

Fetal Pig Digestive System Dissection

Protocol:

1. Begin by placing the fetal pig on its side in your dissecting tray. Peel the skin back from the side of the face, beginning at the ear and extending forward to the eye (note: you need to be very careful with this procedure so that you do not tear up the salivary glands lying underneath the skin. To ensure you do not damage anything, peel the skin back in layers, rather than trying to remove it all at once).
2. Once the skin is removed you should be able to see the salivary glands. The **parotid** is the large gland extending in a triangle from the base of the ear toward the mandible. The **submandibular** (submaxillary) gland lies beneath the parotid at the base of the mandible. The much smaller **sublingual** gland lies just anterior to the submandibular gland.
3. Note the large ball of muscle in the cheek. This is the **masseter** muscle. You should also see the **facial nerve** lying across the top of the masseter.
4. Locate the **Stensen's** (parotid) **duct**, which carries saliva from the parotid glands, around the base of the masseter muscle, and then up into the oral cavity.
5. To see the next set of structures, you must open up the oral cavity. To do this, make an incision, beginning at the back of the mouth, extending through the masseter muscle, and ending at the back of the jaw. Be sure and make this incision on both sides of the face. When finished, you should be able to open the mouth nearly 180 degrees.
6. Observe the **tongue** and the **papillae** on its surface. The **lingual frenulum** is the tissue underneath the tongue that attaches it to the base of the oral cavity.
7. Observe the **hard palate**, the ridged, bony roof of the mouth. The **oral cavity** is the space between the hard palate and the tongue. The **soft palate** is the portion of the roof of the mouth at the back of the mouth.
8. Note the **teeth**, which are just beginning to erupt in the jaw. The **vestibule** is the space between the lips and the front teeth.
9. You are now finished with the structures in the mouth and will now trace the remaining length of the digestive tract. First, locate the **esophagus**, the collapsible tube lying underneath the trachea.
10. Trace the esophagus through the thoracic cavity to where it connects with the **stomach**. The ring of smooth muscle at the connection of the stomach and the esophagus is the **cardiac sphincter**. The **pyloric sphincter** is another ring of smooth muscle located at the other end of the stomach at its connection with the small intestine. The stomach is divided into various

regions: the **cardiac region** is the area around the cardiac sphincter, the **pyloric region** is the area around the pyloric sphincter, the **fundus** is the small, finger-like projection on the upper left side of the stomach, and the **body** is what remains. In addition, the long outside curve of the stomach is called the **greater curvature**. Note the **spleen** which is attached by a membrane, the **greater omentum**, to the greater curvature of the stomach (this membrane, which is very fragile, also extends from the spleen to the intestines). The short, inside curve of the stomach (to the right of the cardiac sphincter) is the **lesser curvature**. The **lesser omentum** is the membrane that attaches the liver to the lesser curvature of the stomach.

11. Make an incision along the length of the greater curvature of the stomach, beginning at the pyloric sphincter and ending at the fundus. You should now be able to see the internal anatomy of the stomach.

12. The **gastric mucosa** is the entire internal lining of the stomach. Some of the gastric mucosa is organized into folds or ridges of tissue. These are the **rugae**. The **diverticulum** is the small pouch or pocket in the upper left region of the stomach (to the left of the cardiac sphincter). The diverticulum is the fundus, seen from the inside. Note also the internal appearance of the **cardiac** and **pyloric sphincters**.

13. Now look on the right underside of the **liver**. You should see a membranous pouch. This is the **gall bladder**. The thin tube extending from the gall bladder is the **cystic bile duct**. It joins with the **hepatic bile duct** coming from the liver and together they form the **common bile duct** that connects with small intestine.

14. Observe the **small intestine**. The short, straight region of the small intestine that begins at the pyloric sphincter is the **duodenum**. The small intestine then begins to coil. The first half of this coiled section is called the **jejunum** and the second half is the **ileum**.

15. Return to your incision through the greater curvature of the stomach. Extend your incision through the pyloric sphincter and the first part of the duodenum.

16. Observe the **duodenal papilla**, the small knob of tissue located within the pyloric sphincter. This is where secretions from the common bile duct and the pancreas enter the small intestine.

17. Note the **villi** which cover the entire inner lining of the small intestine, giving it the appearance of crushed velvet.

18. Locate the **pancreas**, the white, pebbly structure located beneath the stomach and the small intestines.

19. Trace the small intestine to where it connects with the **large intestine** (also called the **colon**).

20. Note the short, dead-end section of the colon at its connection with the small intestine. This is the **cecum**.

21. Make an incision through the cecum. You should now be able to see the **ileocecal sphincter**, which is the small ring of smooth muscle that connects the small intestine to the colon.

22. Trace the rest of the length of the large intestine. The **spiral colon** is the tightly wound portion immediately beyond the cecum. The **descending colon** emerges from the spiral colon and extends directly down through the abdominal cavity. The descending colon becomes the **rectum** as it enters the pelvis (note: you will be able to observe the rectum more clearly when you dissect the fetal pig reproductive systems). The **anus** is the external opening of the rectum and can be observed by lifting up the tail.

23. Return to the small intestine and note the membranes filled with blood vessels that extend along its length. This is the **mesentery**. Note at the base of the mesentery the numerous **lymph nodes**, which appear as small brown beads.

24. Finally, observe the **peritoneum**. The **parietal peritoneum** is the outer layer of the peritoneum that covers the abdominal cavity. The **visceral peritoneum** is the inner layer that covers the organs of the abdominal cavity (the greater and lesser omenta that you observed earlier are portions of the visceral peritoneum, but it can be observed on other organs--for example, the spiral colon--as well).