HISTOLOGY EXAM SLIDES:-SALIENT FEATURES

HYALINE CARTILAGE

- Perichondrium with outer fibrous and inner cellular layer are seen.
- Chondrocytes within the lacunae are present in groups called cell nest.
- A darker territorial matrix and paler interterritorial matrix can be seen.

ELASTIC CARTILAGE

- Perichondrium with outer fibrous and inner cellular layer are seen.
- Chondrocytes are present within the lacunae surrounded by a bundle of elastic fibers.

FIBROCARTILAGE

- Presence of prominent collagen fibers arranged in wavy bundles.
- Rows of chondrocytes intervening between the bundles.
- Perichondrium absent.

COMPACT BONE - TRANSVERSE SECTION

- Haversian system made up of concentric lamellae, lacunae with osteocytes, Haversian canal can be seen
- Canaliculi radiate from lacunae are seen.
- Three types of lamallae present → Circumferential, Concentric and Interstitial.

COMPACT BONE - LONGITUDINAL SECTION.

- Volkmann's canal interconnecting Haversian systems is seen.
- Lacunae with osteocytes can be seen.

CARDIAC MUSCLE

- The fibers are made up of cells which has a centrally placed nucleus and transverse striations.
- The fibers show branching pattern.
- Adjacent cells are separated by intercalated discs.

SKELETAL MUSCLE

- Multi-nucleated long non branching muscle fibers with striations
- Nuclei are flat and placed at the periphery.

SMOOTH MUSCLE

- Spindle shaped cells with tapering ends and no striations.
- They have centrally placed single elongated nucleus.

PERIPHERAL NERVE

- Connective tissue coverings -Endoneurium,Perineurium,Epineurium can be seen
- Cut section of axon with myelin sheath and Schwann cell nucleus can be seen.

OPTIC NERVE

- Covered by meninges → Duramater, Arachnoidmater and Piamater.
- Central retinal artery and vein are seen
- Pial septa divides the nerve into bundles.

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HISTOLOGY EXAM SLIDES:-SALIENT FEATURES

SPINAL GANGLION OR SENSORY GANGLION

- Cell bodies of Pseudounipolar neurons with centrally placed nucleus are present in groups between myelinated nerve fibers
- Prominent satellite cells are seen.

AUTONOMIC GANGLION OR SYMPATHETIC GANGLION

- Cell bodies of Multipolar neurons with eccentrically placed nucleus are scattered between unmyelinated nerve fibers.
- Satellite cells are less prominent

LARGE SIZED ARTERY OR ELASTIC ARTERY

- Tunica intima, Tunica media, Tunica adventitia are seen with Tunica media being thickest.
- Tunica media with more elastic fibers and few smooth muscle fibers and Tunica intima with less prominent internal elastic lamina are seen

MEDIUM SIZED ARTERY OR MUSCULAR ARTERY.

- Tunica Intima, Tunica Media, Tunica Adventitia are seen with Tunica media being thickest
- Tunica media is composed mainly of circularly arranged smooth muscle fibers and tunica Intima with more prominent internal elastic lamina.

LARGE SIZED VEIN

- Tunica intima, tunica media, tunica adventitia are seen with tunica adventitia being thickest .
- Tunica adventitia contain bundles of longitudinally arranged smooth muscles.

LYMPH NODE

- A capsule with subcapsular sinus can be seen.
- Outer Cortex has lymphatic nodules with pale staining germinal centre surrounded by densely packed lymphocytes
- Lymphocytes are arranged as anastomosing cords in medulla.

TONSIL

- Tonsillar crypt lined by stratified squamous non keratinised epithelium.
- Lymphatic nodules with pale staining germinal centre surrounded by densely packed lymphocytes are seen near the crypts.

SPLEEN

- White pulp → lymphatic nodules with eccentrically placed central arteriole
- Red pulp → diffusely distributed lymphocytes, macrophages, blood cells and numerous sinusoids (Splenic cords of Billroth)

THYMUS

- Lobules are incomplete with medulla being continuous with adjacent lobules.
- Medulla contains pink staining round masses called Hassall's corpuscles.

MUCOUS SALIVARY GLAND.

- Numerous mucous acini lined by pale staining simple columnar cells and flat basal nucleus can be seen.
- Cut sections of intercalated, intratobular and interlobular ducts can be seen.

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HISTOLOGY EXAM SLIDES:-SALIENT FEATURES

SEROUS SALIVARY GLAND.

- Numerous serous acini lined with pyramidal cells :- eosiniphilic apical zymogen granules and basophilic basal striations can be seen
- Cut sections of intercalated, intralobular and interlobular ducts can be seen.

MIXED SALIVARY GLAND.

- Serous acini lined by pyramidal cells and mucous acini lined by columnar cells can be seen.
- Mucous acini capped with serous acini - Serous demilunes seen.
- Cut sections of intralobular and interlobular ducts seen.

MAMMARY GLAND- ACTIVE.

- Numerous lobules packed with secretory alveoli which are lined by columnar cells are seen.
- Lumen contains secretory products

PLACENTA

- Cut sections of tertiary villi with intervillous space can be seen.
- The constituents of tertiary villi are syncytiotrophoblast, cytotrophoblast, extraembryonic mesoderm, and fetal blood vessels.

UMBILICAL CORD

- Cut section showing two umbilical arteries and one umbilical vein.
- The vessels are surrounded by Whartons jelly.

THICK SKIN

- Epidermis Lined by stratified squamous keratinised epithelium with 5 layers.
- Stratum basale, Stratum spinosum, Stratum granulosum, Stratum lucidum and Stratum corneum.
- Dermis contains sweat glands but no hair follicles, sebaceous glands and arrector pili muscles.

THIN SKIN

- Epidermis lined by stratified squamous keratinised epithelium with 4 layers.
- Stratum basale, Stratum spinosum, Stratum granulosum, and Stratum corneum.
- Dermis consists of hair follicles, sweat and sebaceous glands and arrector pili muscles.

TONGUE WITH FILIFORM AND FUNGIFORM PAPILLAE

- Lined by stratified squamous non keratinised epithelium with papillae
- Small conical partially keratinised filiform papillae with no taste buds and large mushroom shaped fungiform papillae with taste buds are seen

TONGUE WITH CIRCUMVALLATE PAPILLAE

- Lined by stratified squamous non keratinised epithelium
- Dome shaped circumvallate papillae with numerous oval-shaped lightly stained taste buds can be seen

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HISTOLOGY EXAM SLIDES:-SALIENT FEATURES

OESOPHAGUS

- Mucosa is lined by stratified squamous non keratinised epithelium
- Submucosa contains compound tubuloalveolar mucous glands (mucous acini lined with columnar cells)

STOMACH - FUNDUS

- Mucosa shows shallow gastric pits (1/4 th of mucosa)
  and gastric glands(3/4 th of mucosa) that open into gastric pits.
- Gastric glands lined by eosinophilic parietal cell, basophilic chief cell and mucous neck cells.

STOMACH - PYLORUS

- Mucosa shows long gastric pits (3/4 th of mucosa)
  and gastric glands ($1/4^{th}$ of mucosa)that open into pits.
- Lamina propria filled with pale staining mucous secreting pyloric glands.

DUODENUM

- Mucosa → Broad tongue shaped villi with microvilli and goblet cells.
- Submucosa contains túbuloalveolar mucous glands called Brunners glands.

JEJUNUM

- Mucosa → tall leaf shaped villi with microvilli and lot of goblet cells.
- Intestinal glands- crypts of LieberKuhn present in lamina propria
- No submucosal glands or Peyer's patches.

ILEUM

- Mucosa → small finger like villi with microvilli and goblet cells
- Lamina propria shows aggregations of lymphoid follicles called Peyer's patches

LARGE INTESTINE

- Mucosa - lined by simple columnar epithelium with numerous goblet cells
- Lamina propria is filled with numerous closely arranged tubular glands → crypts of Lieberkuhn
- No villi are seen

APPENDIX

- Star shaped lumen with mucosa lined by simple columnar epithelium with numerous goblet cells
- Lamina propria contains lymphoid follicles that extend into submucosa
- Poorly formed crypts of Lieberkuhn

LIVER

- Classical hepatic lobules with polygonal shaped hepatocytes are arranged in the form of radiating cords from the central vein.
- Portal triad contain → branch of portal vein and hepatic artery and interlobular bile duct, present at the periphery of hepatic lobules.

GALL BLADDER

- Mucosa is highly folded and lined by simple columnar cells with microvilli
- Lamina propria and fibromuscular layer present
- No villi, no goblet cell, No submucosa, and no proper muscularis externa

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HISTOLOGY EXAM SLIDES:-SALIENT FEATURES

PANCREAS

- Exocrine part → numerous serous acini with centroacinar cells
- Endocrine part → Islet of Langerhans → pale staining polyhedral cells with blood vessels

TRACHEA

- Mucosa lined by pseudostratified ciliated columnar epithelium with goblet cells
- Thick layer of hyaline cartilage present
- Serous and mucous glands in submucosa

LUNGS

- Alveoli lined by simple squamous epithelium.
- Cut sections of intrapulmonary bronchi lined by pseudostratified ciliated columnar epithelium with goblet cells and bronchioles with simple columnar ciliated epithelium are seen

KIDNEY.

- Outer cortex:- Renal corpuscles, Section of proximal convoluted tubules (eosinophilic columnar cells with brush border and narrow lumen),Section of distal convoluted tubule (pale staining cuboidal cells and large lumen.)
- Inner medulla :- Sections of collecting ducts and Loop of Henle

URETER

- Star shaped lumen with mucosal folds lined by transitional epithelium
- Inner longitudinal and outer circular layer of smooth muscles.

URINARY BLADDER.

- Mucosa lined by transitional epithelium.
- Thick lamina propria and thick muscular wall made of smooth muscle.

TESTIS

- Cut sections of seminiferous tubules lined by spermatogenic cells in the various stages of development and cells of Sertoli can be seen.
- Groups of nterstitial cells of Leydig is seen between seminiferous tubules

EPIDIDYMIS

- Sections of tubule lined by pseudostratified columnar epithelium with stereocilia
- Each section is surrounded by smooth muscle cells
- Lumen filled with sperms

VAS DEFERENS

- Star shaped lumen with mucosal folds lined by pseudostratified columnar epithelium
- Thick muscular coat of smooth muscles → inner circular, outer longitudinal are seen

NOTE:-(proximal part of vas deferens is lined by simple columnar cells)

PROSTATE

- Prostatic glands (acini or follicles) lined by simple columnar epithelium separated by thick fibromuscular stroma
- Lumen may contain small round uniform or lamellated structure called corpora amylacea.

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HISTOLOGY EXAM SLIDES:-SALIENT FEATURES

OVARY.

- Surface lined by germinal epithelium (cuboidal cells)
- Cortex consists of various follicles in different stages of maturation(Primordial, primary, secondary and mature Graafian follicle)
- Medulla contains connective tissue with blood vessels.

FALLOPIAN TUBE

- Mucosa thrown in to primary ,secondary and tertiary folds filling the lumen
- Lined by simple columnar cells with cilia

UTERUS → PROLIFERATIVE

- Endometrium lined by simple columnar epithelium and lamina propria
- Stroma is highly cellular contains simple tubular glands and spiral arteries.

UTERUS → SECRETORY

- Endometrium lined by simple columnar epithelium and lamina propria
- Stroma contains uterine glands saw-toothed (tortuous) uterine glands and spiral arteries.

SUPRARENAL GLAND.

- Cortex
    - Zona glomerulosa → columnar cells arranged in inverted 'U' shape
    - Zona fasciculata → polyhedral cells in straight columns
    - Zona reticularis → cells form a network
- Medulla with sympathetic ganglion cells and basophilic polyhedral. chromaffin cells.
- All these are separated by sinusoids

PITUITARY GLAND

Consists of three parts

- Pars anterior → chromophores and chromophils separated by sinusoids.
- Pars intermedia → colloid filled vesicles can be seen
- Pars posterior → unmyelinated nerve fibers and pituicytes with sinusoids.

THYROID GLAND

- Cut sections of follicles of various sizes filled with colloid, lined by cuboidal cells.
- Parafollicular cells present between follicles.

PARATHYROID

- Cluster of cells separated by numerous sinusoids
- Chief cells → small, round numerous
- Oxyphil cells → large cells few in number

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HISTOLOGY EXAM SLIDES:-SALIENT FEATURES

CORNEA

Composed of 5 layers.

- Stratified squamous non keratinised epithelium
- Bowman's membrane
- Corneal stroma with corneal corpuscles.
- Descements membrane
- Corneal endothelium.

RETINA

Composed of 10 layers

- Pigmented epithelium
- Layer of rods and cones
- External limiting membrane
- Outer nuclear layer
- Outer plexiform layer
- Inner nuclear layer
- Inner plexiform layer
- Ganglionic cell layer
- Layer of optic nerve fibers
- Internal limiting membrane

CEREBRUM

- Gray matter- Consists of 6 layers
    - ❖ Molecular layer
    - ❖ Outer granular layer
    - ❖ Outer pyramidal layer
    - ❖ Inner granular layer
    - ❖ Inner pyramidal layer
    - ❖ Polymorphous cell layer
- White matter -myelinated nerve fibers.

CEREBELLUM

- Gray matter → 3 layers
    - ❖ Molecular layer,
    - ❖ Purkinje cell layer and
    - ❖ Granular layer.
- White matter → myelinated nerve fibers.

SPINAL CORD.

- Central canal lined by ependyma(simple columnar ciliated epithelium)
- Gray matter :-Posterior horn(large multipolar neurons) and anterior horn(small neurons)
- Outer white matter-myelinated nerve fibres with neuroglia

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