

The Digestive System

Laboratory Objectives:

1. Identify the structural components of the digestive system on models or preserved specimens
 - mouth
 - lips and labial frenulum
 - oral cavity
 - vestibule
 - fauces
 - teeth
 - incisor, canine, premolar, molar
 - crown, root, pulp cavity, root canal, apical foramen, enamel, dentin, cementum, peridontal ligament
 - gingivae
 - hard palate
 - soft palate & uvula
 - tongue and lingual frenulum
 - salivary glands: parotid, submandibular, sublingual
 - esophagus: lower esophageal sphincter
 - stomach
 - lesser curvature, greater curvatures
 - cardia, fundus, body, pyloric antrum, pylorus, rugae
 - layers of muscularis: circular, oblique, longitudinal
 - pyloric sphincter
 - small intestine
 - duodenum, jejunum, ileum
 - plicae circulares, villi
 - ileocecal valve
 - large intestine
 - cecum, vermiform appendix
 - colon: ascending, transverse, descending, sigmoid, hepatic flexure, splenic flexure
 - rectum
 - anal canal: internal anal sphincter, external anal sphincter, anus
 - haustra, tenia coli
 - peritoneum: visceral, parietal, mesentery, greater omentum, lesser omentum

2. Identify the three types of salivary glands on microscope slides
 - parotid, sublingual, submandibular
 - serous and mucous acini

3. Use microscope slides of the alimentary canal to identify and describe the layers of tissue that form its walls

esophagus: mucosa, type of epithelium, submucosa, muscularis

stomach:

esophagus-stomach junction

mucosa: type of epithelium, gastric glands, gastric pits, goblet

cells

submucosa

muscularis

duodenum

mucosa: type of epithelium, intestinal glands, villi, microvilli

(brush

border), goblet cells

submucosa: duodenal glands

muscularis

ileum: Peyer's patches

4. Identify the pancreas and its secretory structures and ducts on microscope slides and models

gross anatomy

head, body, tail

pancreatic ducts: main and accessory

histology

acini

ducts

5. Identify the liver, its lobules, and their components on microscope slides and models

gross anatomy

liver : left, right, caudate, quadrate lobes

histology

lobules

hepatocytes

central vein

sinusoids

bile ducts

branches of hepatic artery

branches of hepatic portal vein

6. Identify the gall bladder on microscope slides and models
7. Trace the pathway of bile from the liver to the duodenum.
 - hepatic ducts: right, left and common
 - cystic duct
 - common bile duct
 - hepatopancreatic ampulla
 - hepatopancreatic sphincter
8. Identify these structures on the villus model.
 - mucosa, lamina propria, muscularis mucosa
 - submucosa
 - muscularis: circular layer, longitudinal layer
 - villi
 - crypts
 - lacteals

Recommended Dissection:

1. Locate and identify the major digestive organs and associated structures on a mammal

The Urinary System

Laboratory Objectives:

1. Identify the structural components of the urinary system on models or preserved specimens

kidney:

- cortex, medulla, capsule
- hilus
- renal pyramids
- renal papillae
- renal calyces (major, minor)
- renal pelvis

ureter

urinary bladder: mucosa, muscularis (detrusor muscle), rugae
urethra

blood supply:

- renal arteries and veins
- interlobar arteries and veins
- arcuate arteries and veins
- interlobular arteries and veins
- afferent arterioles
- glomerular capillaries
- efferent arterioles
- peritubular capillaries
- vasa recta

2. Using microscope slides, identify the components of the kidney.

- renal capsule
- cortex, medulla
- glomeruli
- glomerular capsules
- proximal and distal convoluted tubules

3. Using nephron models, identify the components of the nephron, collecting ducts, and associated vascular structures

- renal corpuscle
- glomerular capsule:
 - parietal layer
 - visceral layer – podocytes, filtration slits
- proximal convoluted tubule
- loop of the nephron (loop of Henle)
- distal convoluted tubule

collecting duct
glomerulus
afferent arteriole
efferent arteriole

4. Using microscope slides, identify the layers of the urinary bladder and the tissues of which they are made
mucosa: transitional epithelium
muscularis

Recommended Dissection:

1. Locate and identify the major urinary organs on a whole mammal
2. Locate and identify the major structures that form the kidney of a large mammal

The Reproductive System

Laboratory Objectives:

1. Identify the structures that form the male reproductive system on models or on preserved specimens
 - testes* (singular = testis): tunica albuginea
 - scrotum
 - epididymis
 - ductus (vas) deferens
 - spermatic cord
 - inguinal canal
 - ejaculatory duct
 - seminal vesicles
 - prostate gland
 - bulbourethral glands
 - urethra: prostatic, membranous, spongy, external urethral orifice
 - penis: corpus spongiosum, corpora cavernosa, glans penis, prepuce

2. Identify the structures that form the female reproductive system on models or on preserved specimens
 - ovaries
 - oviducts: infundibulum, fimbriae
 - uterus: fundus, body, cervix, endometrium, myometrium, perimetrium
 - cervical canal: internal os, external os
 - vagina: fornix, rugae
 - mons pubis
 - labia majora and labia minora
 - clitoris: prepuce
 - vestibule
 - external urethral orifice
 - vaginal orifice
 - perineum
 - urogenital diaphragm

3. Use microscope slides and models to identify the histological features of primary male and female reproductive organs
 - testis slide*
 - seminiferous tubule
 - spermatogonia
 - sustentacular cells
 - interstitial cells of Leydig

penis slide

corpus spongiosum

urethra

corpus cavernosum

ovary slide

follicles: primordial, primary, secondary, vesicular

oocytes, zona pellucida, corona radiata

corpus luteum

oviduct slide

uterus slide

endometrium

myometrium

Recommended Dissection:

1. Locate and identify the major male and female reproductive organs on a whole mammal

The Endocrine System

Laboratory Objectives:

1. Identify the histological features of the major endocrine glands on microscope slides. Identify the endocrine organ from which the slide is prepared
slides
pituitary:
 anterior pituitary (adenohypophysis)
 posterior pituitary (neurohypophysis)
thyroid
 follicles
 follicular cells
 thyroglobulin
 parafollicular cells
parathyroid gland: chief cells
adrenal gland
 cortex: zona glomerulosa, zone fasciculata, zona reticularis
 medulla: chromaffin cells
pancreas: pancreatic islets

2. Locate and identify the major endocrine organs on models and diagrams
hypothalamus
pituitary gland: anterior and posterior
pineal gland
thyroid gland
parathyroid glands
thymus gland
pancreas
adrenal glands: adrenal medulla, adrenal cortex
ovaries
testes

Recommended Dissection:

1. Locate and identify the major endocrine glands on a mammal