Laboratory Exercise 56

Cat Dissection: Digestive System

Materials Needed

Preserved cat
Dissecting tray
Dissecting instruments
Bone cutter
Disposable gloves
Hand lens
Human torso model

Safety

- Wear disposable gloves when working on the cat dissection.
- Dispose of tissue remnants and gloves as instructed.
- Wash the dissecting tray and instruments as instructed.
- Wash your laboratory table.
- Wash your hands before leaving the laboratory.

In this laboratory exercise, you will dissect the major digestive organs of the cat. As you observe these organs, compare them with those of the human by observing the parts of the human torso model; however, keep in mind that the cat is a carnivore (flesh-eating mammal) and that the organs of its digestive system are adapted to capturing, holding, eating, and digesting the bodies of other animals. In contrast, humans are omnivores (eat both plant and animal substances). Because humans are adapted to eating and digesting a greater variety of foods, comparisons of the cat and the human digestive organs may not be precise.

Purpose of the Exercise

To examine the major digestive organs of the cat and to compare these organs with those of the human.

LEARNING OUTCOMES

After completing this exercise, you should be able to

1. Locate and identify the major digestive organs of the cat.
2. Compare the digestive system of the cat with that of the human.
3. Identify the corresponding organs in the human torso model.

EXPLORE

Procedure—Digestive System Dissection

1. Place the preserved cat in the dissecting tray on its left side.
2. Locate the major salivary glands on one side of the head (fig. 56.1). To do this, follow these steps:
   a. Clear away any remaining fascia and other connective tissue from the region below the ear and near the joint of the mandible.
   b. Identify the *parotid gland,* a relatively large mass of glandular tissue just below the ear. Note the parotid duct (Stensen's duct) that passes over the surface of the masseter muscle and opens into the mouth.
   c. Look for the *submandibular gland* just below the parotid gland, near the angle of the jaw.
   d. Locate the *sublingual gland* that is adjacent and medial to the submandibular gland.
3. Open the oral cavity. To do this, follow these steps:
   a. Use scissors to cut through the soft tissues at the angle of the mouth.
   b. When you reach the bone of the jaw, use a bone cutter to cut through the bone, thus freeing the mandible.

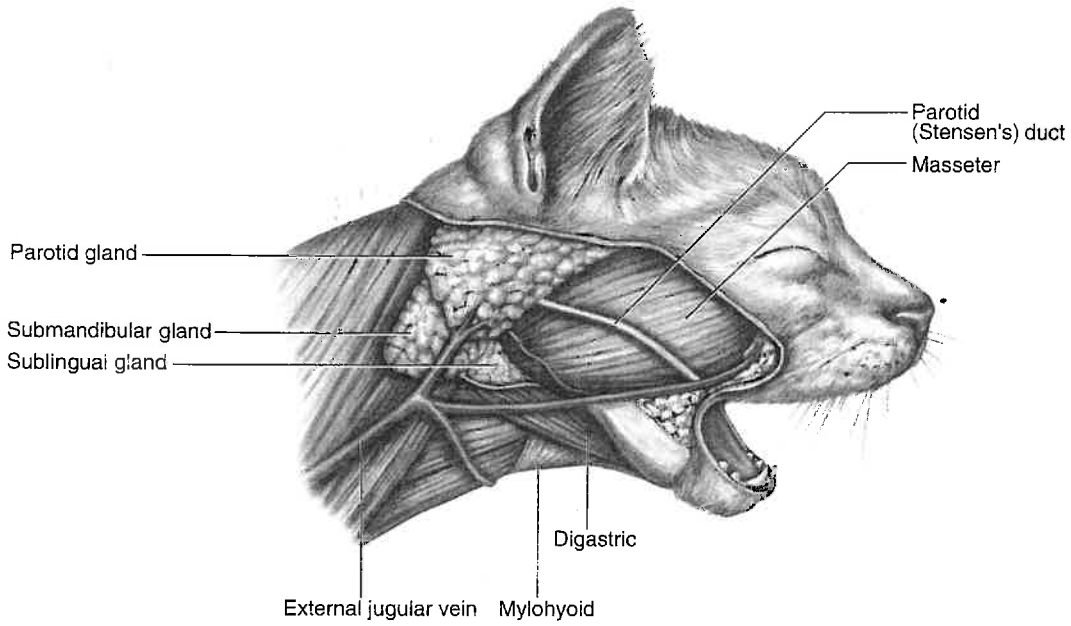

Figure 56.1 Major salivary glands of the cat.

c. Open the mouth wide, and locate the following features:

cheek
lip
vestibule
palate
hard palate
soft palate
palatine tonsils (small, rounded masses of glandular tissue in the lateral wall of the soft palate)
tongue
frenulum
papillae (examine with a hand lens)

4. Examine the teeth of the upper jaw. The adult cat has 6 incisors, 2 canines, 8 premolars, and 2 molars. The lower jaw teeth are similar, except 4 premolars are present.
5. Complete Part A of Laboratory Report 56.
6. Examine organs in the abdominal cavity with the cat positioned with its ventral surface up. Review the normal position and function of the greater omentum.
7. Examine the *liver,* which is located just beneath the diaphragm and is attached to the central portion of the diaphragm by the *falciform ligament.* Also, locate the *spleen,* which is posterior to the liver on the left side (fig. 56.2). The liver has five lobes—a right medial, right lateral (which is subdivided into two parts by a deep cleft), left medial, left lateral, and caudate lobe. The caudate lobe is the smallest lobe and is located in the median line, where it projects into the curvature of the stomach. The caudate lobe is covered by a sheet of mesentery, the *lesser omentum,* that connects the liver to the stomach (figs. 56.3 and 56.4). Find the greenish *gallbladder* on the inferior surface of the liver on the right side. Also note the *cystic duct,* by which the gallbladder is attached to the *bile duct,* and the *hepatic duct,* which originates in the liver and attaches to the cystic duct. Trace the bile duct to its connection with the duodenum.
8. Locate the *stomach* in the left side of the abdominal cavity. At its anterior end, note the union with the *esophagus,* which passes through the diaphragm. Identify the *cardia, fundus, body,* and *pyloric part* (listed from entrance to exit) of the stomach. Use scissors to make an incision along the convex border of the stomach from the cardia to the pyloric part. The lining of the stomach has numerous *gastric folds* (*rugae*). Examine the *pyloric sphincter,* which creates a constriction between the stomach and small intestine.
9. Locate the *pancreas.* It appears as a grayish, two-lobed elongated mass of glandular tissue. One lobe lies dorsal to the stomach and extends across to the duodenum. The other lobe is enclosed by the *mesentery,* which supports the duodenum (figs. 56.3 and 56.4).
10. Trace the *small intestine,* beginning at the pyloric sphincter. The first portion, the *duodenum,* travels posteriorly for several centimeters. Then it loops back around a lobe of the pancreas. The proximal half of the remaining portion of the small intestine

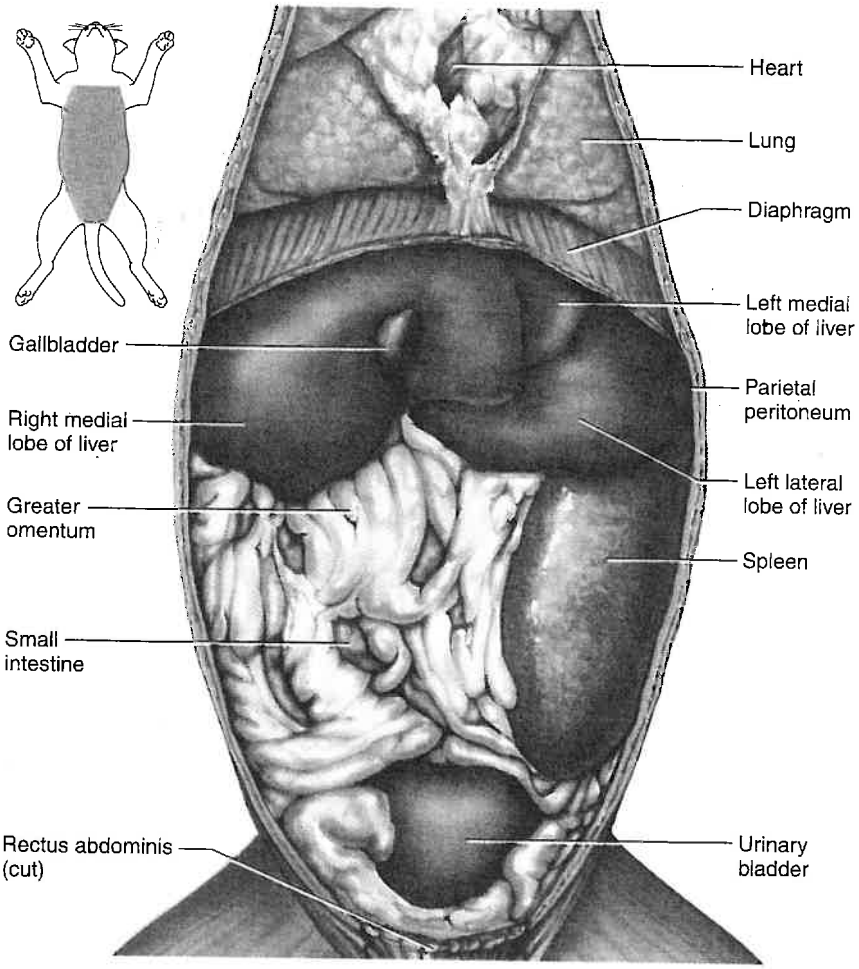

Figure 56.2 Ventral view of abdominal organs of the cat.

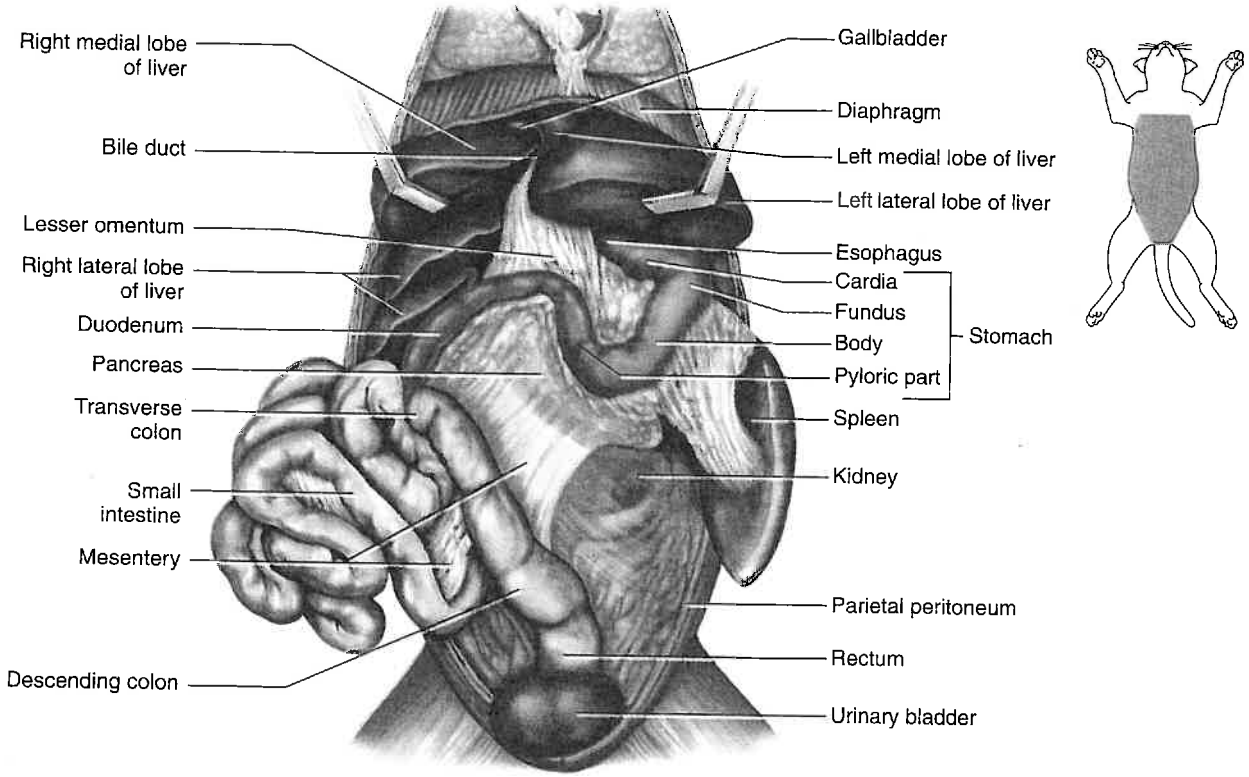

Figure 56.3 Ventral view of the cat's abdominal organs with intestines reflected to the right side.

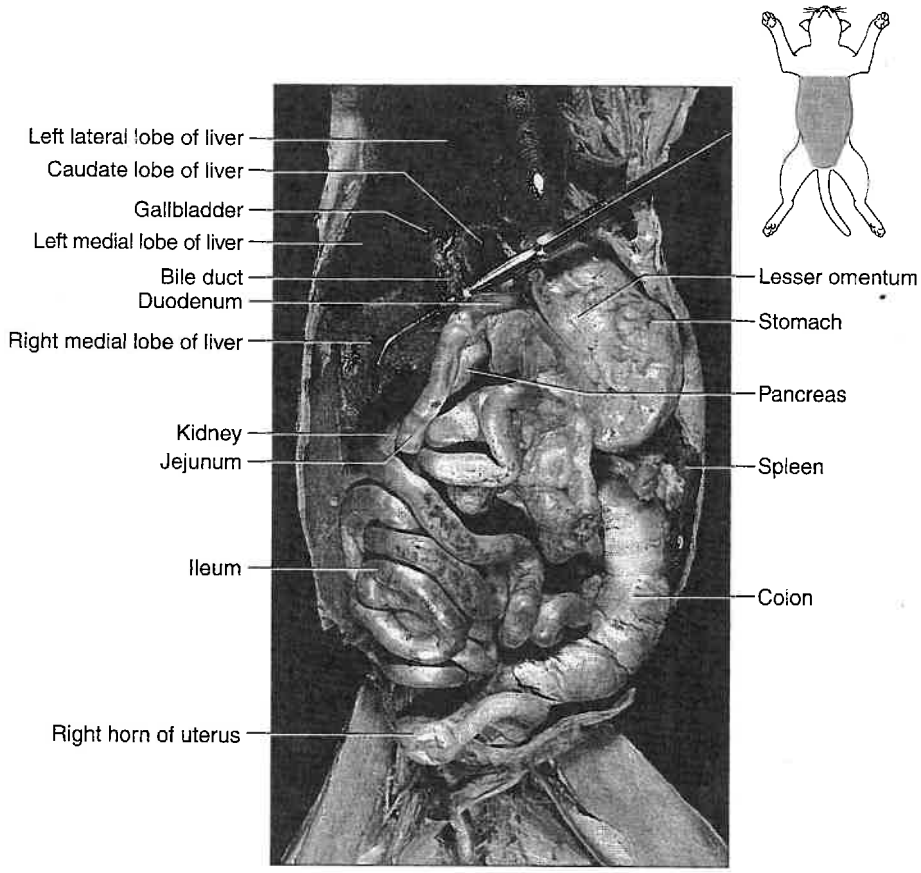

Figure 56.4 Abdominal organs of the cat with the greater omentum removed. The left liver lobes have been reflected to the right side.

is the *jejunum,* and the distal half is the *ileum.* Open the duodenum and note the velvety appearance of the villi. Note how the mesentery supports the small intestine from the dorsal body wall. The small intestine terminates on the right side, where it joins the large intestine.

11. Locate the *large intestine,* and identify the *cecum, ascending colon, transverse colon,* and *descending colon.* Also locate the *rectum,* which extends through the pelvic cavity to the *anus.* Make an incision at the junction between the ileum and cecum, and look for the *ileocecal sphincter.*
12. Review the locations of the digestive organs without the aid of the figures. 1
13. Examine the human torso model along with figures 56.1, 56.2, 56.3, and 56.4. For the human digestive organs, identify corresponding digestive organs of the cat. 3
14. Complete Part B of the laboratory report.