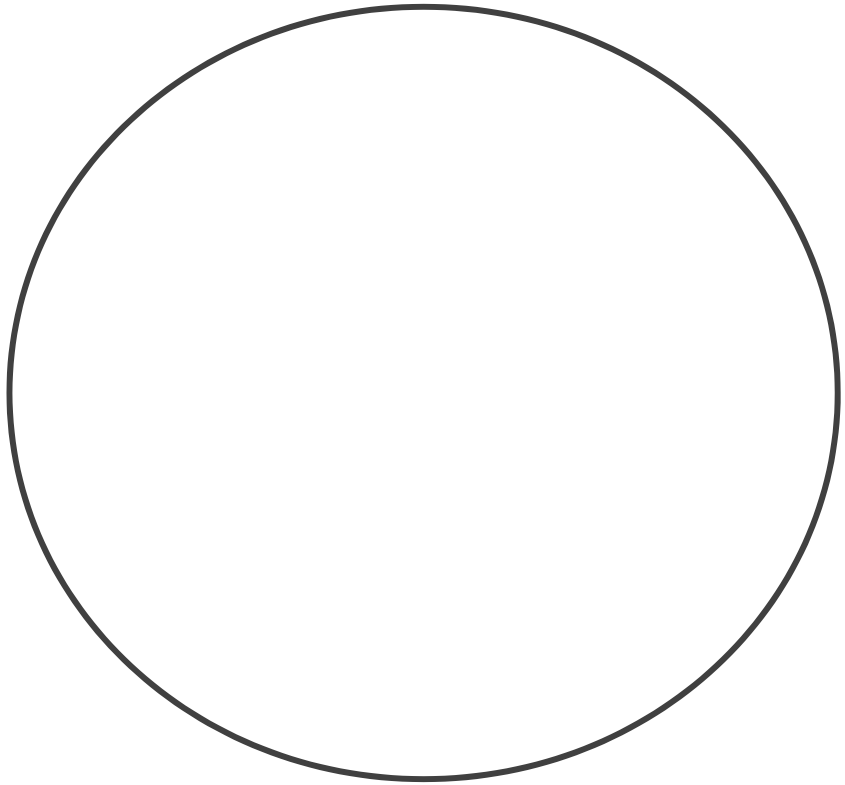


Specimen 3. Parathyroid gland; **(hematoxylin and eosin stain, ×400):**
1) cord of chief (principal) cells; 2) capillaries; 3) trabecula; 4) capillaries in the trabecula; 5) capsule.



Specimen 4. Adrenal gland **(hematoxylin and eosin stain, ×400):**
1) zona glomerulosa; 2) zona fasciculata; 3) zona reticularis; 4) cortex; 5) capillaries; 6) medula; 7) capsule.

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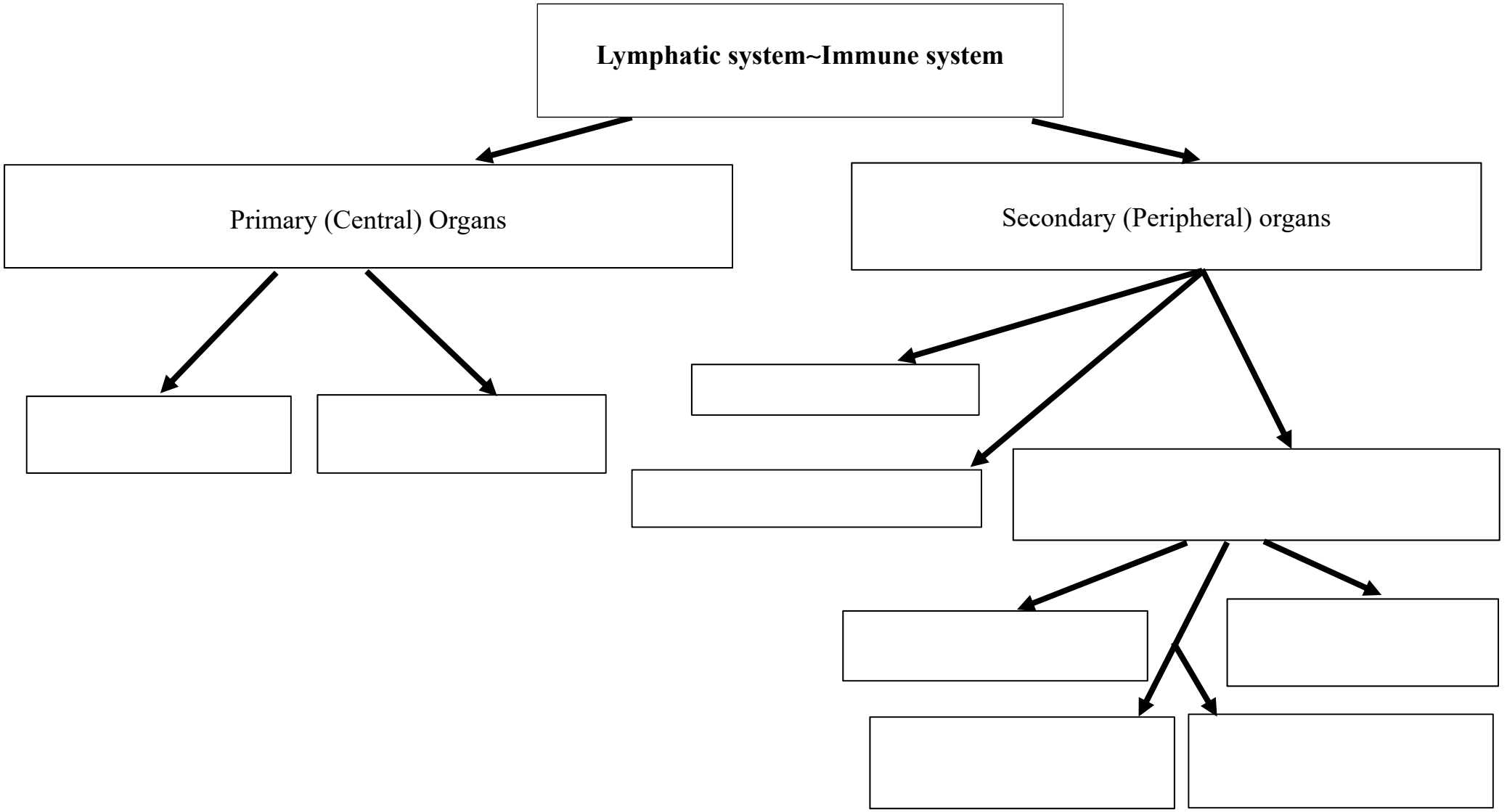
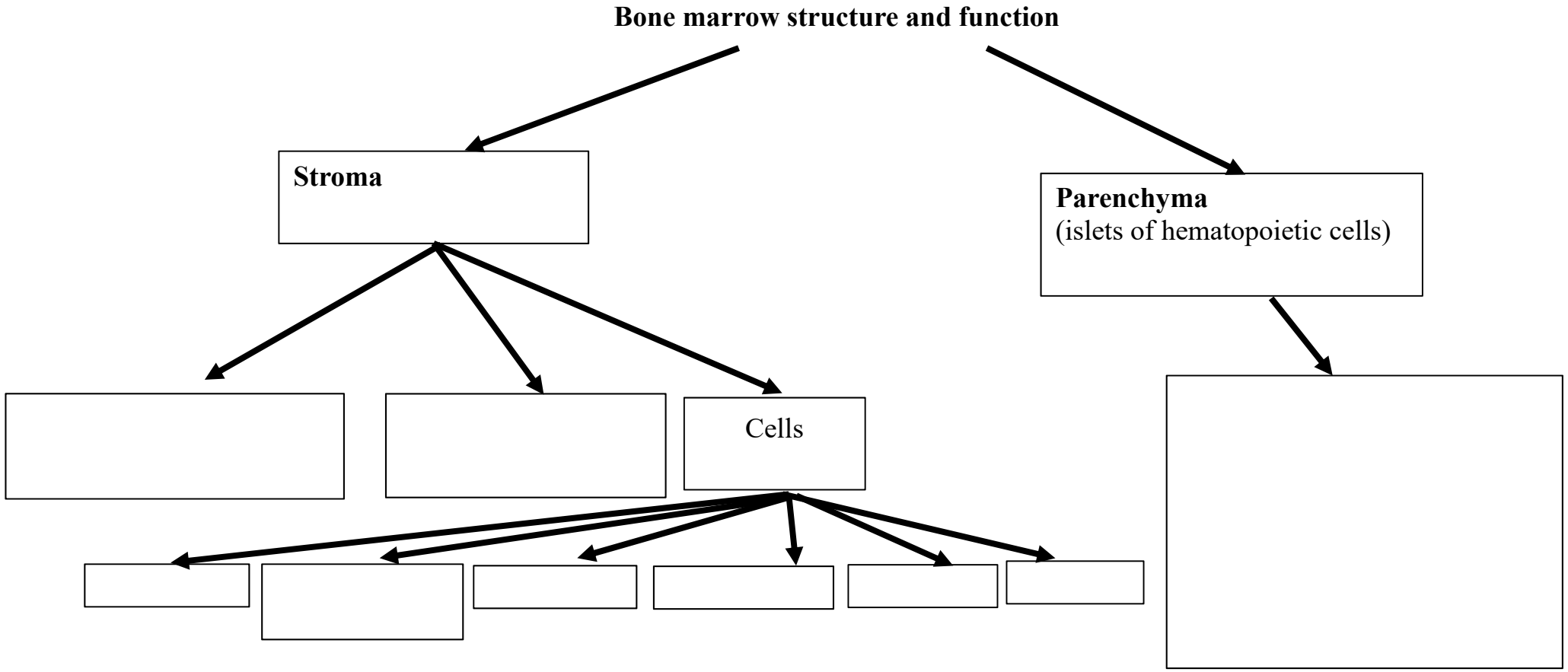
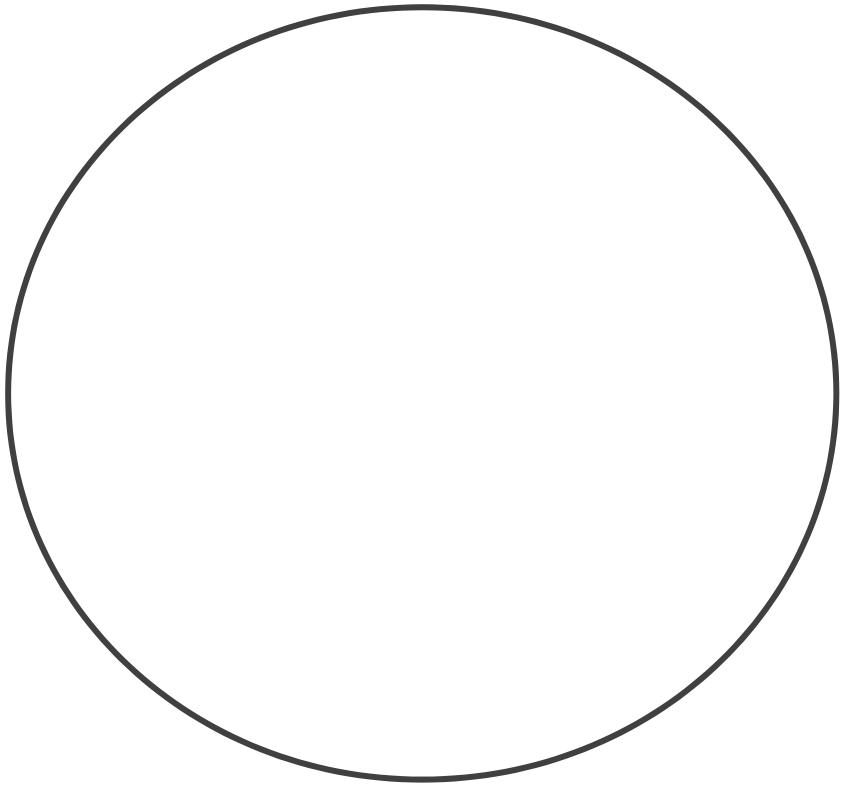
HEMATOPOIETIC AND IMMUNE SYSTEM



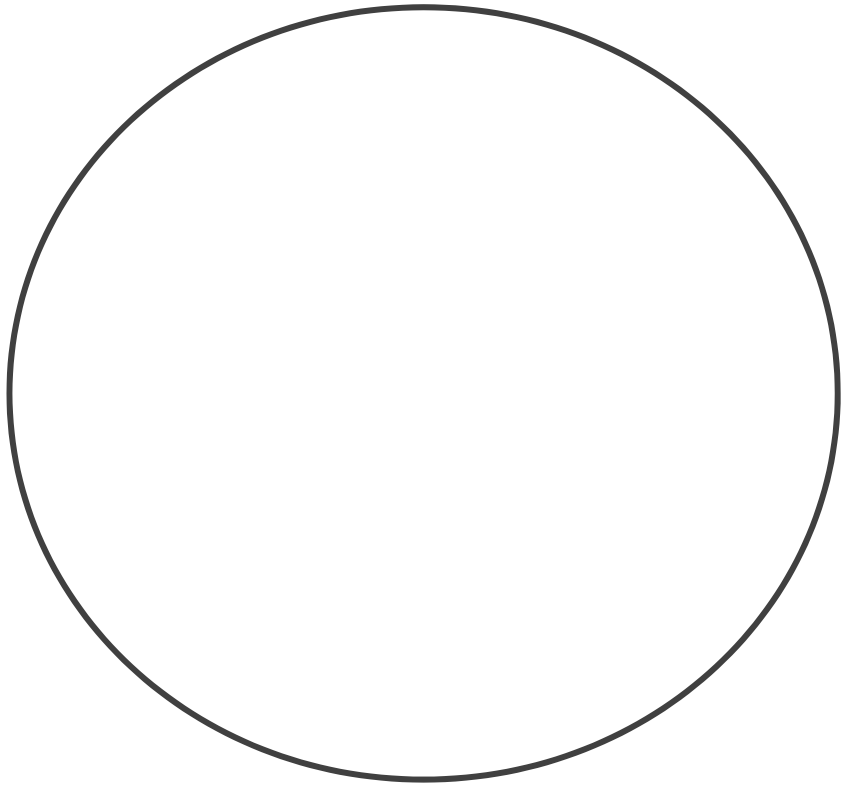

Bone marrow structure and function
Stroma
Parenchyma
(islets of hematopoietic cells)
Cells

Function

1.



Specimen 1. Bone marrow **(hematoxylin and eosin stain, ×400):**
1) islets of hematopoietic cells on different stage of differentiation; 2) megakaryocytes; 3) adipose cells (adipocytes); 4) reticular cells; 5) sinusoidal capillary; 6) red blood cells.



Specimen 2. Thymus **(hematoxylin and eosin stain, ×400):**
1) lobule ot thymus; 2) cortex; 3) medulla; 4) thymocytes (T-lymphocytes on different stage of differentiation); 5) epithelioreticular cells; 6) Hassal's corpuscle; 7) trabeculae; 8) capsule.

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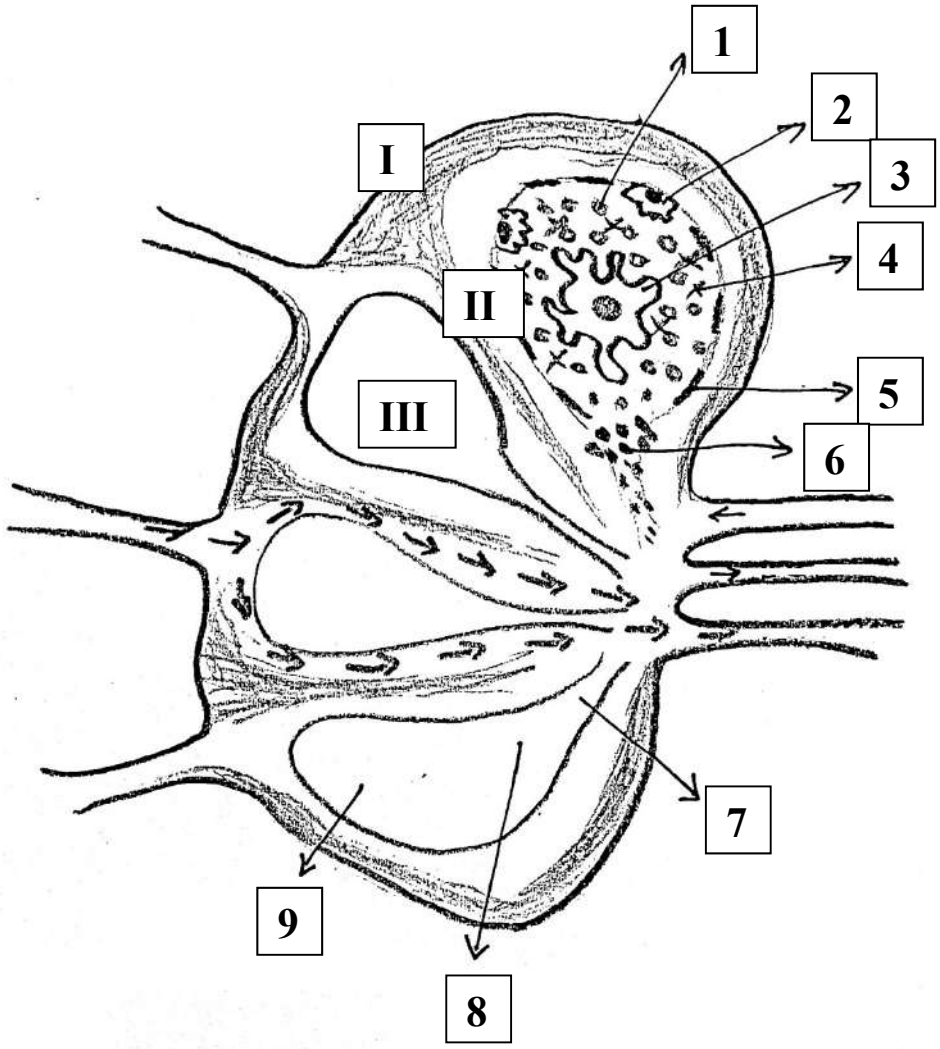
SCHEMATIC PICTURE OF LYMPH NODE



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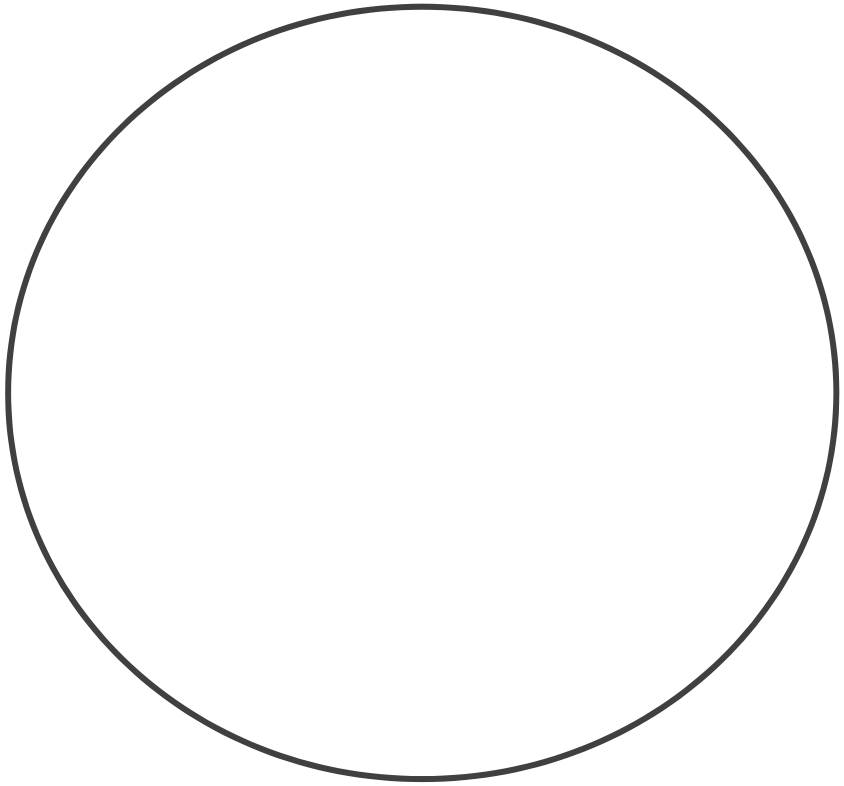
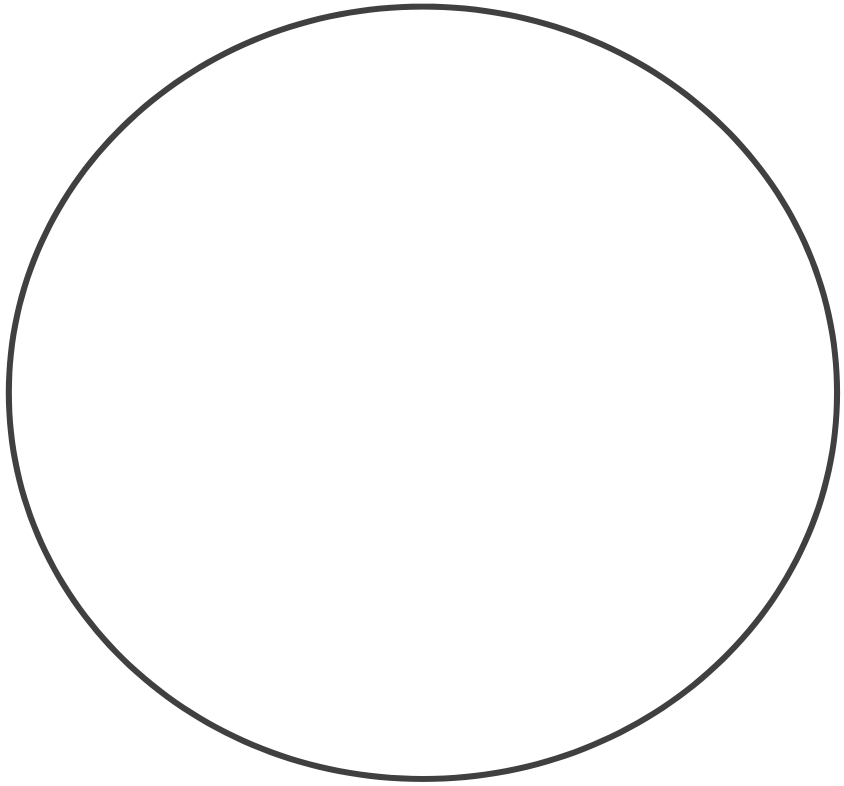
PERIPHERAL ORGANS OF IMMUNE SYSTEM



Specimen 1. Spleen **(hematoxylin and eosin stain, ×400):**
1) red pulp; 2) splenic cord (cord of Billroth); 3) splenic venous sinuses; 4) white pulp; 5) lymphatic nodules; 6) germinal center; 7) central artery of lymphatic nodules; 8) penicillar arteries of spleen; 9) capsule.



Specimen 2. Lymph Node, **(hematoxylin and eosin stain, ×400):**
1) cortex; 2) medula; 3) lymphatic nodules (B-cell zone) in cortex; 4) paracortical zone (T-cells); 5) medullary cords; 6) medullary sinus; 7) subcapsular sinus; 8) trabeculae; 9) trabecular sinus; 10) capsule.

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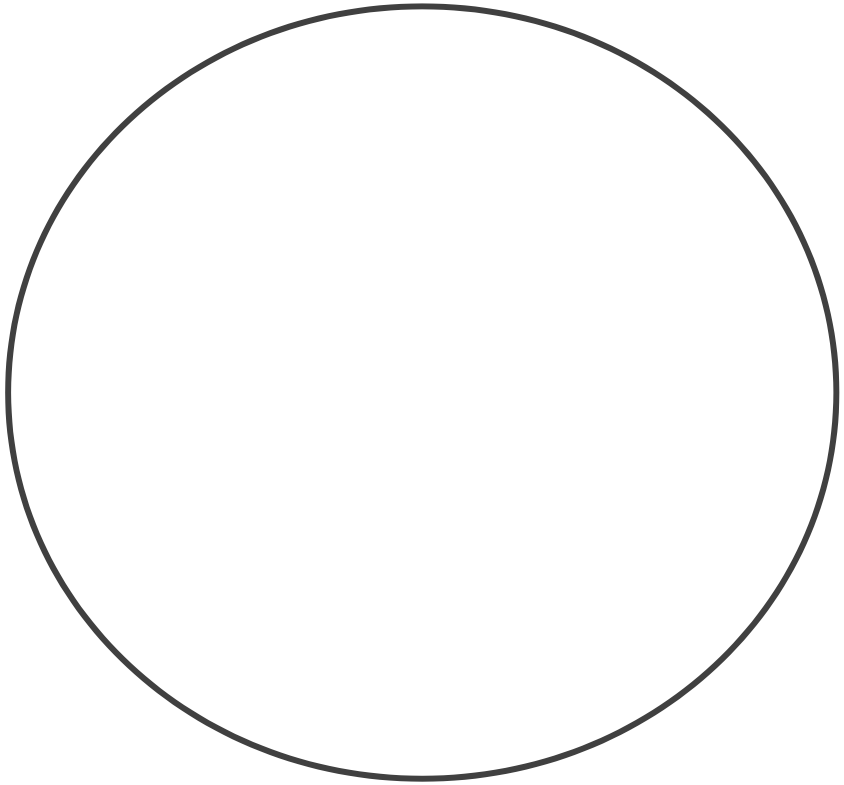

Specimen 3. Tonsil **(hematoxylin and eosin stain, ×400):**
1) primary lymphatic nodules of tonsil in lamina propria of mucosa; 2) secondary lymphatic nodules of tonsil; 3) germinal center of lymphatic nodules; 4) small lymphocytes; 5) lymphoblast and plasma cells in germinal center of lymphatic nodules; 6) macrophage with tingible body represent "starry sky" in germinal center of lymphatic nodules; 7) mucosa (stratified squamous non-keratinized epithelium).

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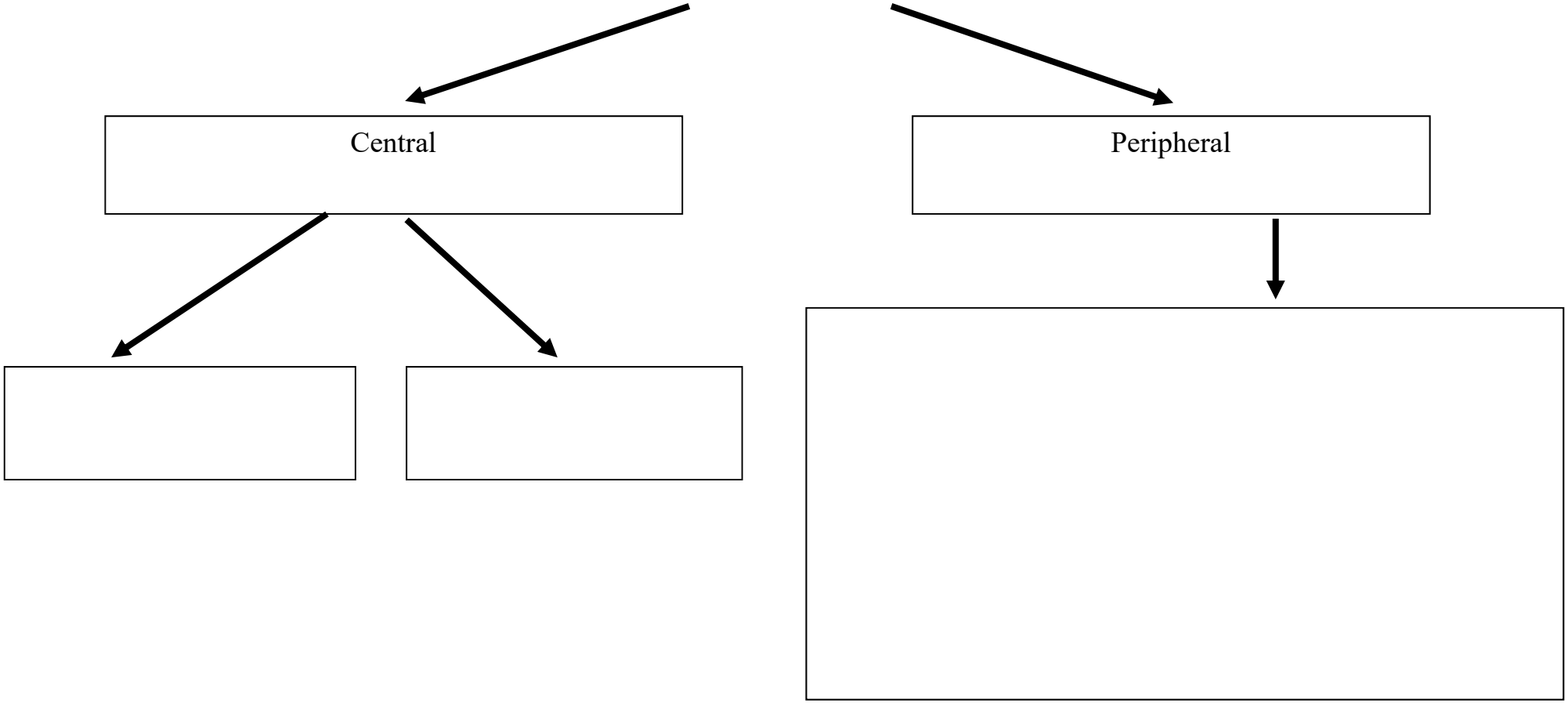
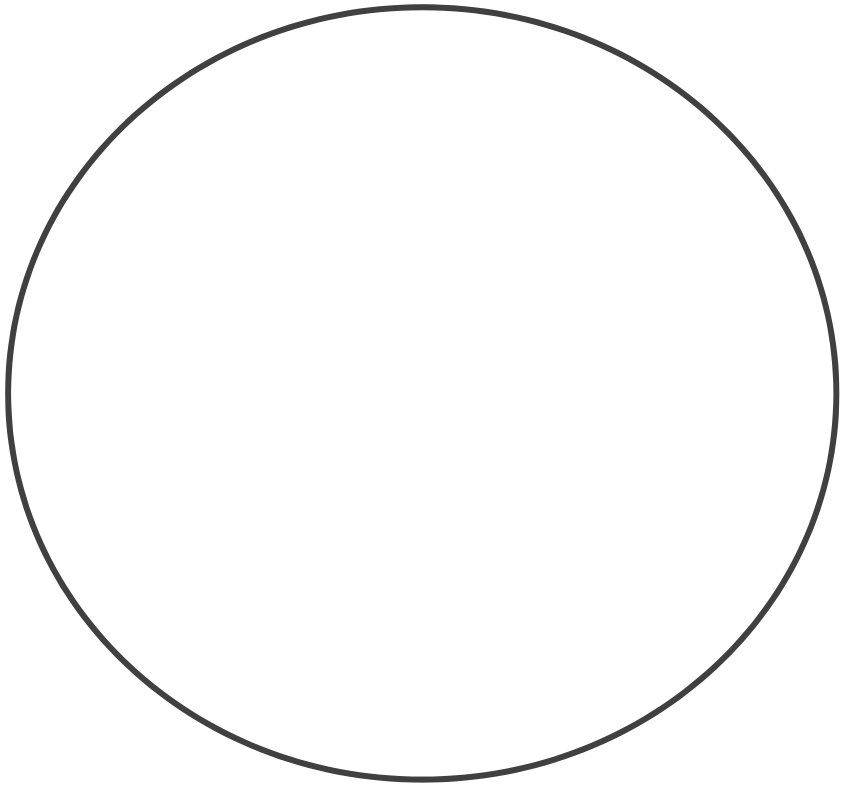
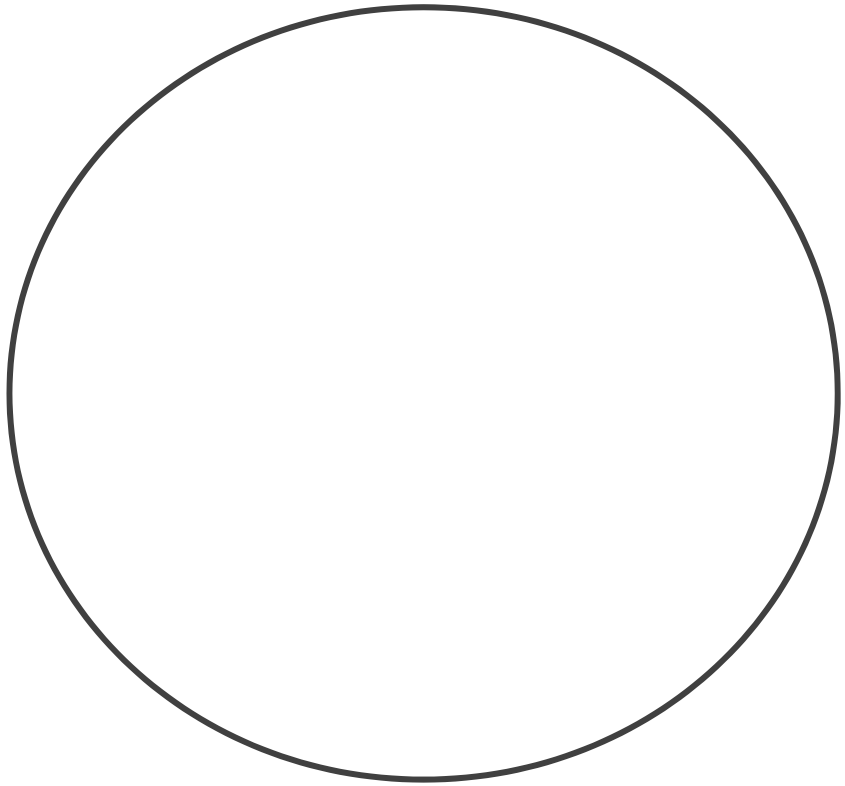
NERVE SYSTEM





Specimen 1. Spinal cord **(Silver stain, ×400):**
1) gray matter; 2) ventral (anterior) horns; 3) multipolar neurons; 4) dorsal (posterior) horns; 5) interneurons; 6) neurons of lateral horns; 7) white matter; 8) central canal.



Specimen 2. Cerebral cortex **(Silver stain, ×400):**
1) plexiform (molecular) layer; 2) small pyramidal (external granular) layer; 3) layer of medium pyramidal cells (outer pyramidal cells); 4) granular layer (inner granular layer); 5) ganglionic layer – large pyramidal cells – Betz cells; 6) multiform layer
(layer of polymorphic cells).

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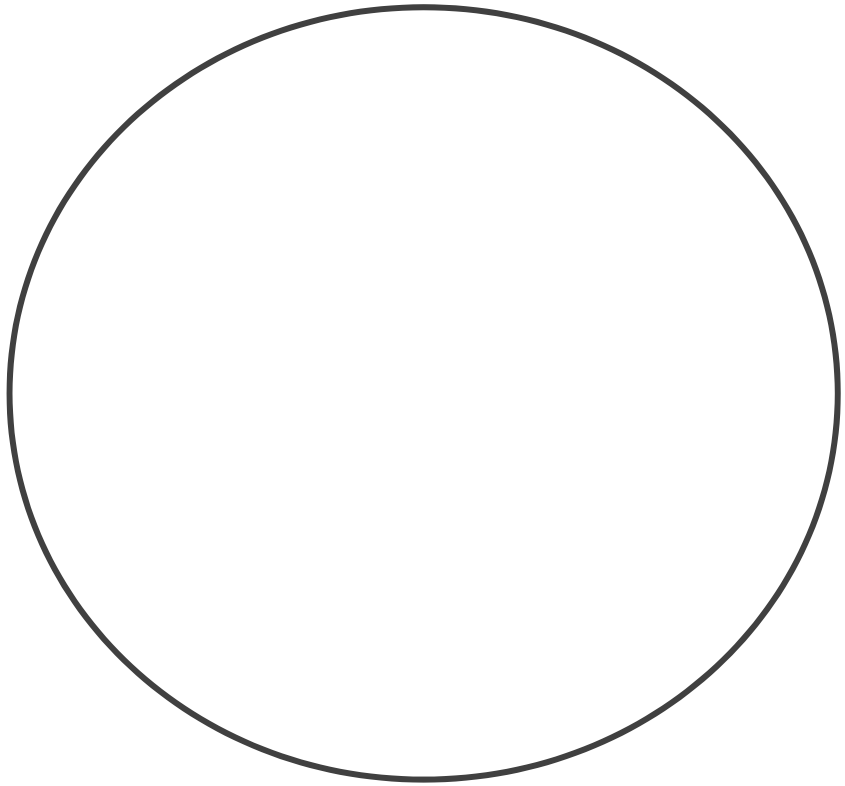

Specimen 3. Cerebellum cortex **(Silver stain, ×400):**
1) molecular layer; 2) Purkinje cells layer; 3) granular layer; 4) gray matter (cortex); 5) white matter (inner cerebellar medulla).

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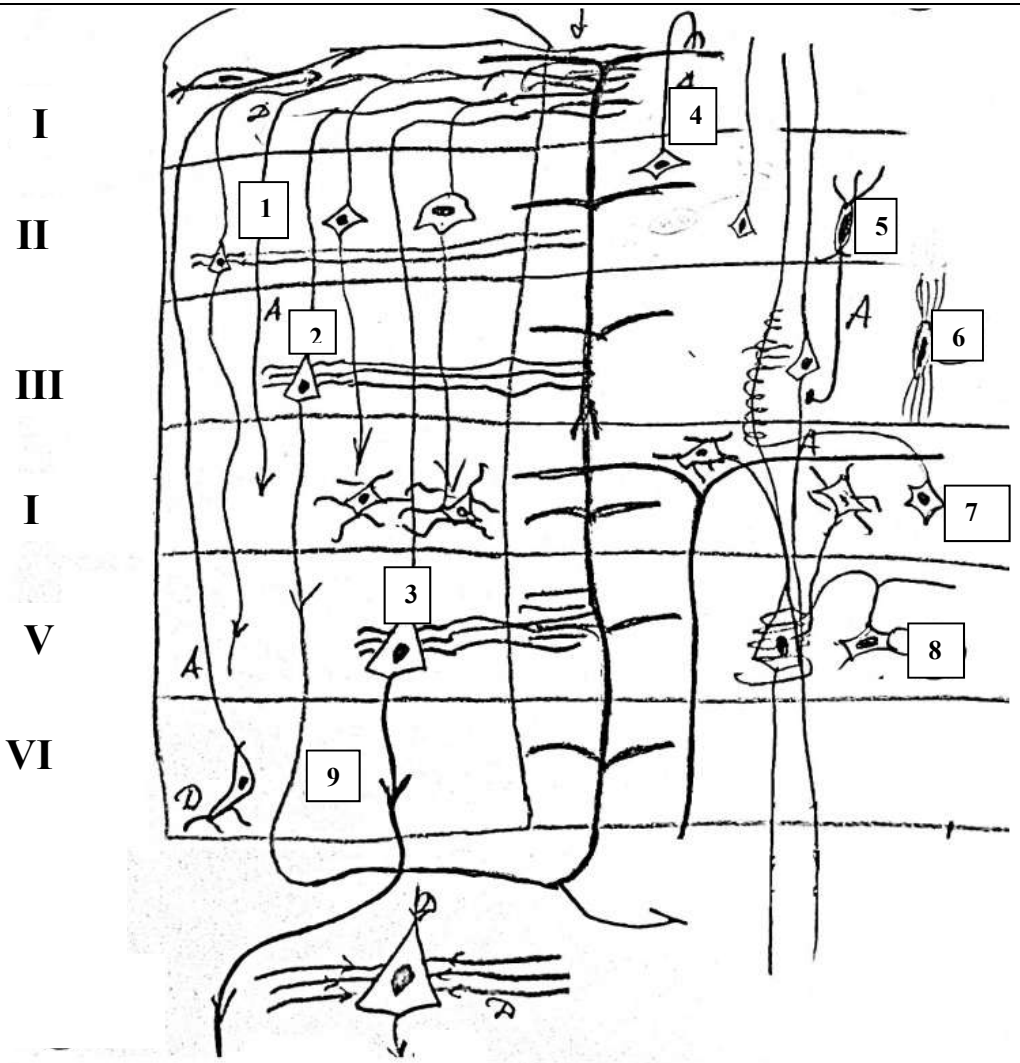
SCHEMATIC PICTURE OF CEREBRAL CORTEX



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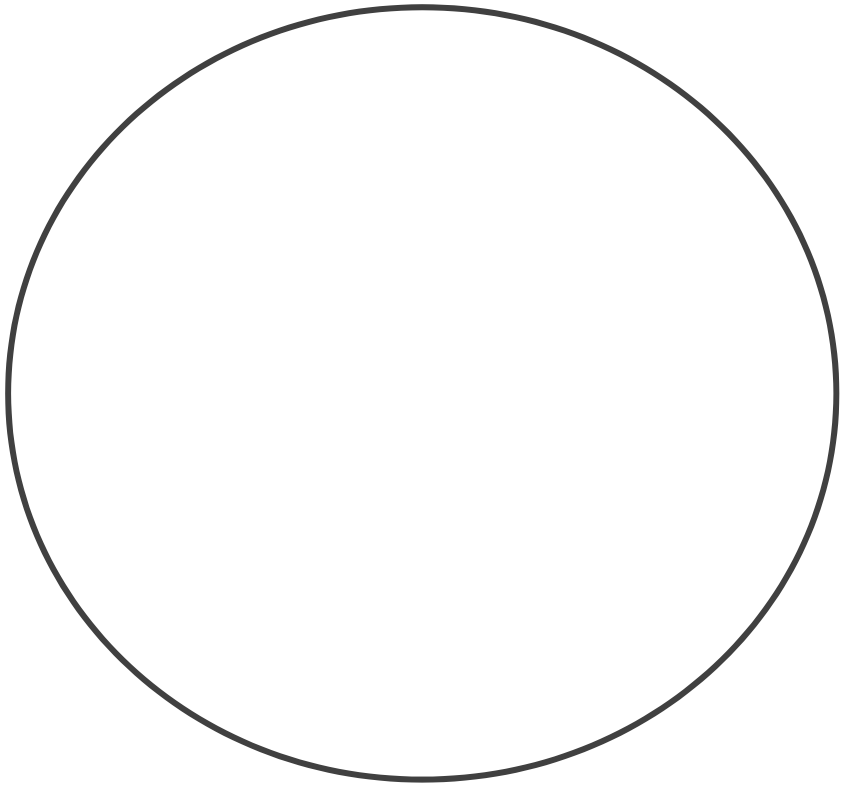
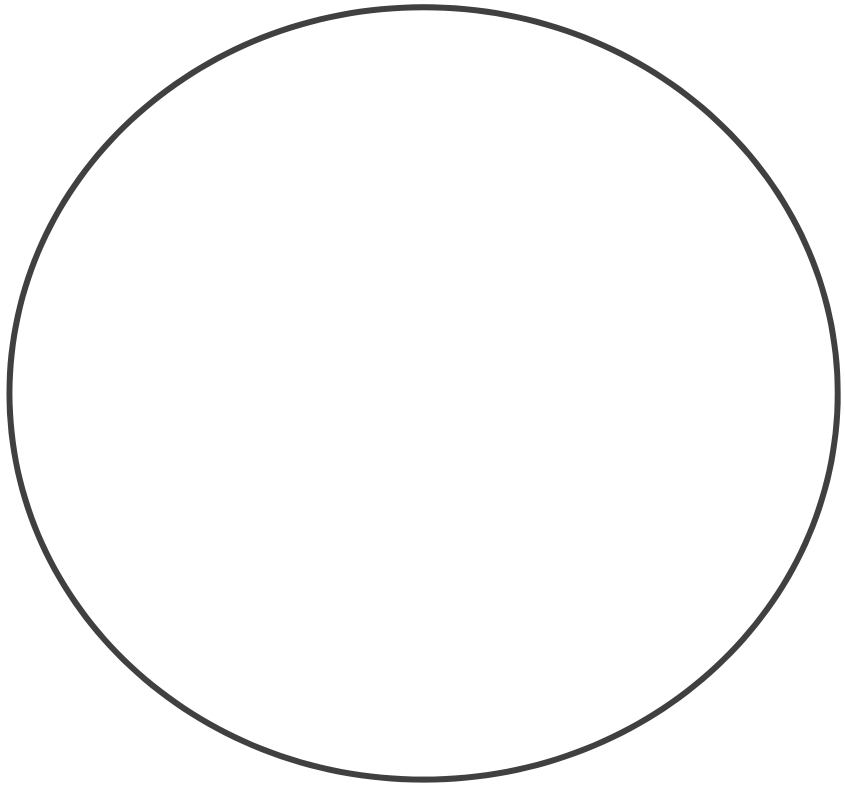
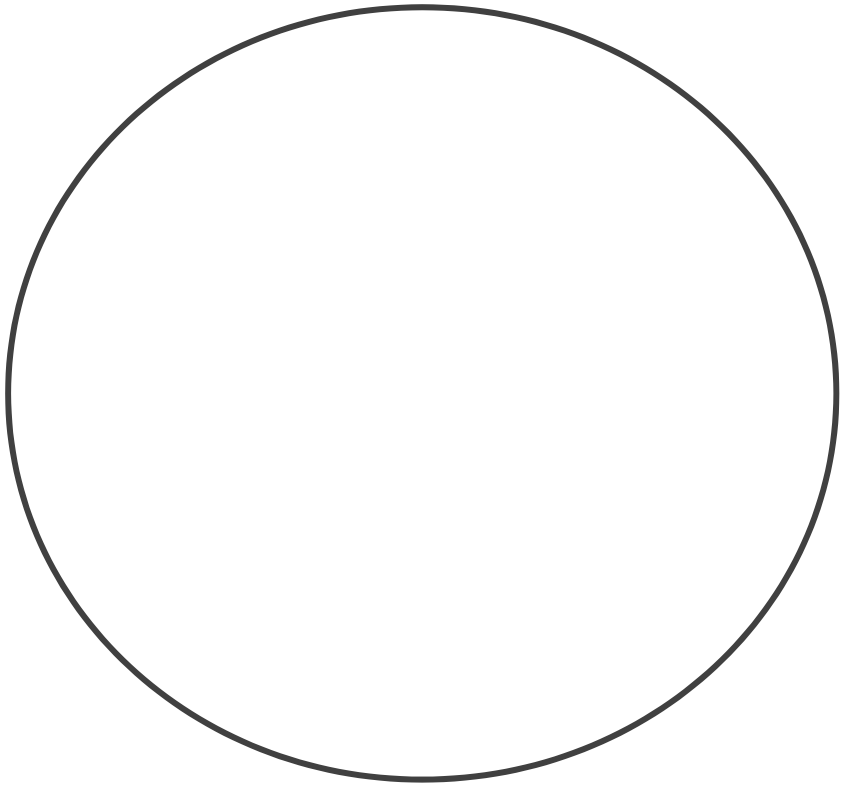


Specimen 1. Nerve **(hematoxylin and eosin stain, ×400):**
1) nerve fiber (cross section); 2) nucleus of Schwann cells; 3) nucleus of fibroblast; 4) endoneurium; 5) perineurium; 6) epineurium.



Specimen 2. Sensory Spinal ganglion (dorsal root ganglion) **(hematoxylin and eosin stain, ×400):**
1) pseudounipolar neuron; 2) nucleus of pseudounipolar neuron; 3) satellite cells (mantle gliocytes); 4) nerve fiber; 5) capsule.



Specimen 3. Vegetative ganglion **(hematoxylin and eosin stain, ×400):** 1) multipolar neuron; 2) nucleus of multipolar neuron; 3) satellite cells (mantle gliocytes); 4) nerve fiber; 5) capsule.

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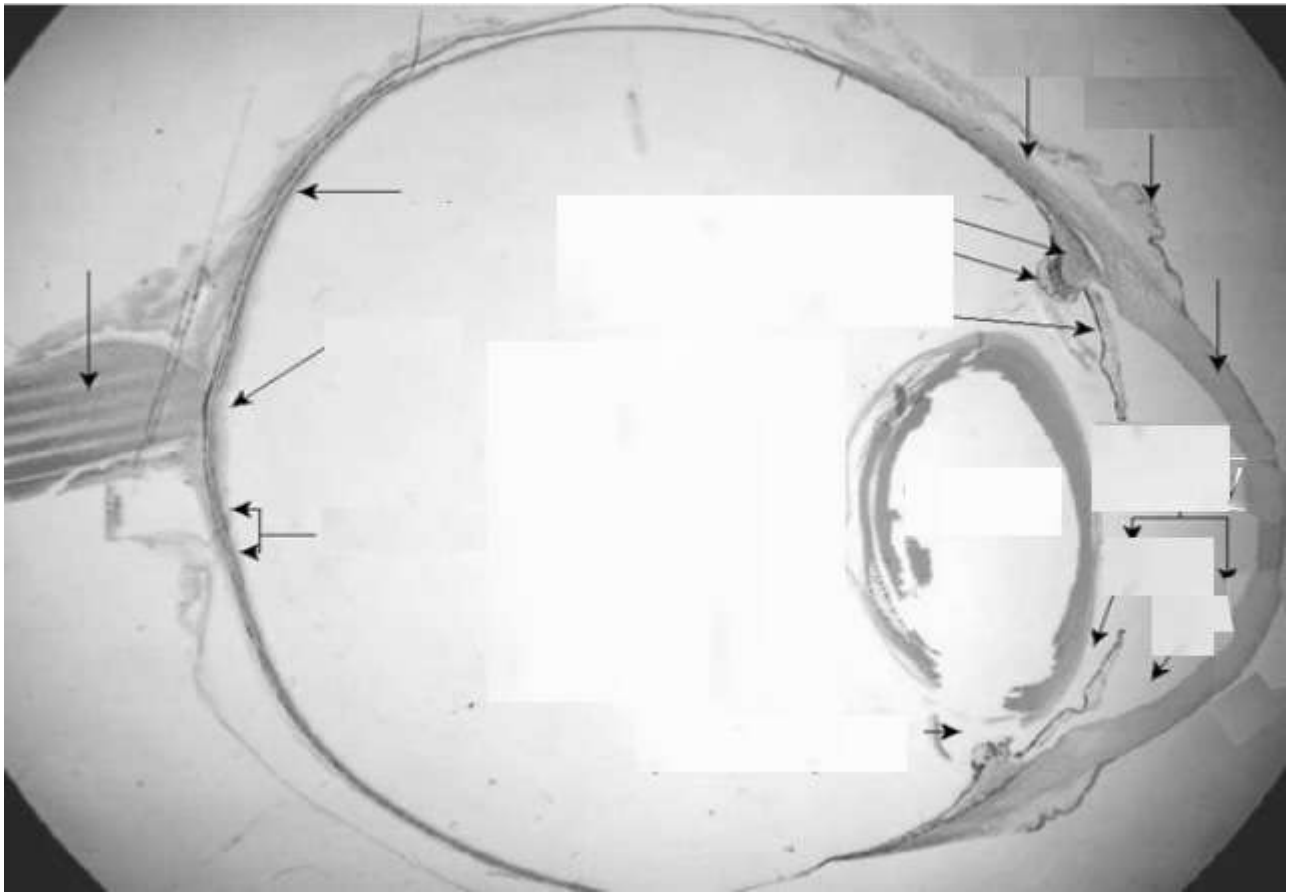
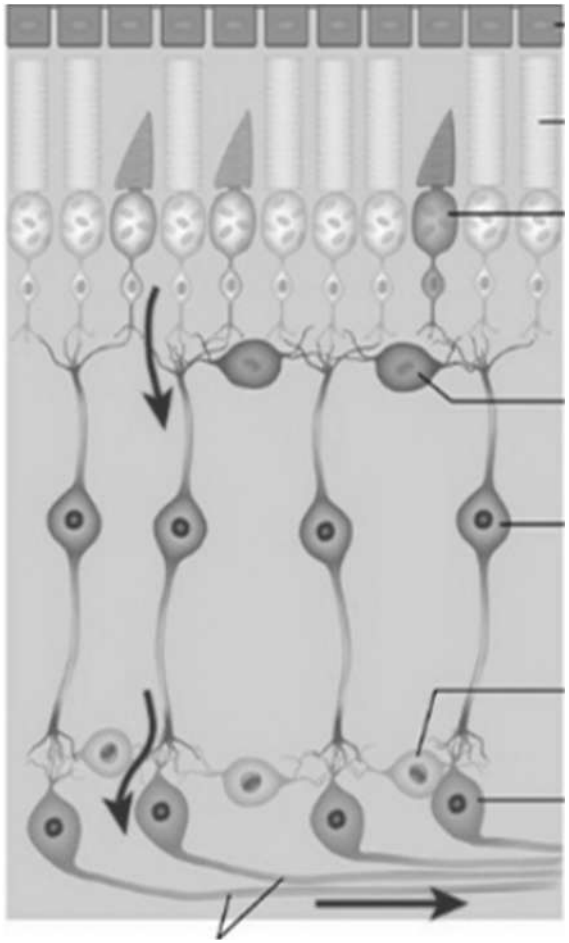
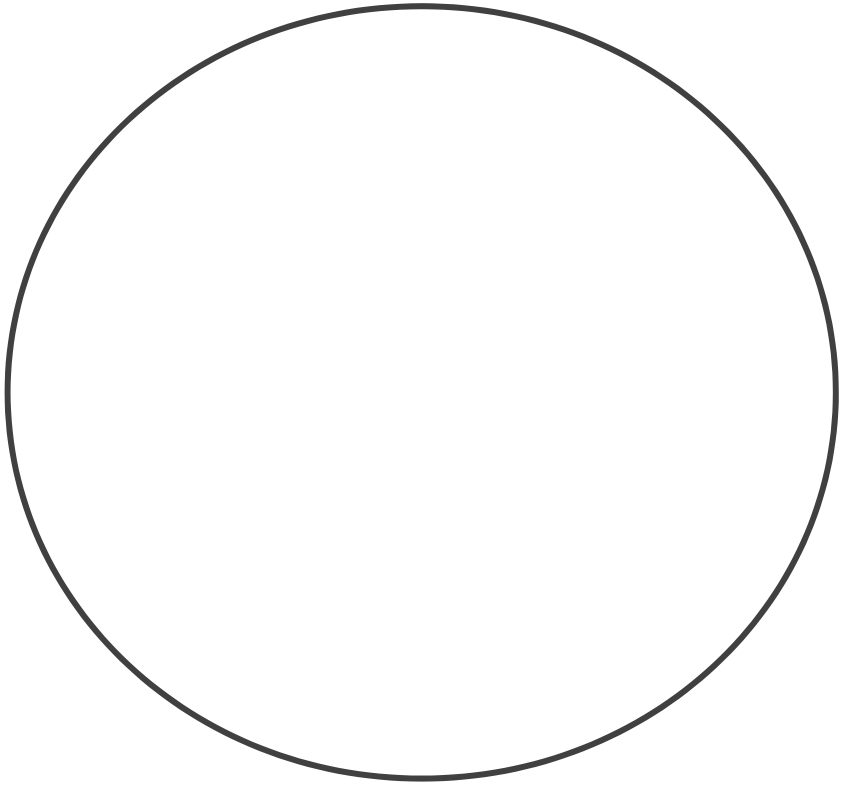
ORGANS OF SENSE

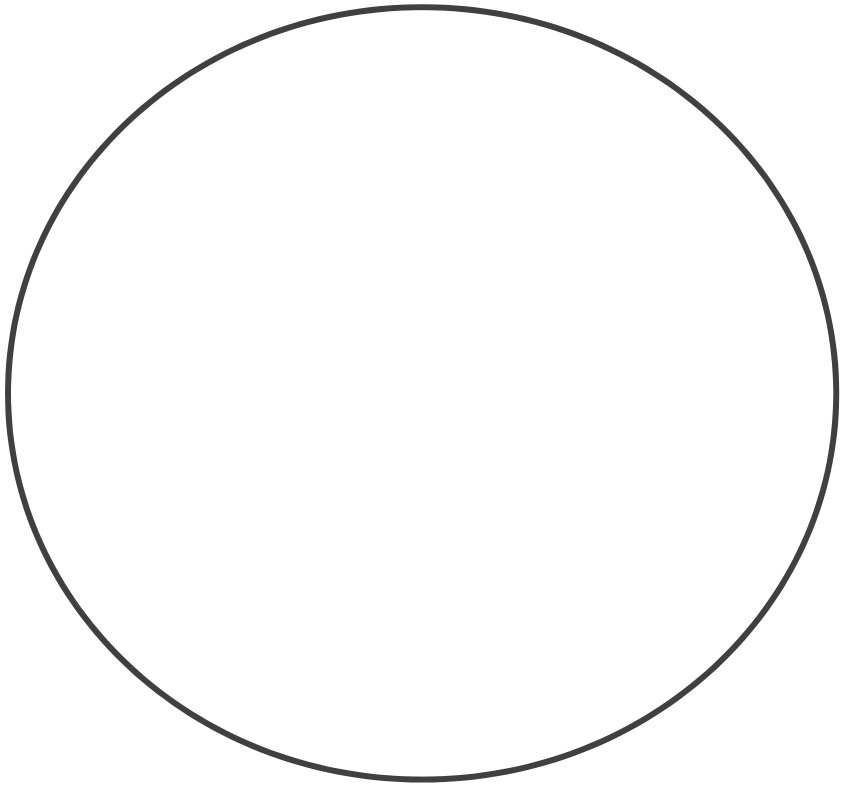
SCHEMATIC PICTURE OF EYE



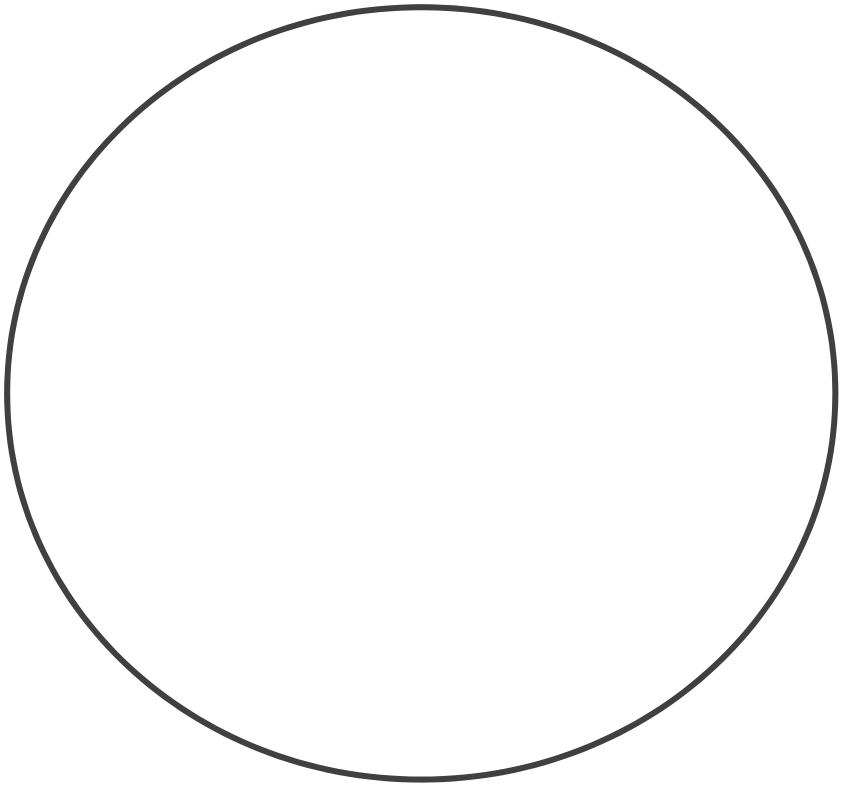
	Layer	Cells type and their part	
1.	Retinal pigment epithelium (RPE)		
2.	Layer of rods and cones		
3.	Outer limiting membrane		
4.	Outer nuclear layer		
5.	Outer plexiform layer		
6.	Inner nuclear layer		
7.	Inner plexiform layer		
8.	Ganglion cell layer		
9.	Layer of optic nerve fibers		
10.	Inner limiting membrane		



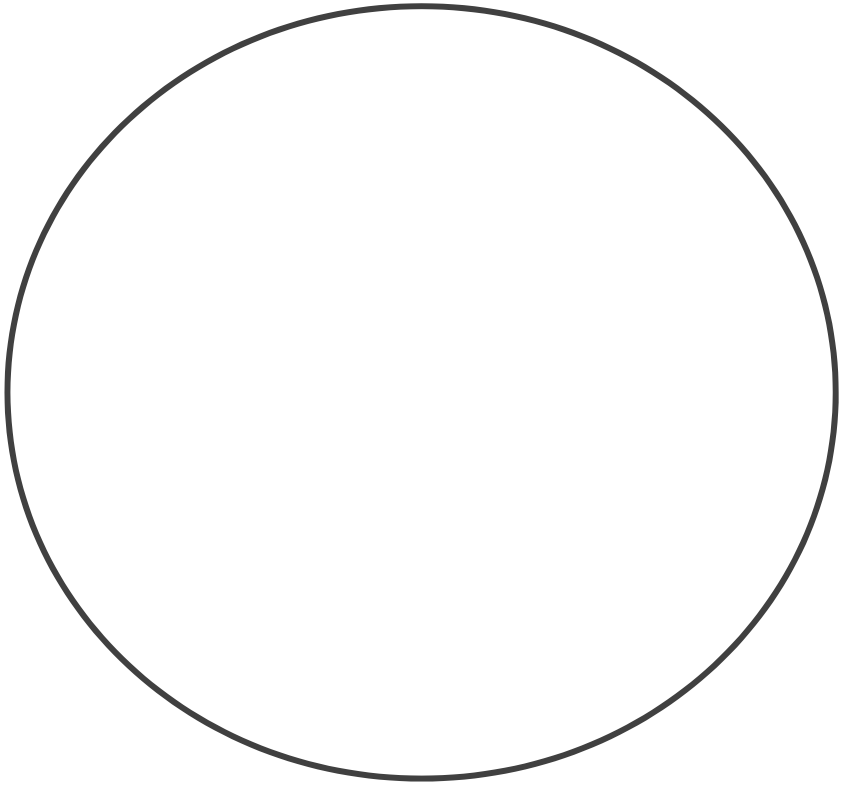
Specimen 1. Eye, meridional section **(hematoxylin and eosin stain, ×400):** 1) cornea; 2) anterior chamber; 3) corneoscleral junction; 4) Schlemm canal; 5) sclera; 6) ciliary body; 7) lens; 8) lens capsule (basement mebrane); 9) lens epithelium (simple quboidal or columnar epithelium), 10) lens fiber with crystallins; 11) posterior chamber; 12) vitreous body.



Specimen 2. Cornea **(hematoxylin and eosin stain, ×400):** 1) stratified squamous non-keratinized epithelium of cornea; 2) anterior basement mebrane (Bowman's membrane); 3) corneal stroma (substance proper); 4) posterior basement mebrane (Descemet's membrane); 5) corneal endothelium (simple squamous epithelium).

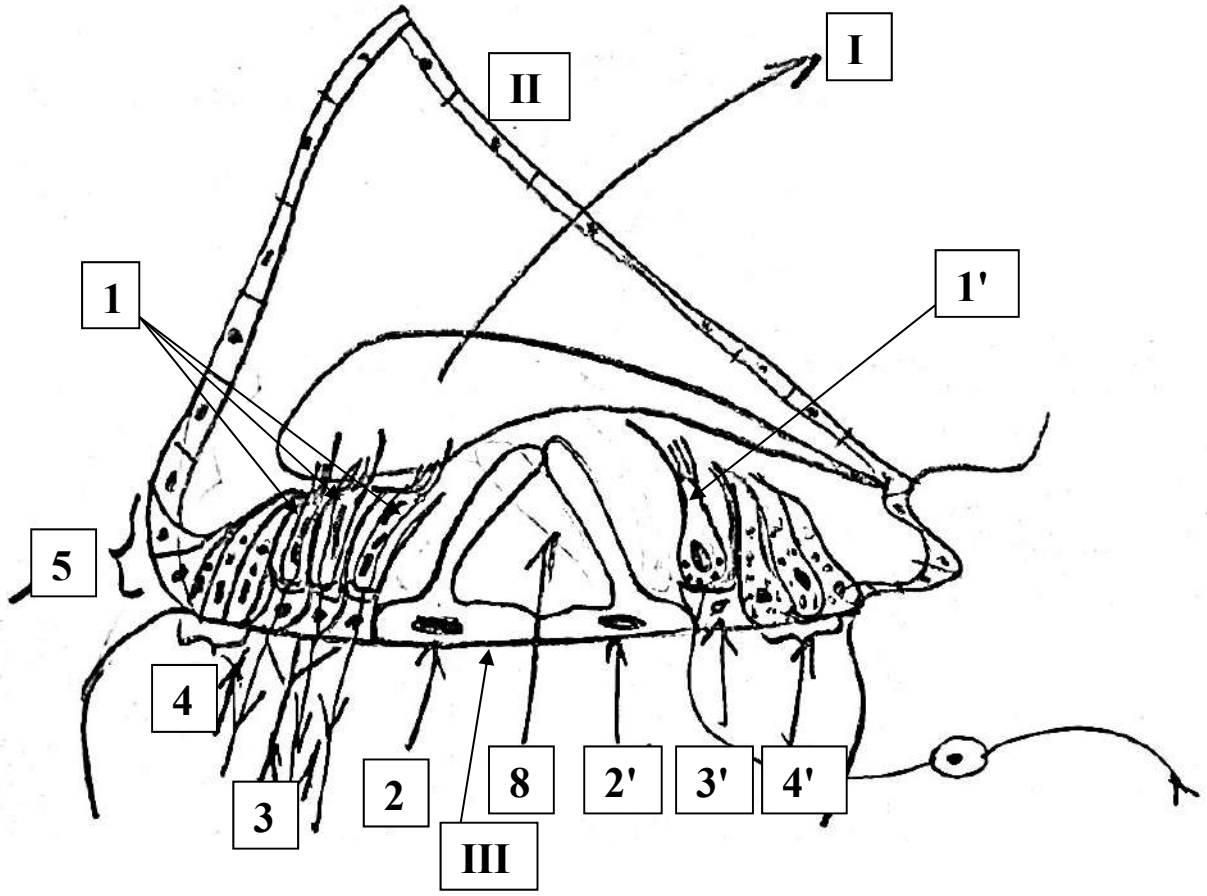


Specimen 3. Retina **(hematoxylin and eosin stain, ×400):**
I) sclera; II) choroid; III) retina;
1) retinal pigment epithelium; 2) layer of rods and cones; 3) outer limiting membrane; 4) outer (external) nuclear layer; 5) outer (external) plexiform layer; 6) inner nuclear layer; 7) inner plexiform (reticular) layer; 8) ganglion cell layer; 9) layer of optic nerve fibers; 10) internal limiting membrane. ⇐LIGHT way.



Specimen 4. Eyelid **(hematoxylin and eosin stain, ×400):**
1) palpebral conjunctiva (stratified columnar epthelium); 2) stratified squamous keratinized epithelium of skin; 3) tarsal plate; 4) orbicularis muscle; 5) tarsal (Meibomian) gland; 6) eyelashes; 7) sebaceous gland of eyelashes; 8) hair follicle.

SCHEMATIC PICTURE OF ORGAN OF CORTY



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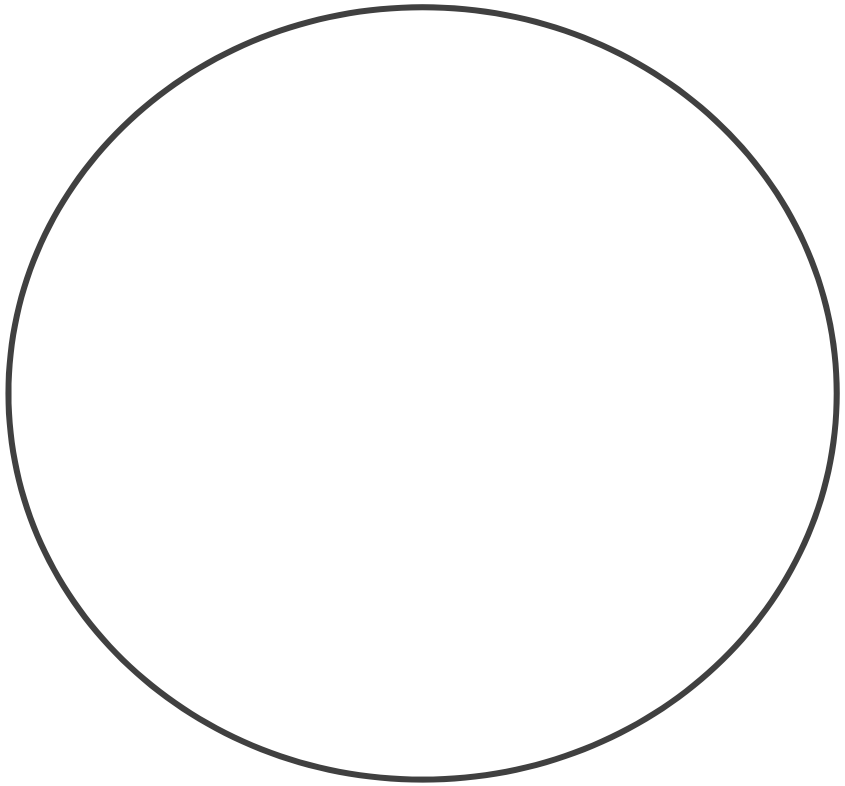
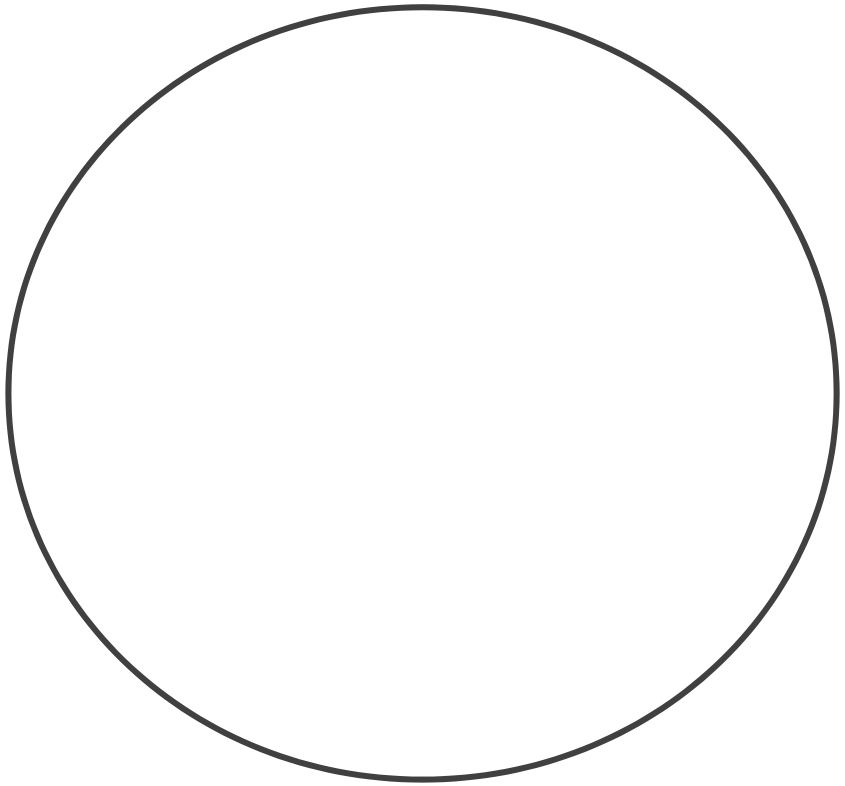


Specimen 5. Organ Corti **(hematoxylin and eosin stain, ×400):**
1) tectorial membrane; 2) inner hair cells; 3) outer hair cells; 4) supporting (phalangeal) cells; 5) inner tunnel; 6) pillar cells.

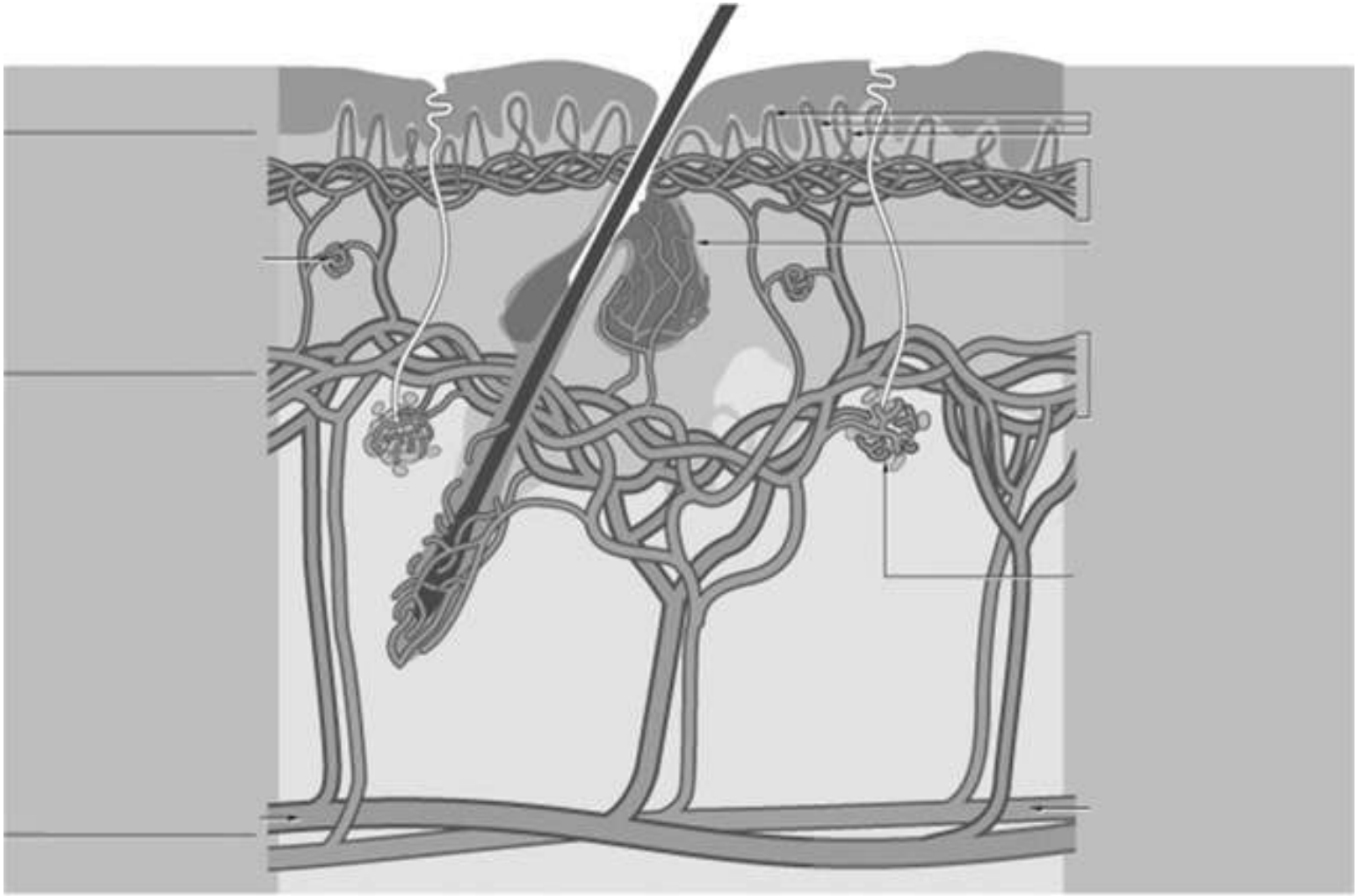


Specimen 6. Taste buds **(hematoxylin and eosin stain, ×400):**
1) taste bud; 2) pore of taste bud; 3) microvilli; 4) supporting cells; 5) sensory cells.

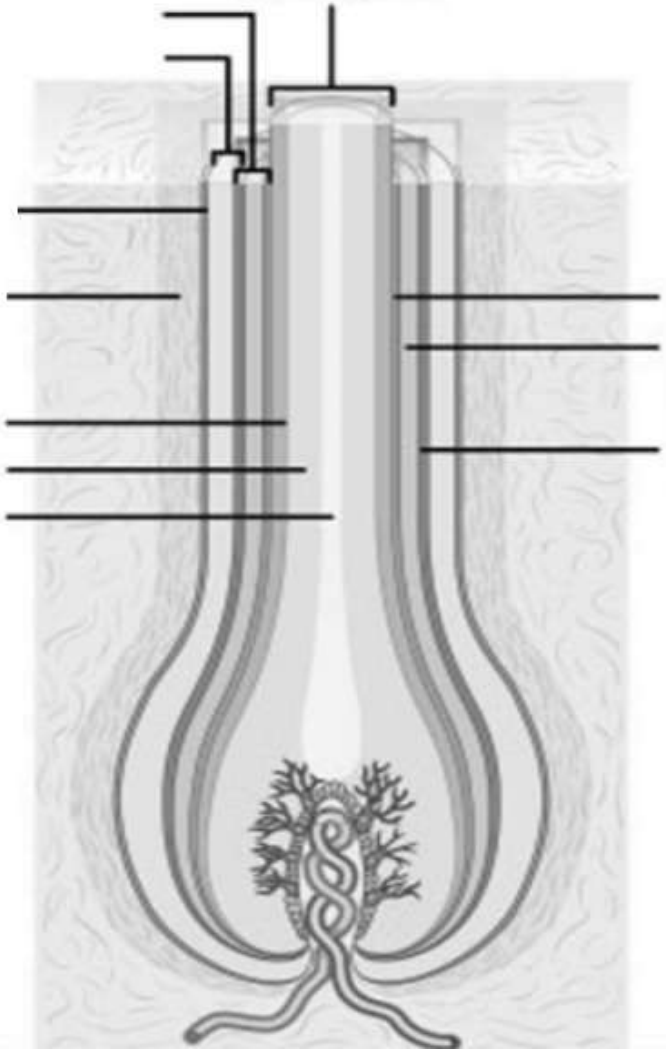
Teacher's signature _____

SKIN

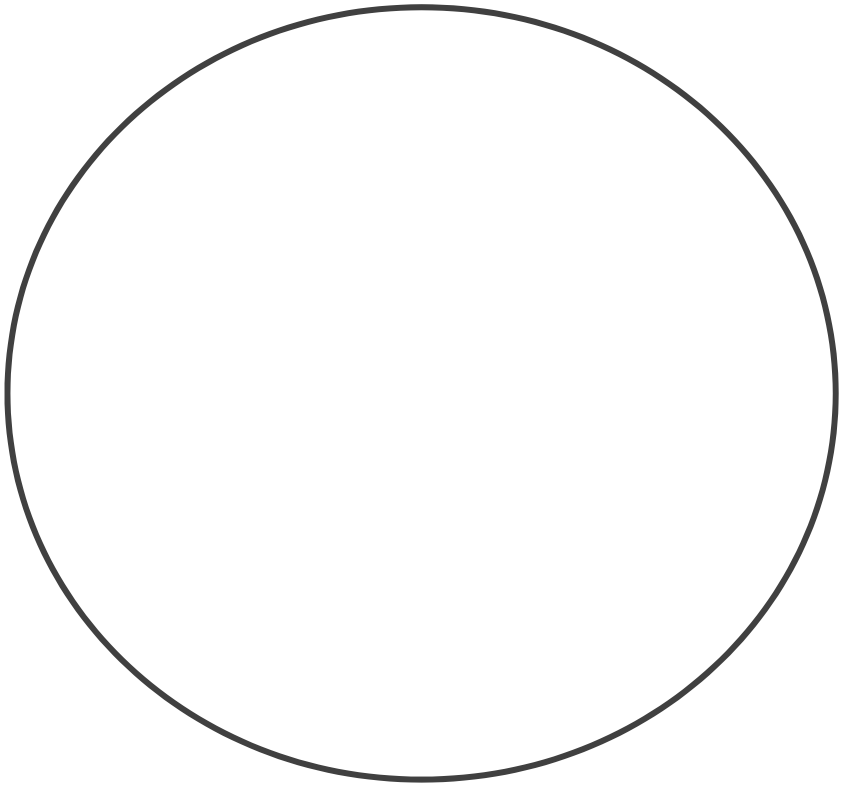
SCHEMATIC PICTURE OF SKIN



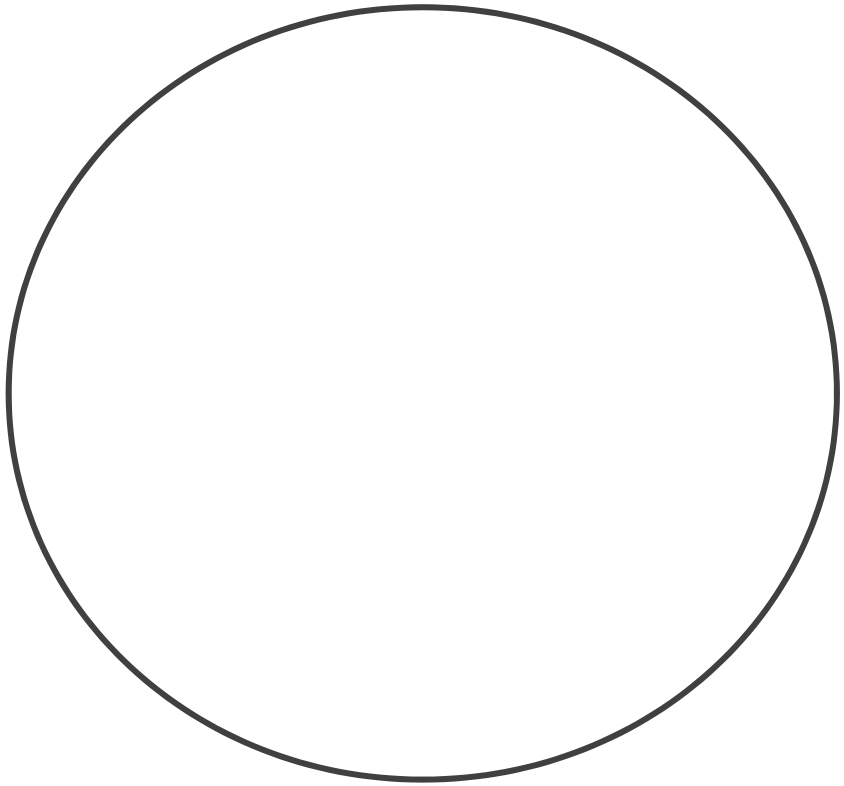
SCHEMATIC PICTURE OF HEIR BULB



Skin and its derivatives	**Type of tissue**	**Embryogenesis** *(from which germ layer it develops)*
Epidermis		
Dermis		
Hypodermis		
Hair		
Sweat glands		
Sebaceous glands		



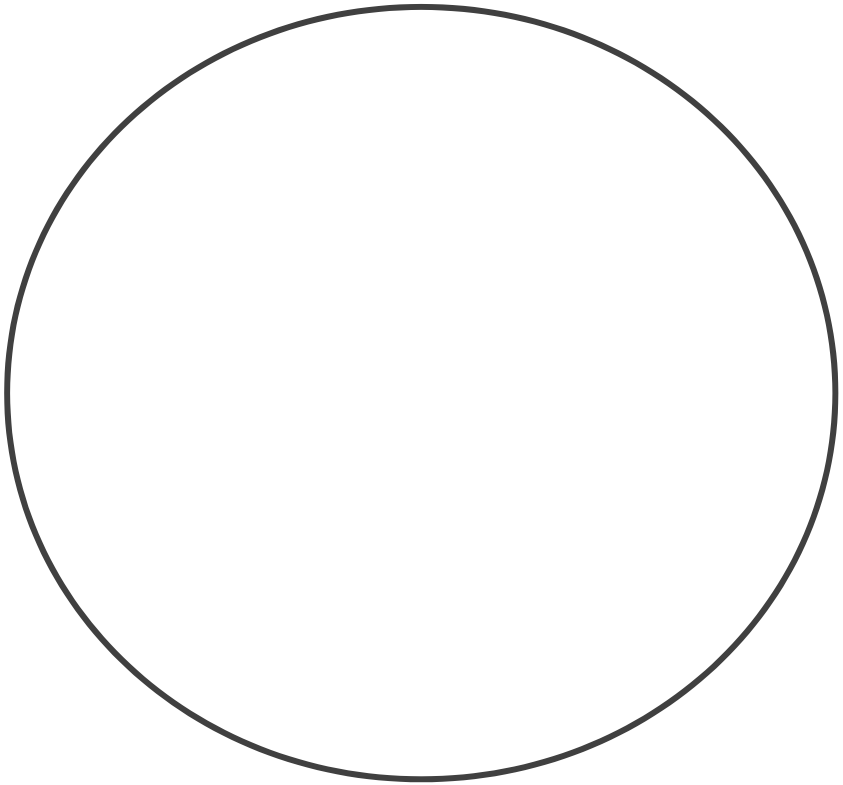
Specimen 1. Skin (scalp) **(hematoxylin and eosin stain, ×400):**
1) epidermis – stratified squamous keratinized epithelium; 2) dermis; 2a) papillary layer; 2b) reticular layer; 3) sebaceous gland; 4) hair shaft; 5) arrector pili muscle; 6) sweat gland



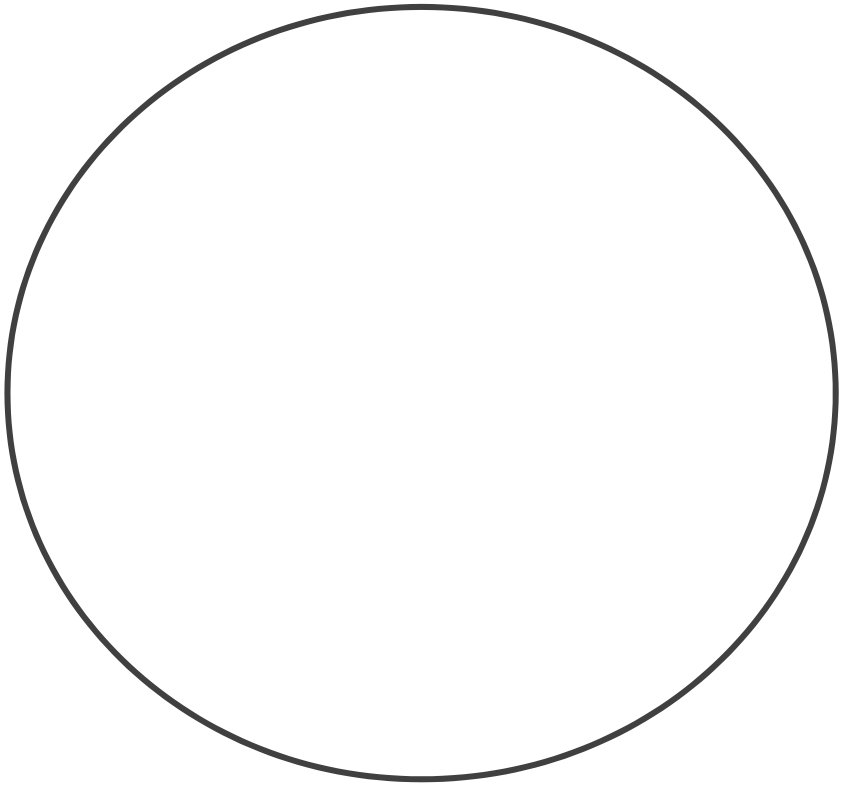
Specimen 2. Hair root **(hematoxylin and eosin stain, ×400):**
1) hair bulb; 2) hair papilla; 3) inner root epithelial sheath; 4) outer root epithelial sheath; 5) glassy membrane; 6) hypodermis.

Teacher's signature _____

DIGESTIVE SYSTEM
ORGANS OF ORAL CAVITY. TEETH. TONGUE

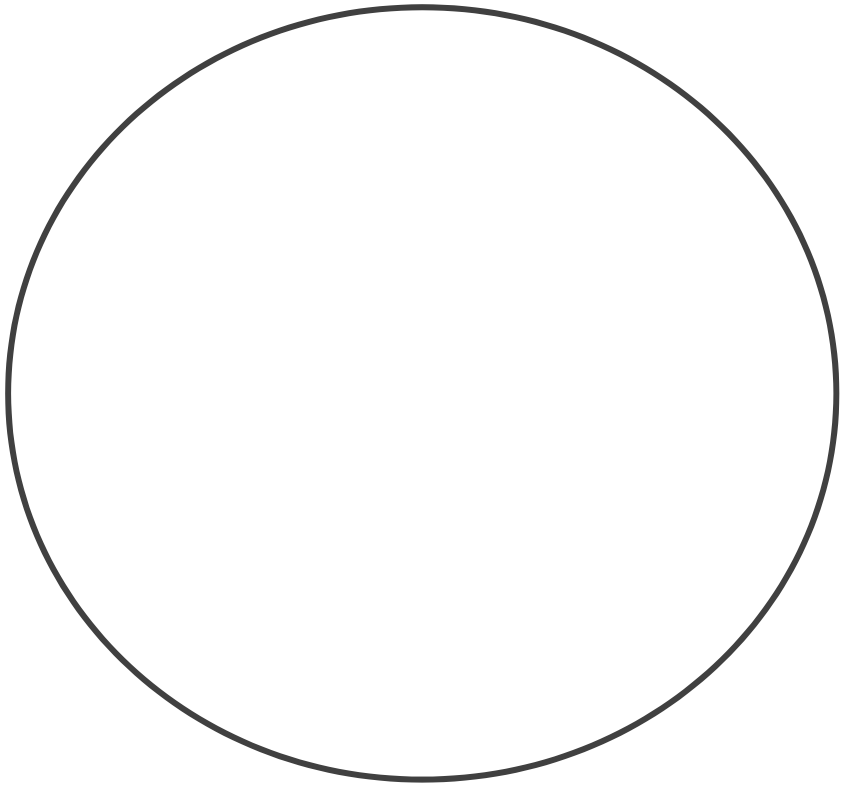


Specimen 1. Lip of baby **(hematoxylin and eosin stain, ×200):**
1) stratified squamous parakeratinized epithelium of oral mucosa; 2) compound salivary gland; 3) fibers of striated muscles; 4) red portion – muco-cutaneous junction: stratified squamous keratinized epithelium; 5) connective tissue papillae; 6) stratified squamous keratinized epithetlium of skin; 7) stratum granulosum; 8) sebaseous gland; 9) hair follicle.

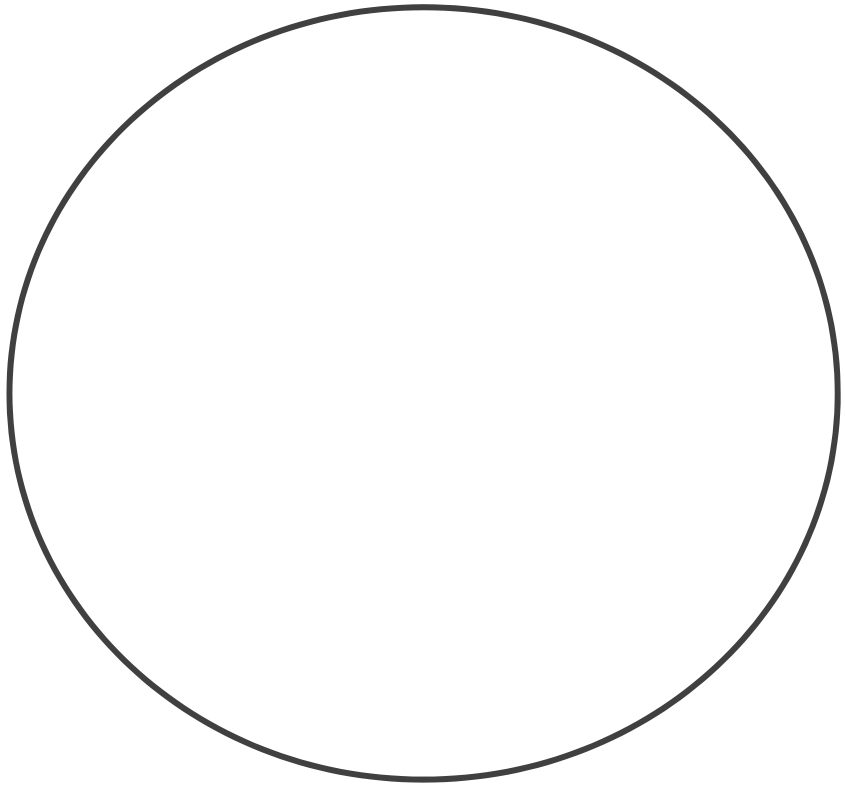


Specimen 2. Tongue **(hematoxylin and eosin stain, ×200):**
1) filiform papilla; 2) stratified squamous keratinized epithelium; 3) fungiform papila; 4) stratified squamous thin keratinized epithelium

Teacher's signature _____



Specimen 3. Histogenesis of tooth tissues **hematoxylin and eosin stain, ×200):**
1) dental follicle; 2) dental papillae.



Specimen 4. Slice of dental root 5 **(hematoxylin and eosin stain, ×200):**
1) dental papillae; 2) odontoblasts; 3) dentin; 4) enamel; 5) ameloblasts.

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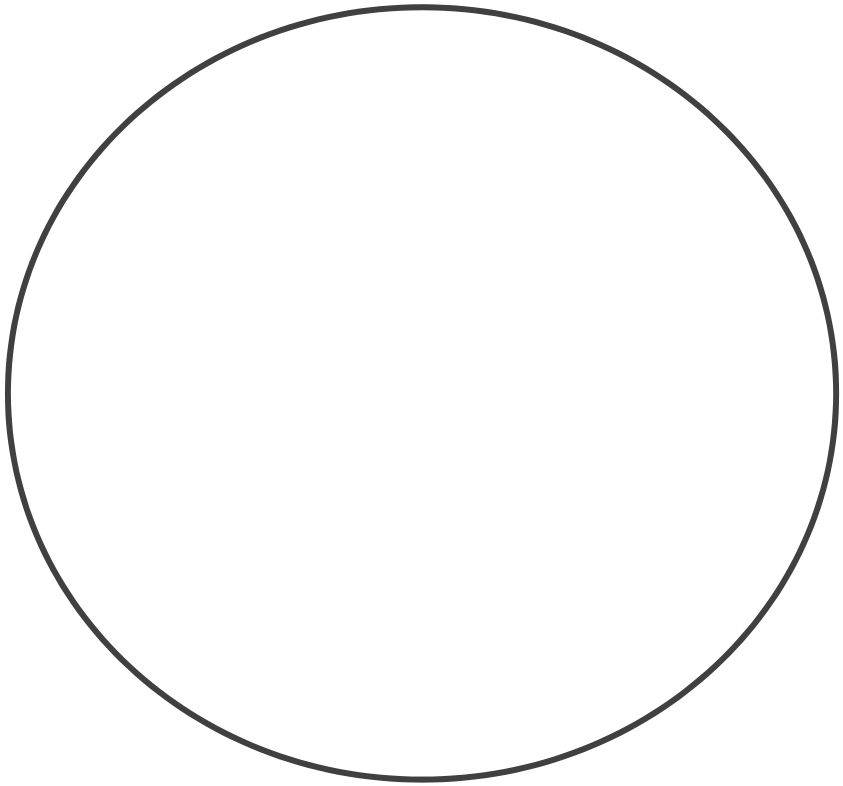
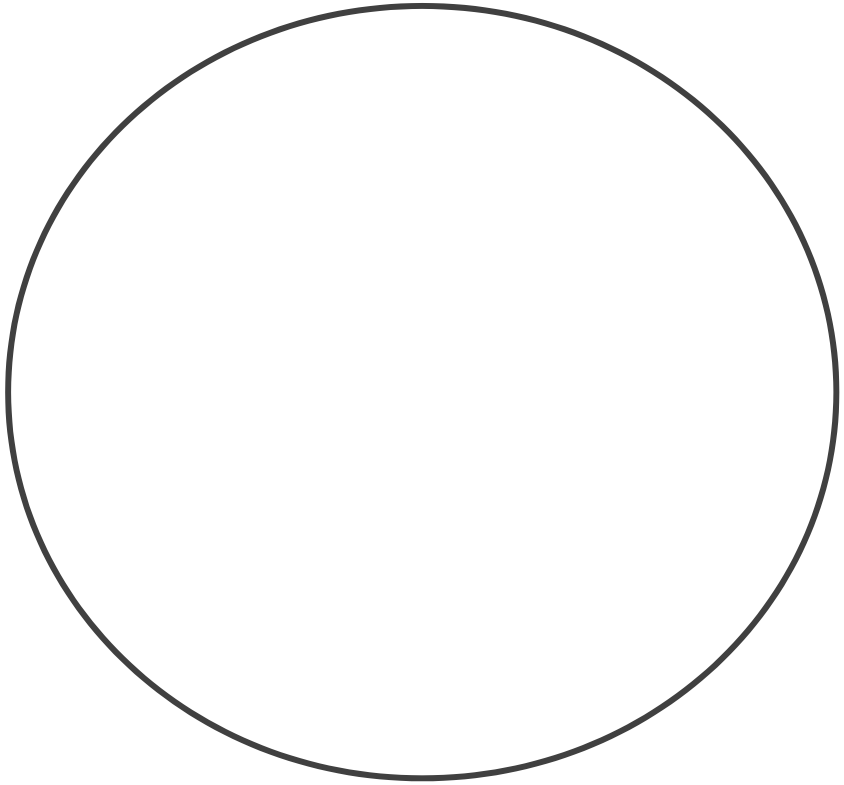


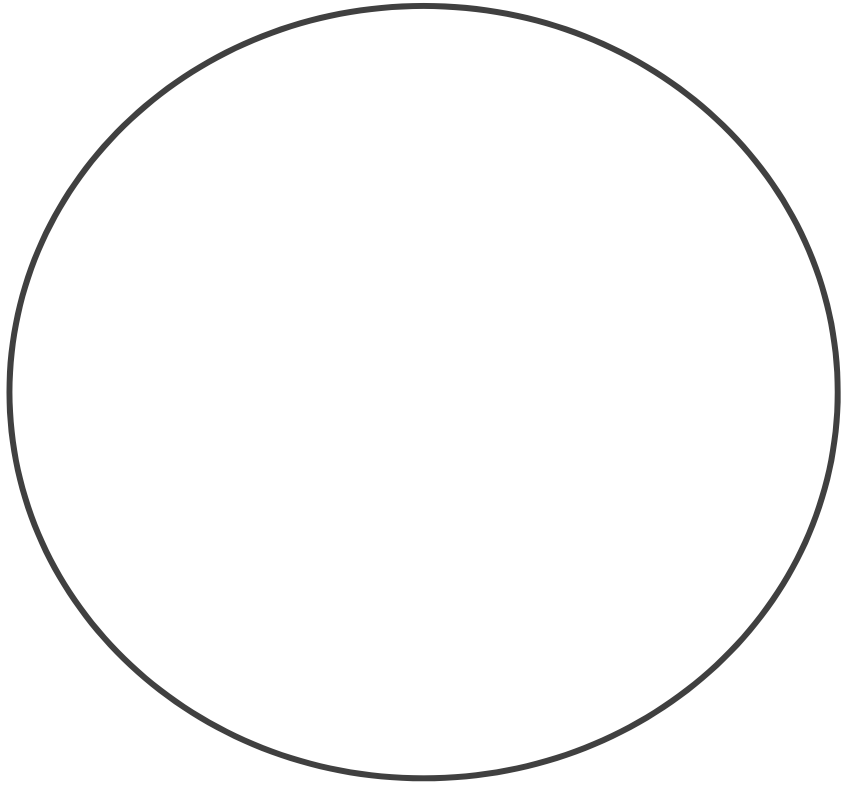
Specimen 5. Frontal slice of tooth **(hematoxylin and eosin stain, ×200):**
1) enamel; 2) enamel rods; 3) lines of Retzius.

Teacher's signature _____

DIGESTIVE SYSTEM
ESOPHAGUS, STOMACH



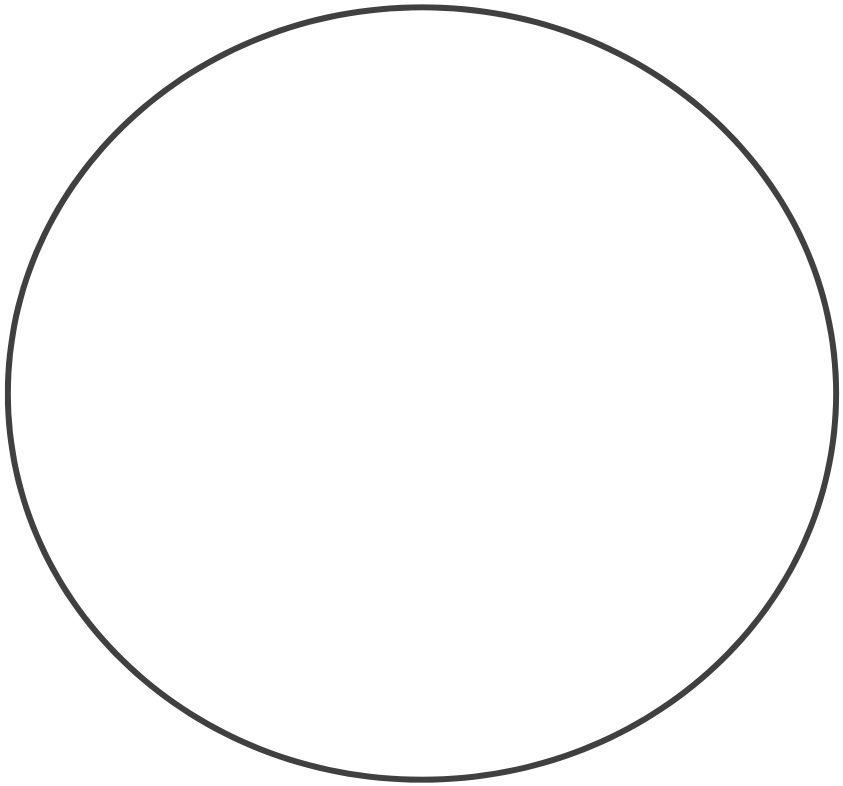
Specimen 1. Esophagus **(hematoxylin and eosin stain, ×400):**
1) mucosa; 2) stratified nonkeratinized epithelium; 3) lamina propria; 4) lamina muscularis mucosa; 5) submucosa; 6) proper mucous gland of esophagus; 7) tunica muscularis; 8) tunica adventitia.



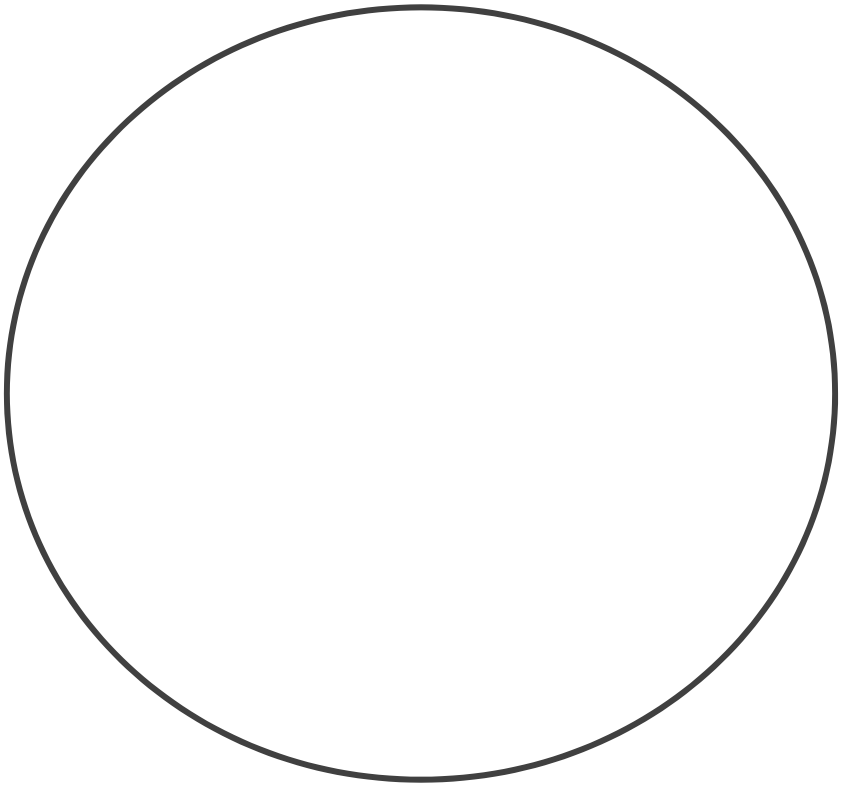
Specimen 2. Stomach **(hematoxylin and eosin stain, ×200):**
1) mucosa; 2) gastric pits; 3) lamina proptia; 4) proper gastric glands; 5) parietal cells; 6) chief cells; 7) neck (mucous) cells; 8) lamina muscularis mucosa; 9) submucosa; 10) tunica muscularis; 11) serosa.

DIGESTIVE SYSTEM

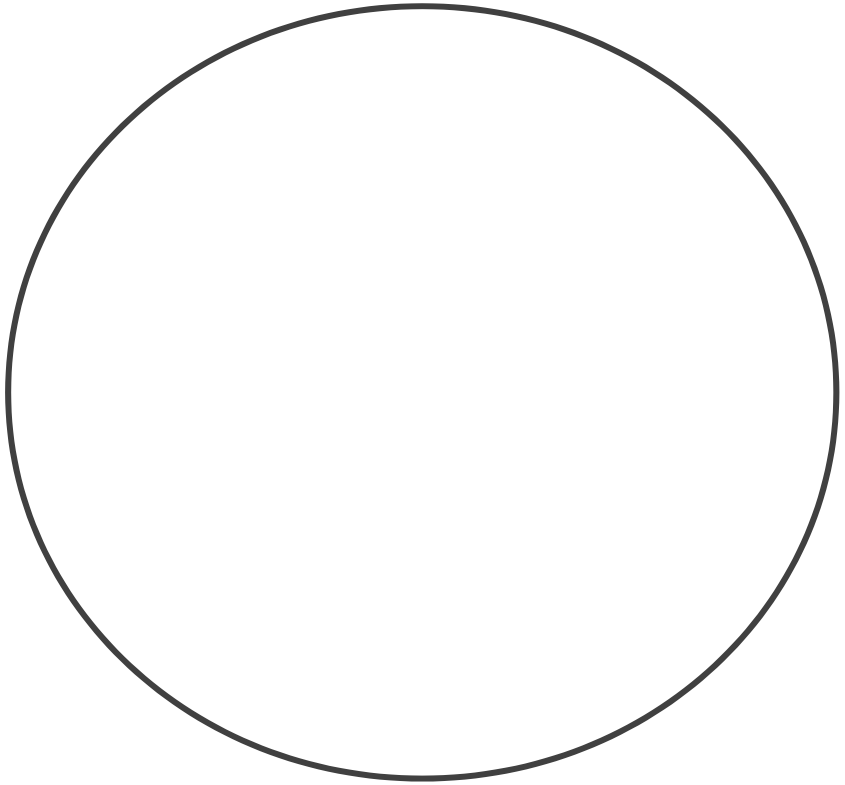
SMALL INTESTINE AND COLON



Specimen 3. Small intestine – Duodenum; **(hematoxylin and eosin stain, ×400):**
1) villi; 2) tunica mucosa; 3) simple columnar epithelium; 4) lamina propria mucosa; 5) muscularis mucosa; 6) submucosa; 7) Duodenal gland (Brunner's gland) 8) tunica muscularis; 9) serosa.



Specimen 3. Small intestine-Jejunum; **(hematoxylin and eosin stain, ×400):**
1) Plicae circulares; 2) tunica mucosa; 3) simple columnar epithelium; 4) lamina propria mucosa; 5) lymphoid infiltration of mucosa; 6) muscularis mucosa; 7) submucosa; 8) tunica muscularis; 9) serosa.



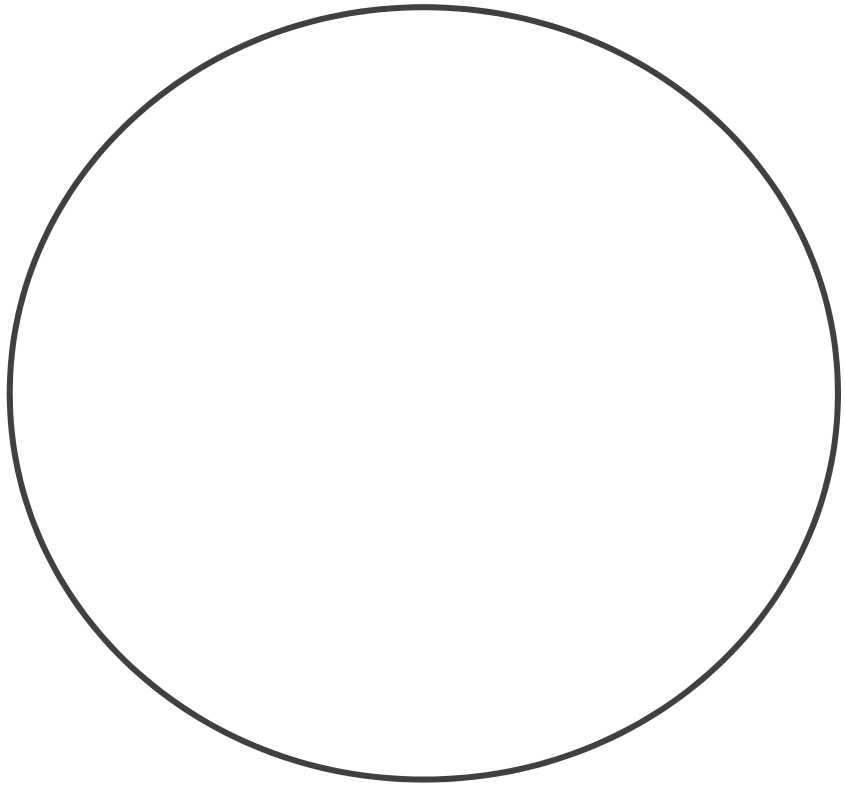
Specimen 4. Large intestine **(hematoxylin and eosin stain, ×400):**
1) mucosa; 2) crypts of Lieberkuhn; 3) simple columnar epithelium; 4) Goblet cells; 5) lamina propria; 6) lymphatic nodules; 7) lamina muscularis mucosa; 8) submucosa; 9) tunica serosa.

Teacher's signature _____

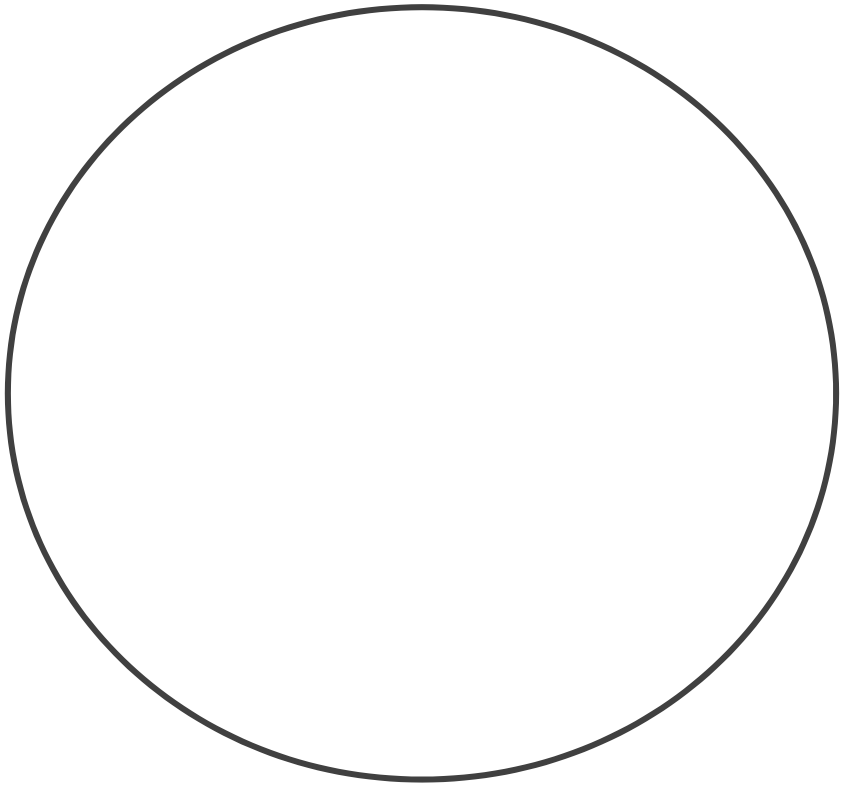
		Type of epithelium of mucosa	Muscularis externa	
			Number and type of muscle layers	Type of muscle tissue
oral cavity			—	—
esophagus				
stomach				
small intestine				
large intestine	***caecum***			
	colon			
	rectum			
	anal canal			

DIGESTIVE GLAND

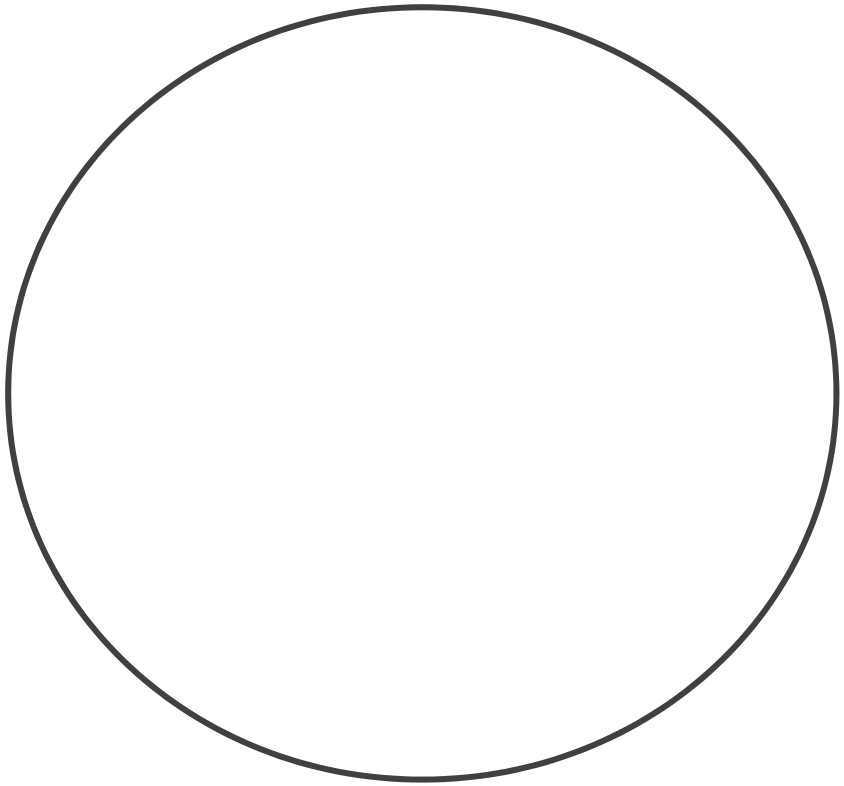
Gland	Duct system	Lining epithelium of the duct	Function of duct
Major salivary glands ***(parotid, sublingual, submandibular)***	intercalated ducts		
	striated (interlobular) ducts		
	common salivary duct		
Pancreas	centro-acinar cells + intercalated ducts		
	intralobular collecting ducts		
	interlobular ducts duct		
Liver	canals of Hering		
	intrahepatic bile ductule		
	interlobular bile ducts		
	hepatic ducts		
	common hepatic duct		



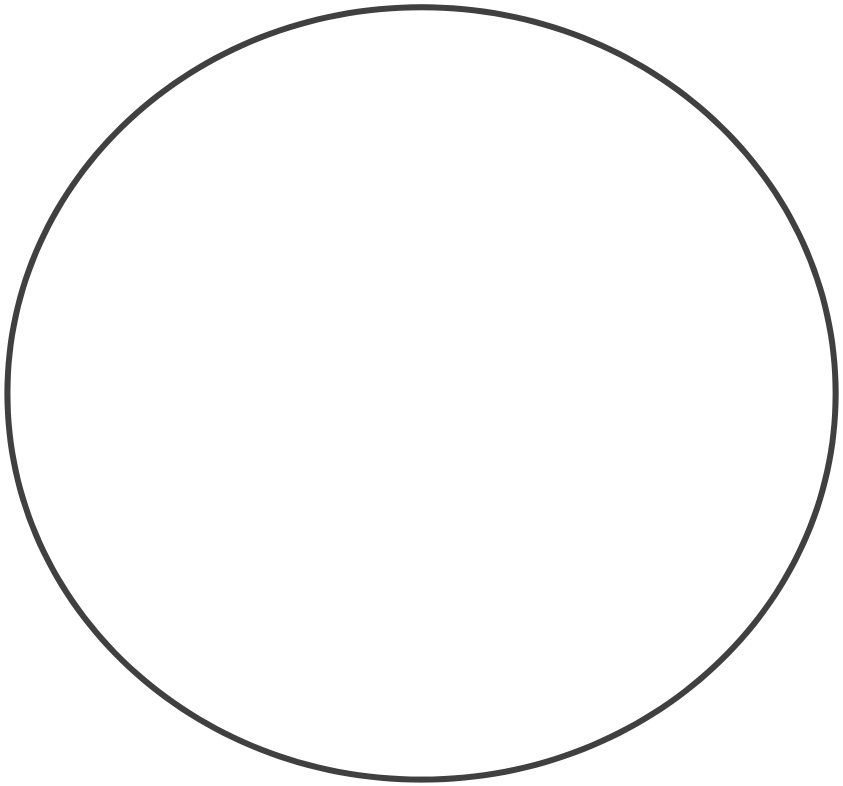
Specimen 1. Parotid salivary, **(hematoxylin and eosin stain, ×400):** 1) capsule; 2) trabecula; 3) serous acini (chief cells); 4) intercalated duct; 5) striated duct; 6) interlobular duct.



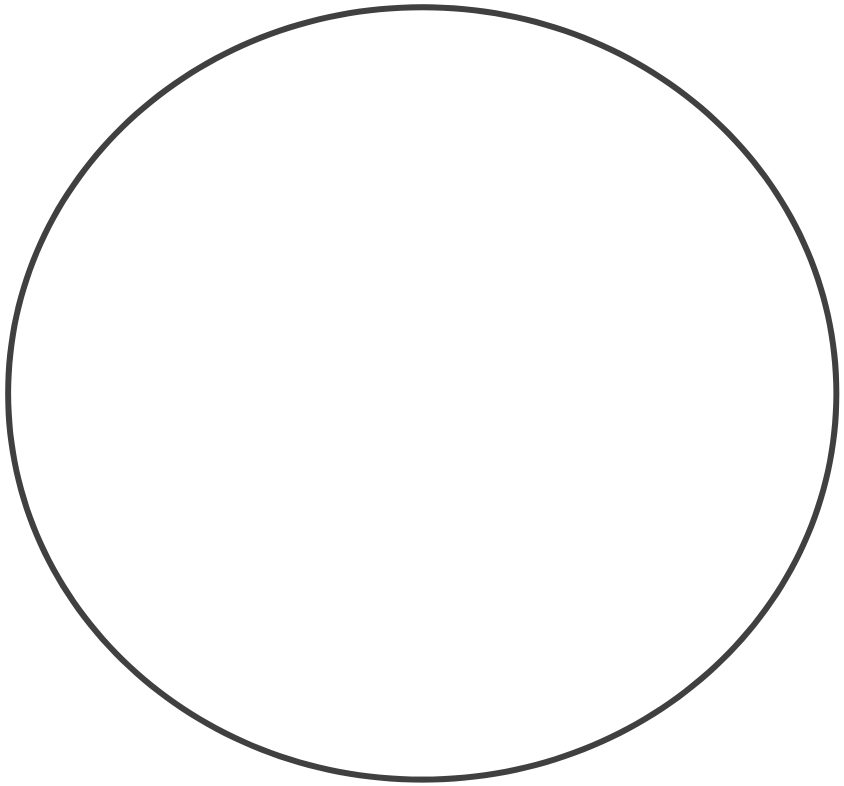
Specimen 2. Sublingual salivary, **(hematoxylin and eosin stain, ×400):** 1) capsule; 2) trabecula; 3) mixed sero-mucous acini; 4) serous demilune; 5) mucous acini; 6) myoepithelial cells; 7) intercalated duct; 8) striated duct; 9) interlobular duct.



Specimen 3. Pig liver or Rat liver **(hematoxylin and eosin stain, ×400):**
1) hepatic classical lobule; 2) interlobular connective tissue; 3) liver plates; 4) Portal triads (portal vein; hepatic artery; bile duct); 5) lymphatic vessel); 6) sinusoidal capillary; 7) central vein.



Specimen 4. Human liver, **(hematoxylin and eosin stain, ×400):**
1) liver plates; 2) sinusoidal capillary; 3) central vein; 4) Portal (hepatic) triads (portal vein; hepatic artery; bile duct); 5) lymphatic vessel.



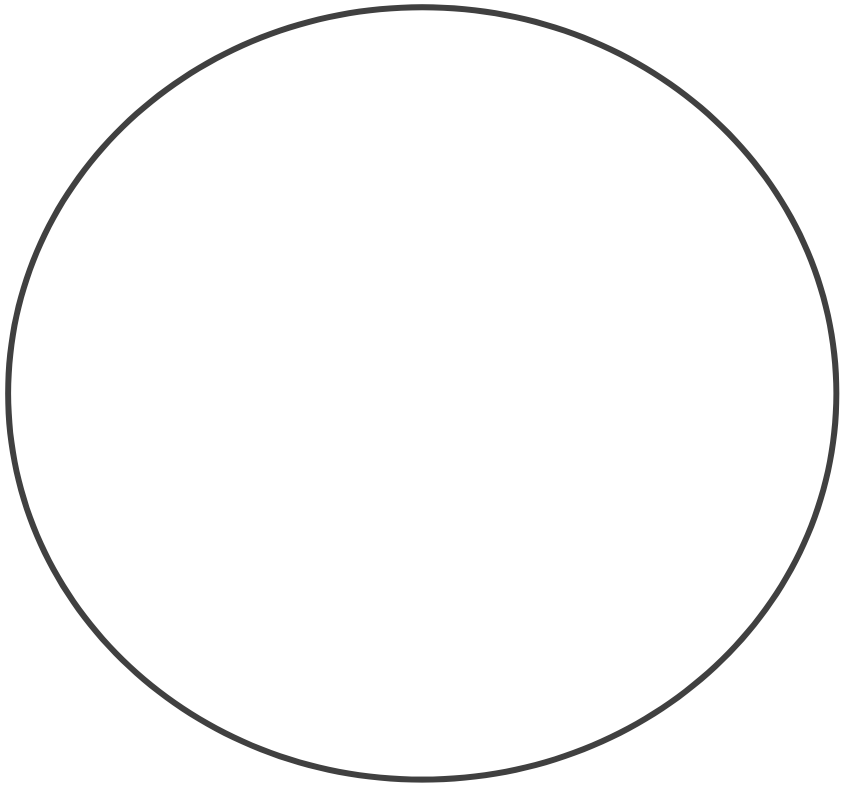
Specimen 5. Pancreas **(hematoxylin and eosin stain, ×400):**
1) lobule of pancreas; 2) interlobular connective tissue; 3) acinus of pancreas; 4) Islets of Langerhans.

Teacher's signature _____

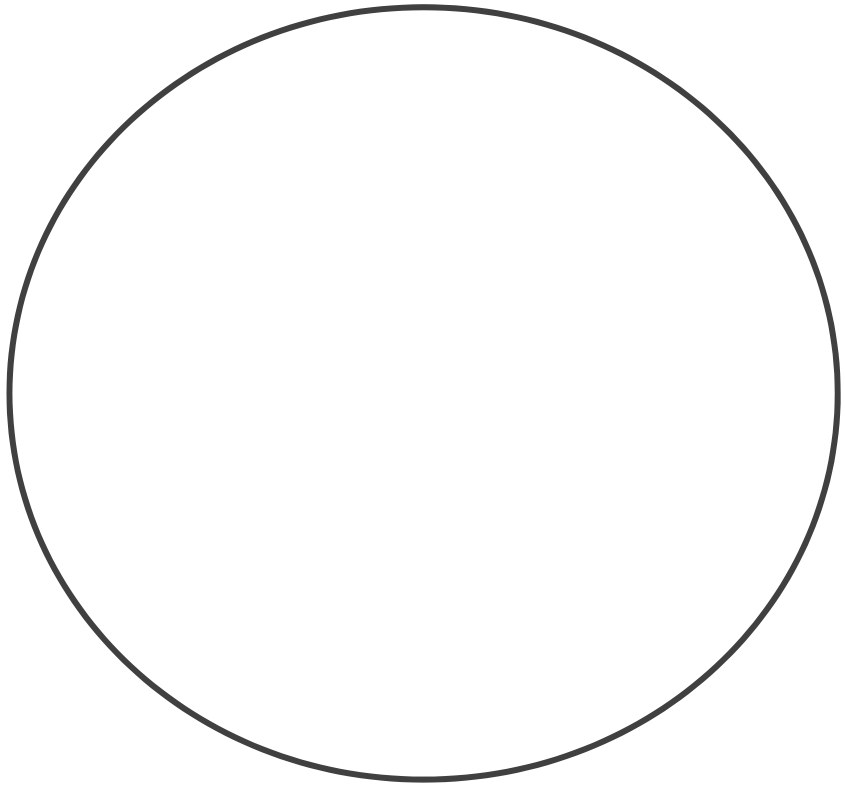
RESPIRATORY SYSTEM

Part of respiratory system			Lining epithelium	Types of cells of the epithelium
conducting portion	nasal cavity	vestibule		
		respiratory region		
		olfactory region		
	nasopharynx			
	larynx	superior vestibular folds		
		inferior vocal folds		
	trachea			

	trachea *(cont.)*		
	primary bronchi, secondary (lobar) bronchi, tertiary (segmental) bronchi		
	bronchioles		
	terminal bronchioles		
respiratory portion	respiratory bronchioles		
	alveoli		



Specimen 1. Trachea **(hematoxylin and eosin stain, ×400):**
1) pseudostratified ciliated columnar epithelium; 2) lamina propria; 3) tunica mucosa; 4) submucosa; 5) mucous acini and sero-mucous acini of tracheal gland; 6) hyaline cartilage; 7) tunica adventitia.

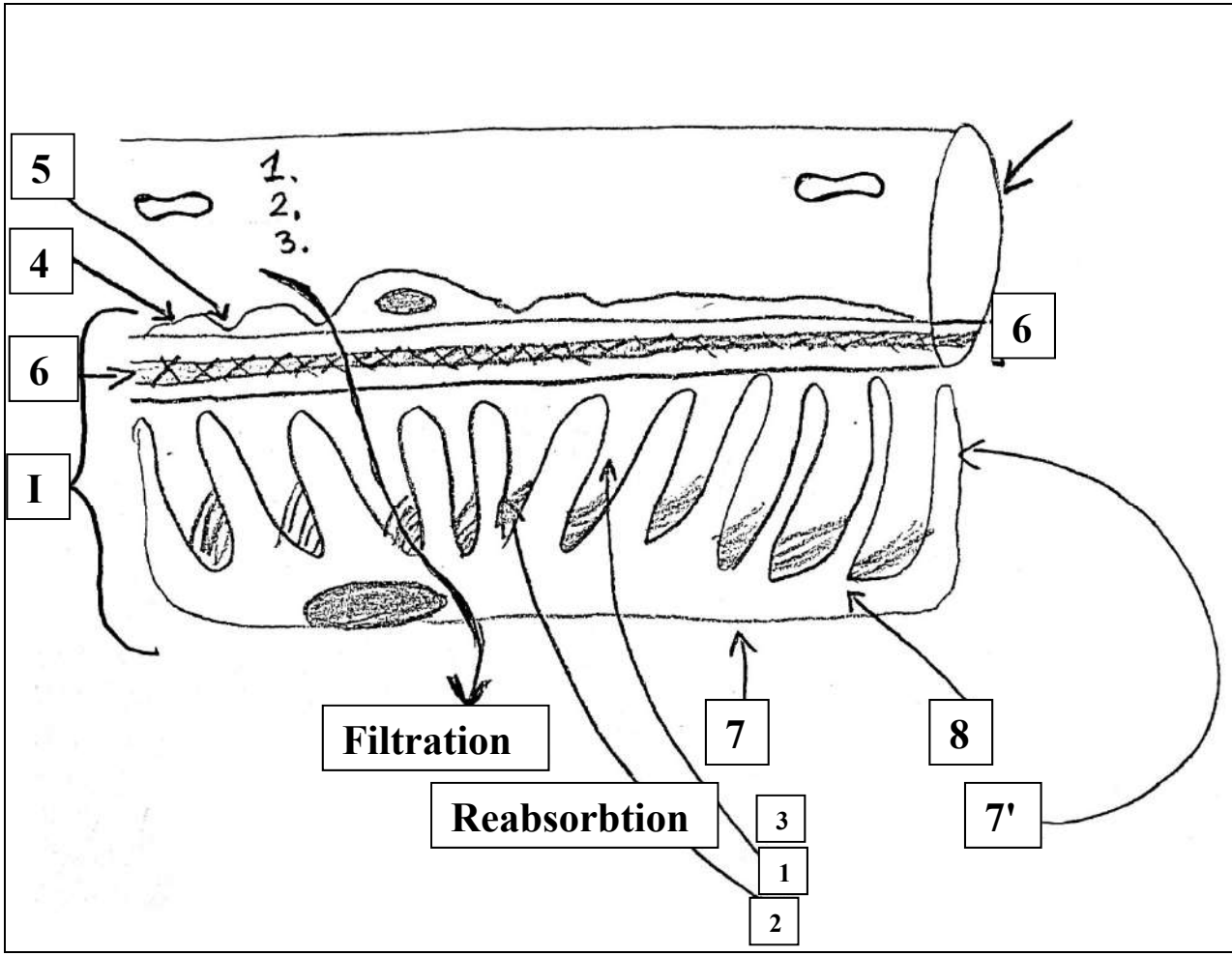


Specimen 2. Lung **(hematoxylin and eosin stain, ×400):**
1) terminal bronchiole; 2) cuboidal epithelium; 3) smooth muscle cells; 4) alveolar duct; 5) alveolar sac; 6) alveola.

Teacher's signature _____

URINARY SYSTEM

SCHEMATIC PICTURE OF FILTRATION BARRIER



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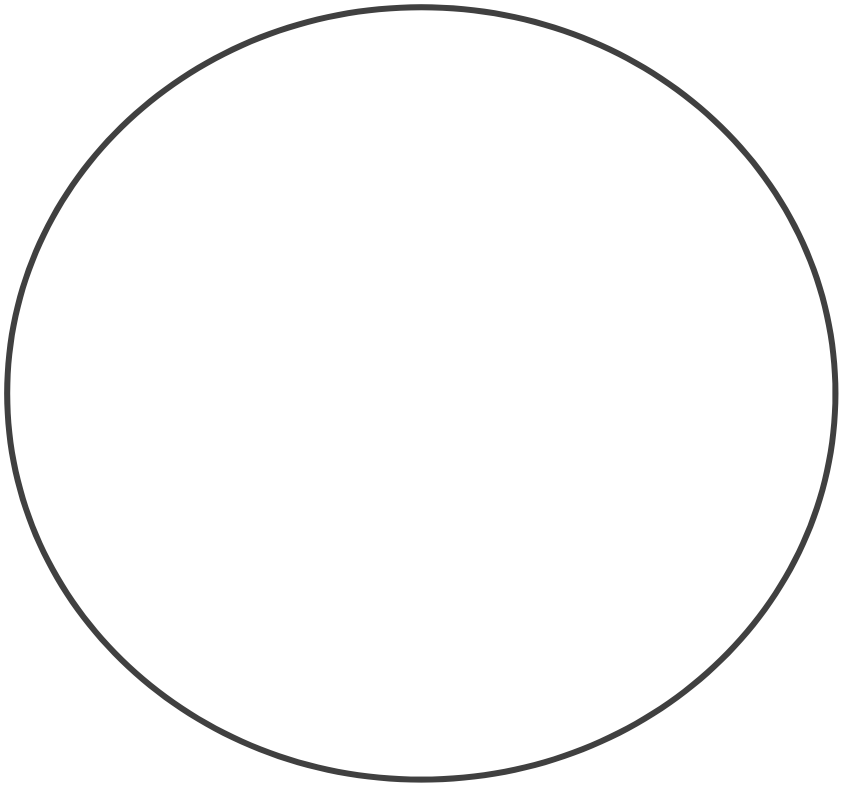
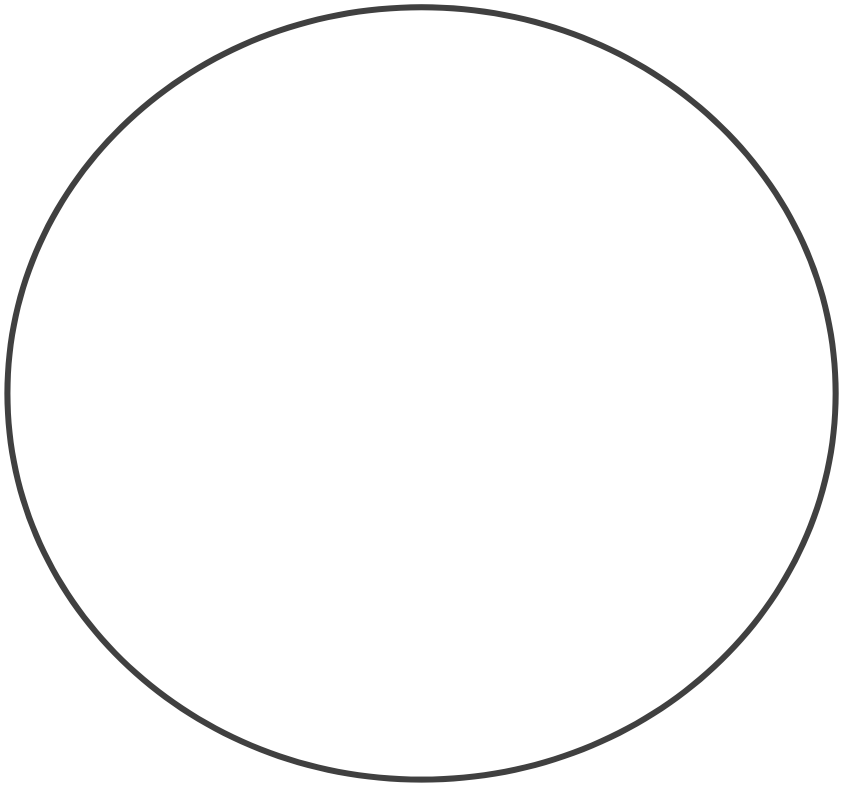
Part of nephron	Lining Epithelium, its characteristics	Function
Glomerulus		
Bowman's capsule		
Proximal convoluted tubule		
Proximal straight tubule		
Loop of Henle: descending limb		
Loop of Henle: ascending limb		
Distal straight tubule		
Distal convoluted tubule		
Collecting duct		

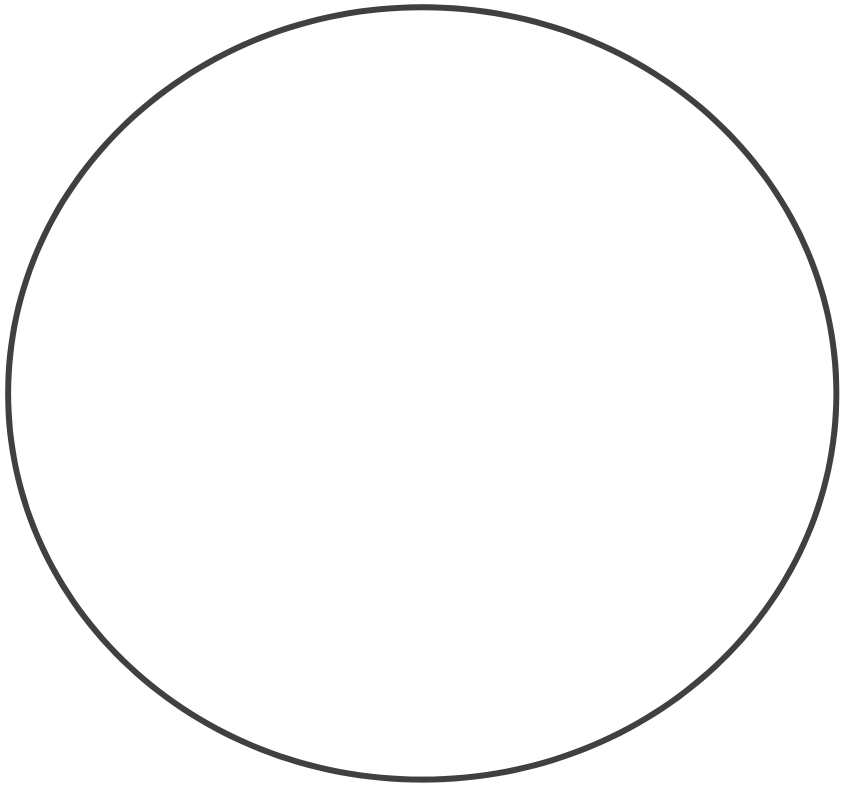


Specimen 1. Kidney of rat **(hematoxylin and eosin stain, ×400):**
1) cortex; 2) renal corpuscle; 3) proximal convoluted tubules; 4) distal convoluted tubules; 5) medula; 6) straight tubules; 7) collecting duct; 8) capsule



Specimen 2. Ureter **(hematoxylin and eosin stain, ×400):**
1) lumen; 2) urothelium (transitional epithelium); 3) lamina propria; 4) tunica mucosa; 5) longitudinal layer of muscle; 6) circular layer of muscle; 7) tunica muscularis; 8) tunica adventitia.

Teacher's signature _____

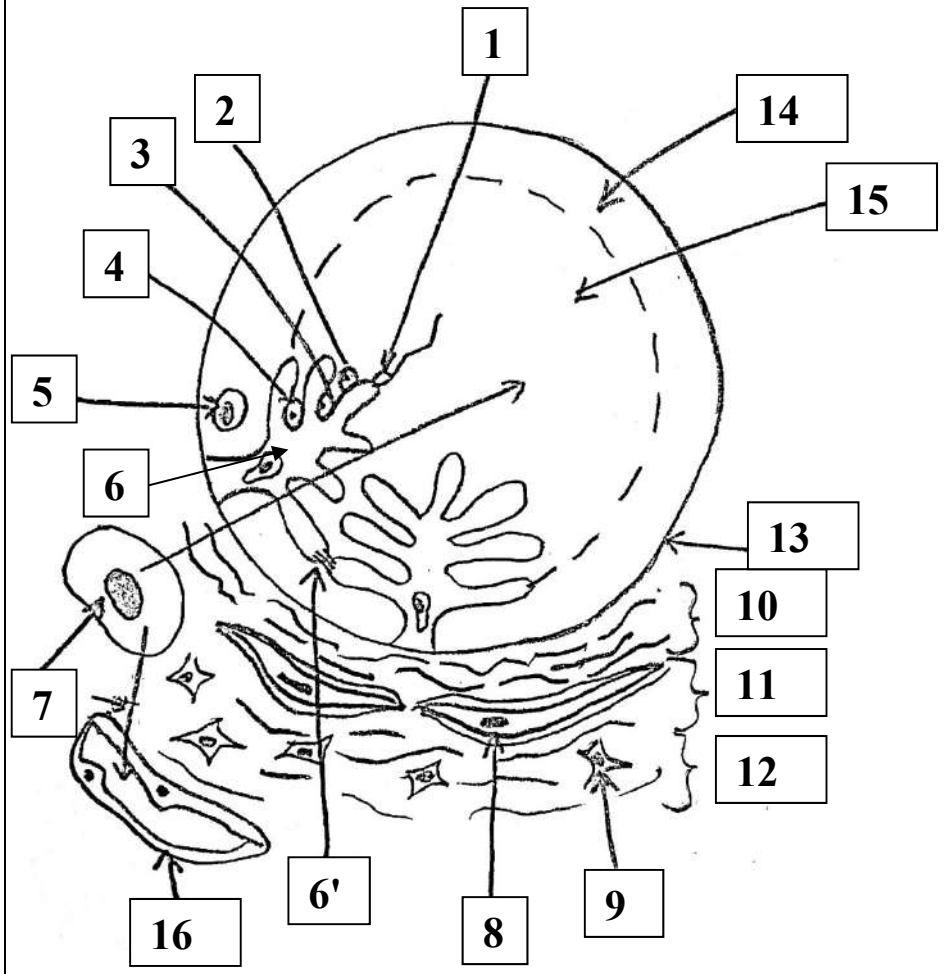


Specimen 3. Urinary bladder **(hematoxylin and eosin stain, ×400):**
1) lumen; 2) urothelium (transitional epithelium); 3) lamina propria; 4) tunica mucosa; 5) tunica submucosa; 6) inner longitudinal layer of smooth muscle; 7) middle circular layer of smooth muscle; 8) outer longitudinal layer of smooth muscle; 9) tunica muscularis; 10) tunica adventitia.

Teacher's signature _____

MALE REPRODACTIVE SYSTEM

SCHEMATIC PICTURE OF CONVOLUTED TUBULE IN TESTICLE



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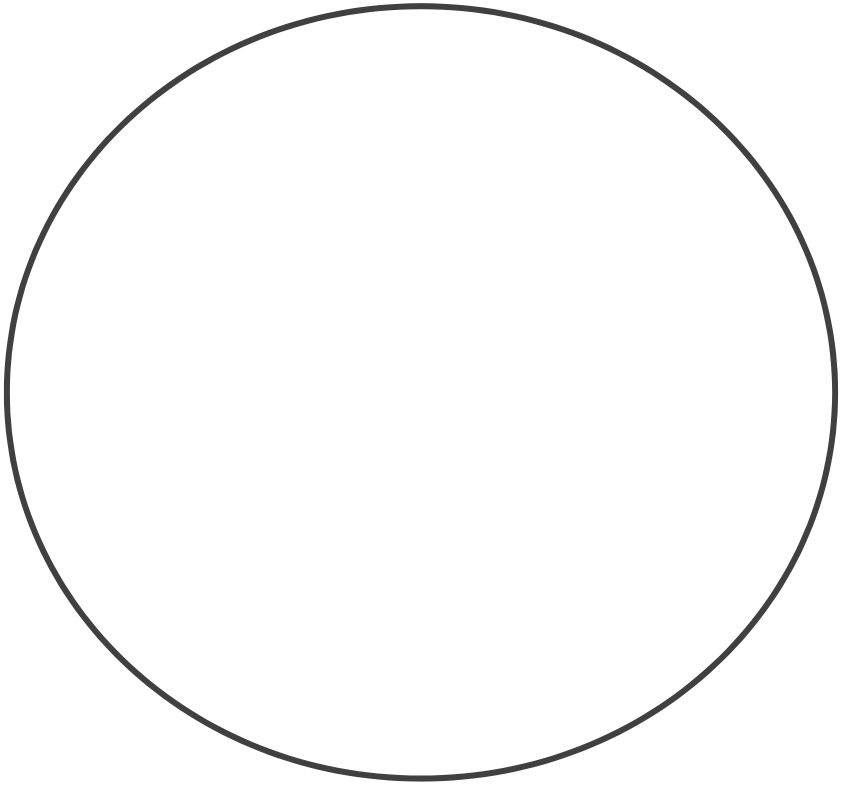
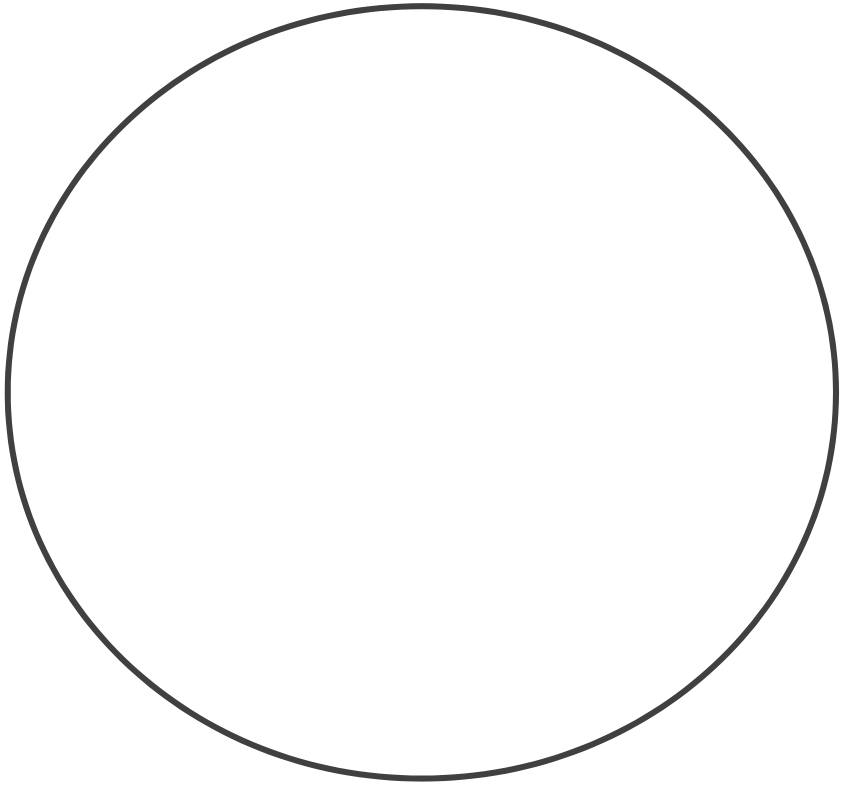
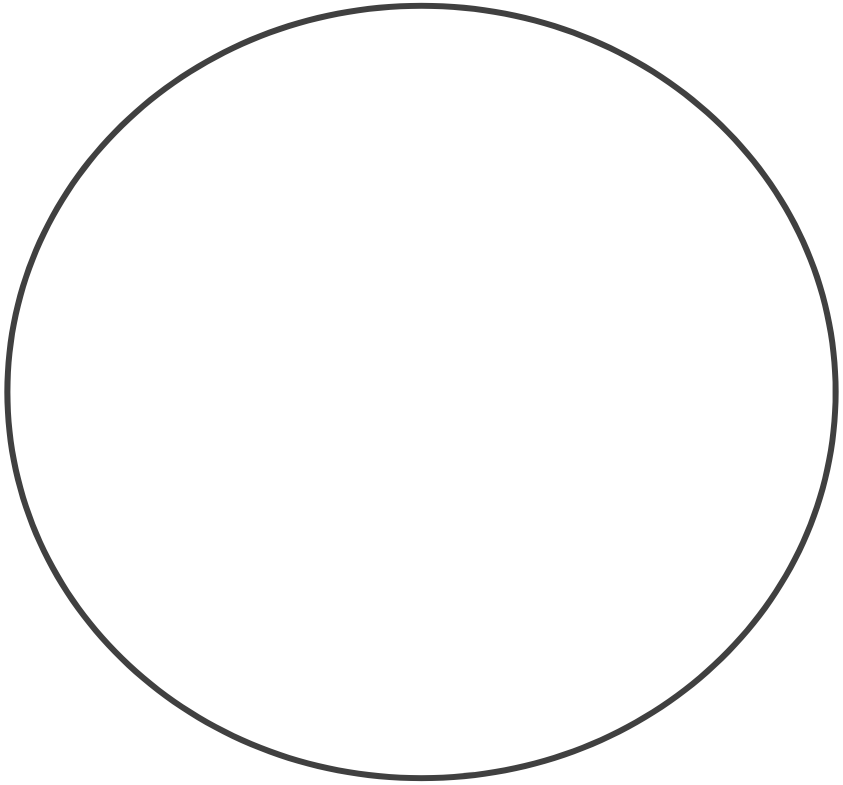
Part of male reproductive system		Type of epithelium of mucosa
testis	seminiferous tubules	
	straight tubules	
	rete testis	
	efferent ducts	
epedidymis	epedidymis duct	
ductus deferens		
ejaculatoris duct		
urethra	prostatic	
	membranous	
	spongy	



Specimen 1. Testis **(hematoxylin and eosin stain, ×400):**
1) seminiferous tubule; 2) stratified seminiferous (spermatogenic) epithelium; 3) spermatogonia; 4) primary spermatocytes; 5) secondary spermatocytes; 6) spermatid; 7) spermatozoa.



Specimen 2. Epididymis **(hematoxylin and eosin stain, ×400):**
1) ductus epididymis; 2) spermatozoa; 3) pseudostratified columnar epithelium; 3) stereocilia; 4) basal cells; 5) connective tissue with smooth muscle cells.

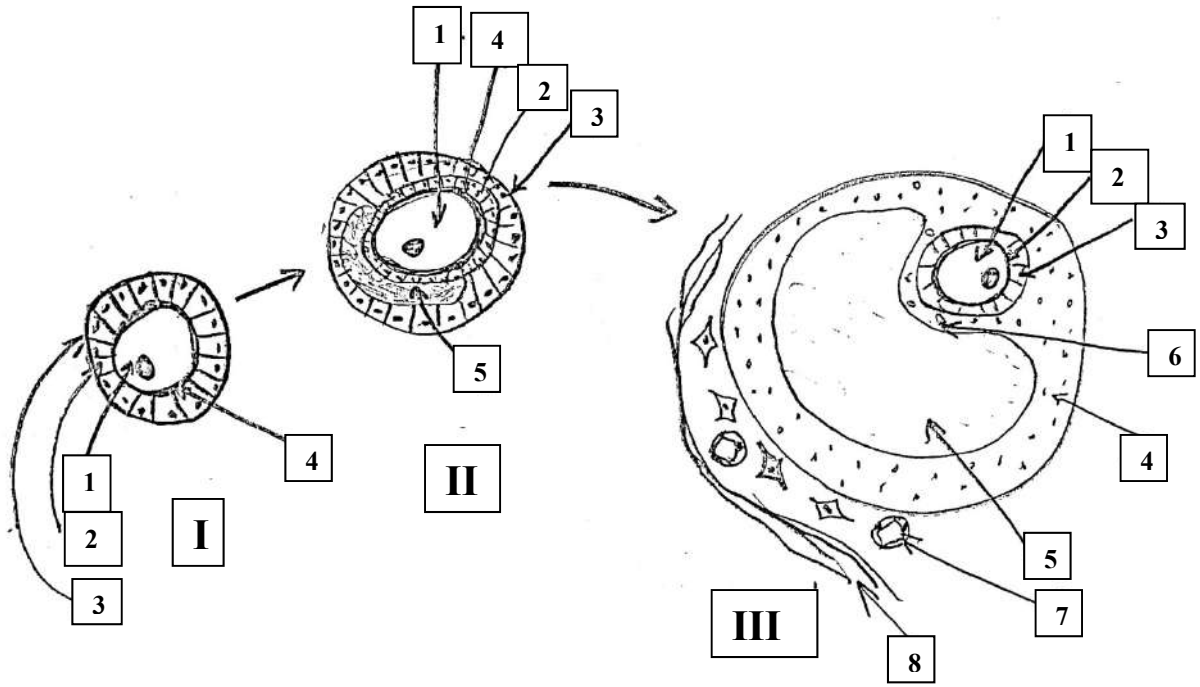


Specimen 3. Prostate gland **(hematoxylin and eosin stain, ×400):**
1) irregular tubuloalveolar acini (alveoli); 2) pseudostratified or simple cuboidal or columnar epithelium; 3) corpora amylacea (prostaic concretion); 4) stroma – fibromuscular tissue; 5) capsule.

Teacher's signature _____

FEMALE REPRODACTIVE SYSTEM

SCHEMATIC PICTURE OF DEVELOPING FOLLICLES



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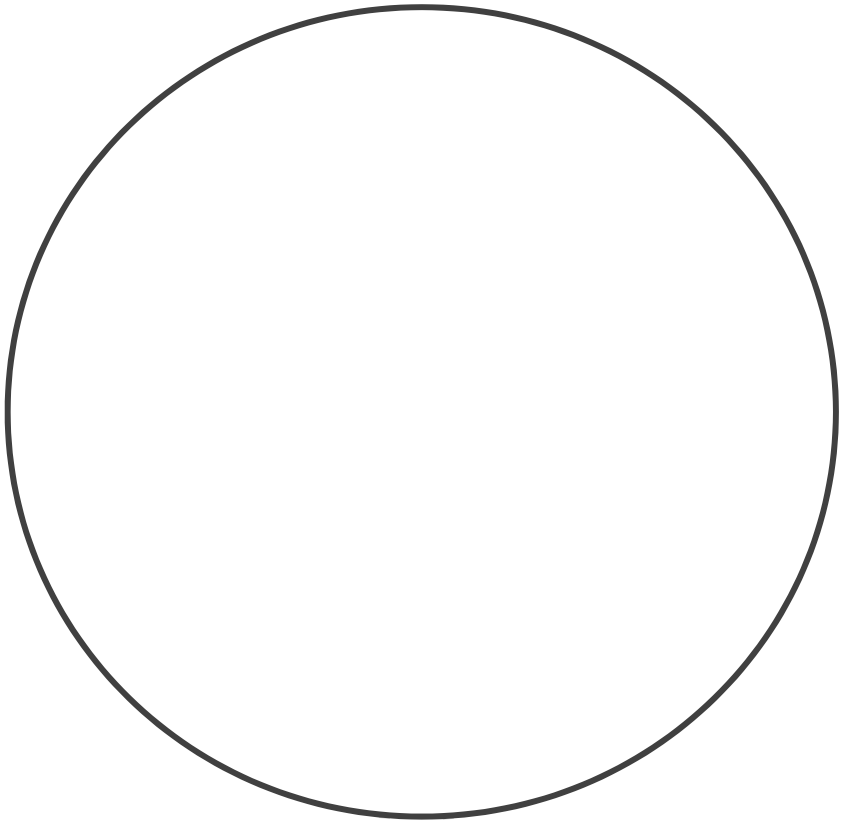
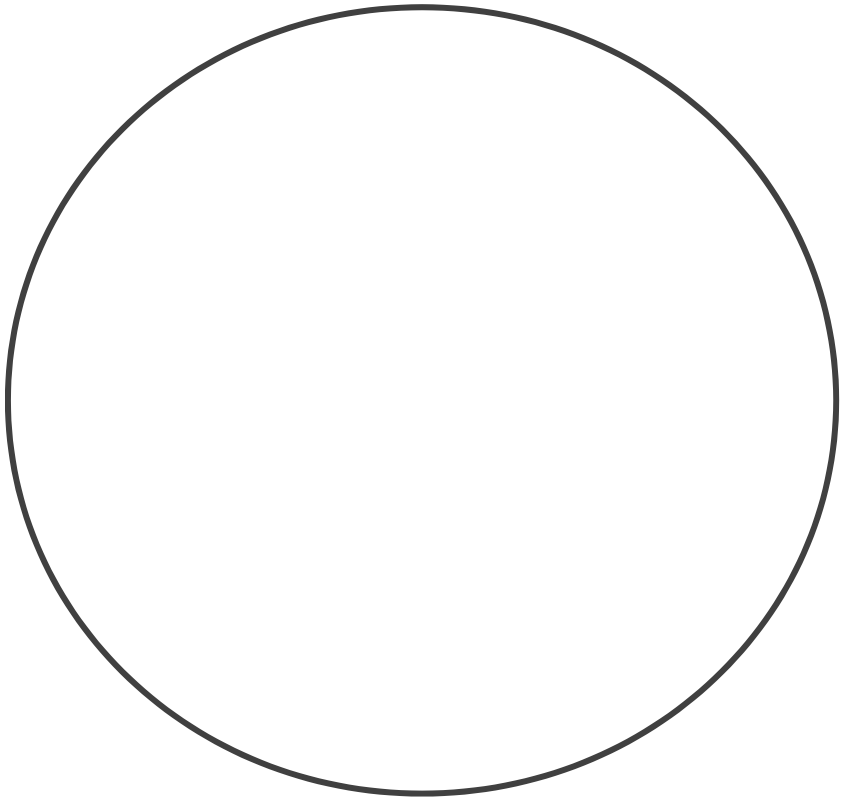
Type of follicle	Stage of oogenesis	Surrounding cells and layers
Primordial follicle		
Unilaminar primary follicles		
Multilaminar primary follicles		
Secondary follicles		
Mature Follicles (Tertiary or Graafian Follicles)		

Part of female reproductive system	Type of epithelium of mucosa	Muscularis
uterine tube (oviduct)		
uterus		
uterine cervix		
vagina		

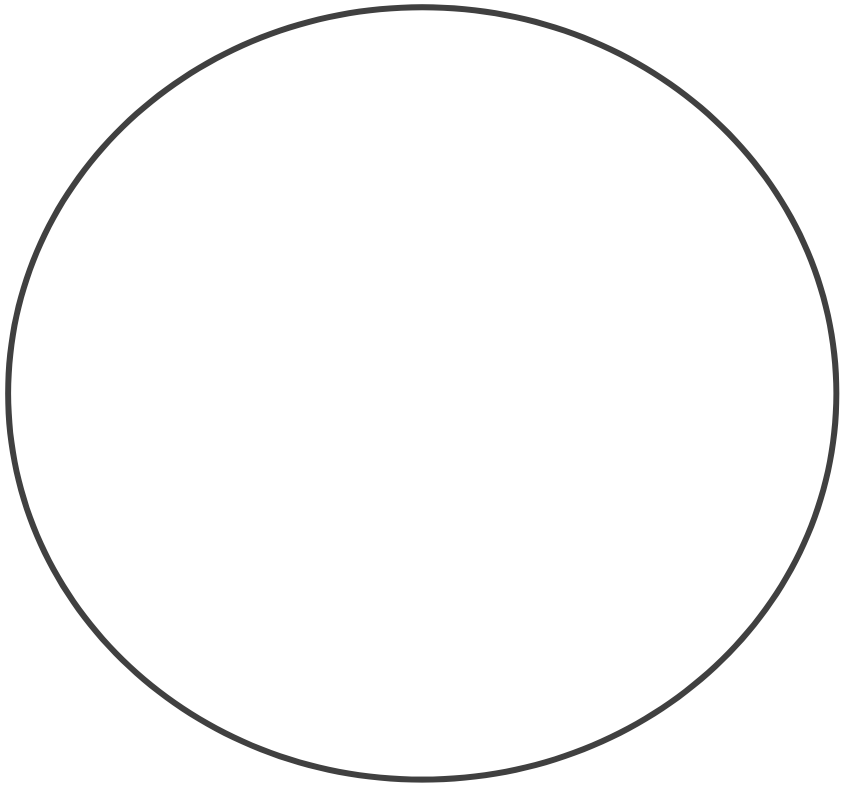


Specimen 1. Ovary **(hematoxylin and eosin stain, ×400):**
1) germinal epithelium (simple cuboidal epithelium); 2) tunica albuginea; 3) cortex; 4) medulla; 5) primordial follicle; 6) unilaminar primary follicle; 7) multilaminar primary follicle; 8) secondary follicle; 9) tertiary Graafian follicle; 10) oocyte; 11) zona pellucida; 12) cumulus oophorus; 13) antrum; 14) theca interna; 15) theca externa; 16) atretic follicle; 17) corpus luteum.

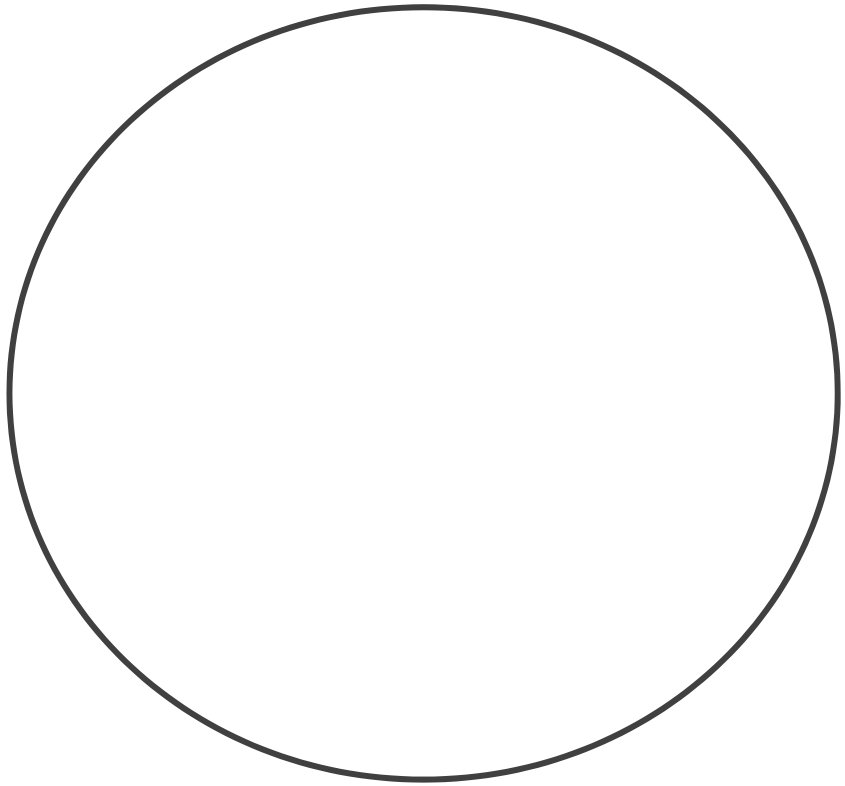


Specimen 2. Uterine tube **(hematoxylin and eosin stain, ×400):**
1) tunica serosa; 2) tunica muscularis; 3) external longitudinal layer; 4) inner circular layer; 5) tunica mucosa; 6) folds of tunica mucosa; 7) simple columnar ciliated epithelium; 8) simple columnar nonciliated peg cells.

Teacher's signature _____

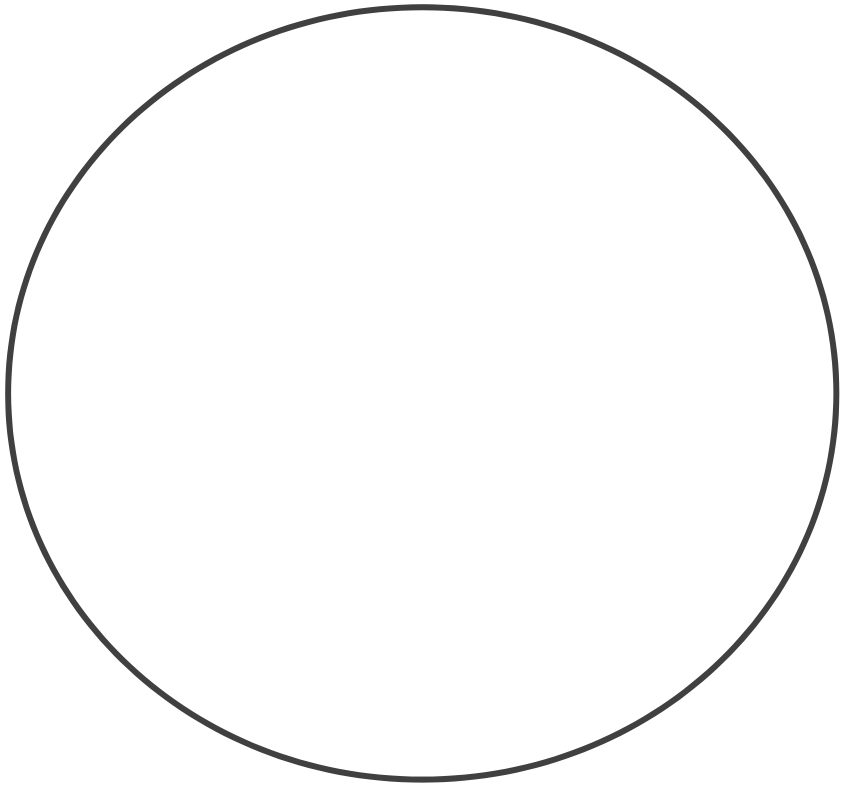


Specimen 3. Uterus **(hematoxylin and eosin stain, ×400):**
1) perimetrium; 2) myometrium; 3) outer layer of longitudinal arranged smooth muscle cells; 4) middle layer of circularly arranged smooth muscle cells (stratum vasculare); 5) inner layer of longitudinal arranged smooth muscle cells; 6) endometrium; 7) simple columnar epithelium (ciliated columnar cells and secretory columnar cells); 9) uterine gland (simple branched tubular glands).

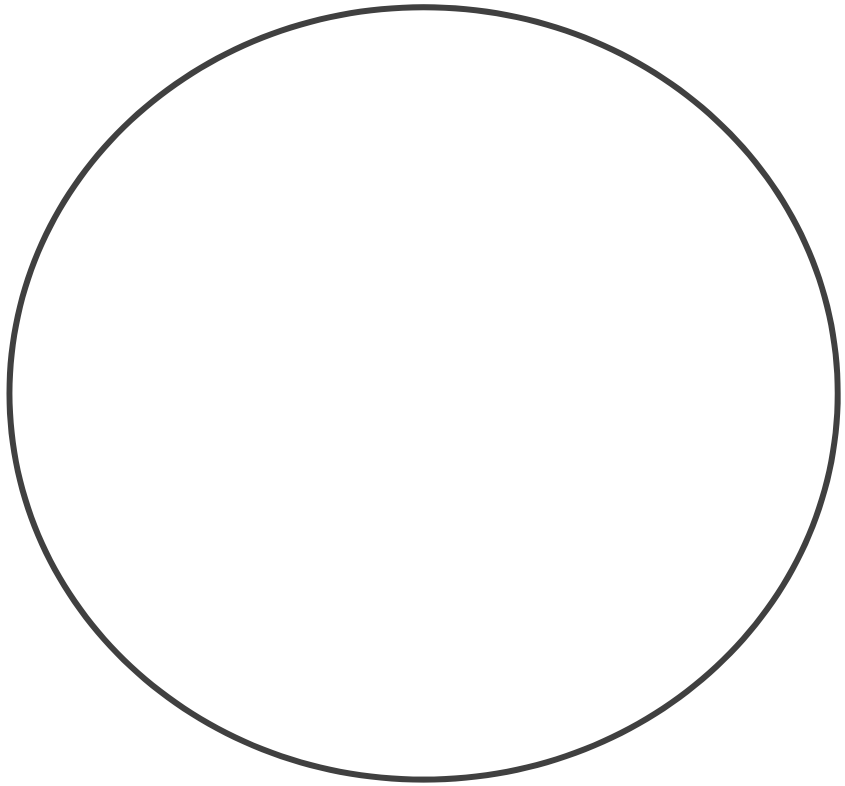


Specimen 4. Mammary gland **(hematoxylin and eosin stain, ×400):**
1) glandular alveoli of compound tubuloalveolar gland; 2) interlobular duct (simple cuboidal or columnar epithelium); 3) interlobular connective tissue (septum); 4) blood vessels; 5) adipose tissue in interlobular septum.

Teacher's signature _____



Specimen 5. Human placenta, **(hematoxylin and eosin stain, ×400):**
1) chorionic villi; 2) cytotrophoblast; 3) syncytiotrophoblast; 4) blood vessels in chorionic villi.



Specimen 6. Vagina **(hematoxylin and eosin stain, ×400):**
1) mucosa; 2) stratified squamous nonkeratinized epithelium; 3) lamina prorpria (outer layer) – connective tissue papillae – loose connective tissue; 4) lamina prorpria (inner layer) – dense irregular connective tissue; 5) tunica muscularis 6) tunica adventitia.

Teacher's signature _____

FOR NOTES

Навчальне видання

ГІСТОЛОГІЯ, ЦИТОЛОГІЯ ТА ЕМБРІОЛОГІЯ

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Частина 3. Спеціальна гістологія

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