

Fetal Pig Dissection Guide



Background:

Mammals are vertebrates having hair on their body and mammary glands to nourish their young. The majority are placental mammals in which the developing young, or fetus, grows inside the female's uterus while attached to a membrane called the placenta. The placenta is the source of food and oxygen for the fetus, and it also serves to get rid of fetal wastes. The dissection of the fetal pig in the laboratory is important because pigs and humans have the same level of metabolism and have similar organs and systems. Also, fetal pigs are a byproduct of the pork food industry so they aren't raised for dissection purposes, and they are relatively inexpensive.

Objectives:

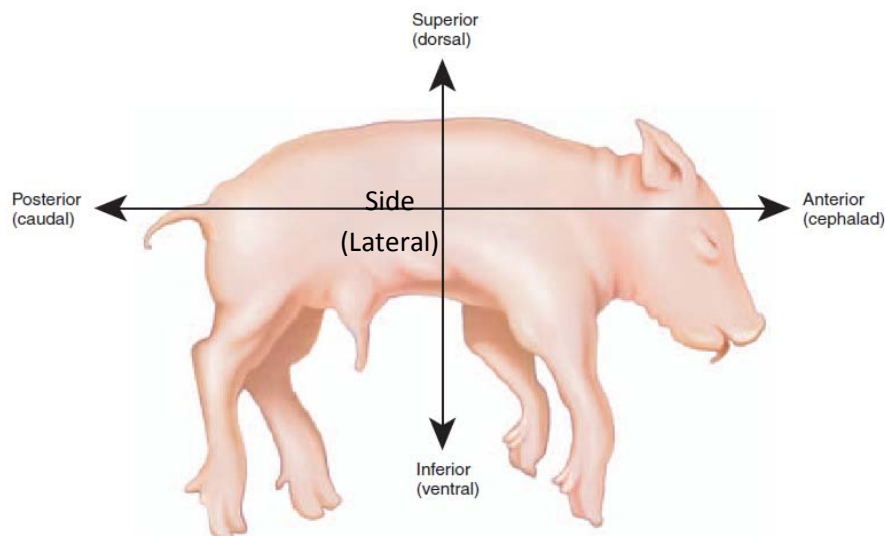
- Identify important external structures of the fetal pig.
- Identify major structures associated with a fetal pig's digestive, respiratory, circulatory, urogenital, & nervous systems.
- Compare the functions of certain organs in a fetal mammal with those of an adult mammal.

Materials:

preserved fetal pig, dissecting pan, dissecting kit, dissecting pins, string, plastic bag, metric ruler, paper towels

Day 1 - External Anatomy

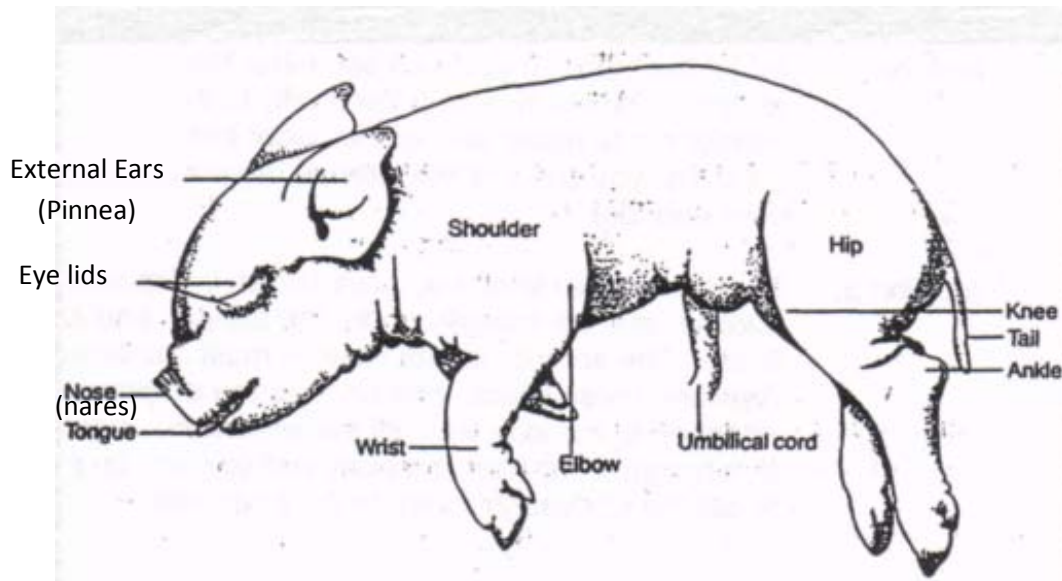
1. Obtain a fetal pig and rinse off the excess preservative by holding it under running water. Lay the pig on its side in the dissecting pan and locate dorsal, ventral, & lateral surfaces. Also locate the anterior and posterior ends.



- A fetal pig has not been born yet, but its approximate age since conception can be estimated by measuring its length. Measure your pig's length from the tip of its snout to the base of its tail and record this on your hand-in. Use the length/age chart on this sheet to determine the age of your fetal pig & record this.

Length	Age
11 mm	21 days
17 mm	35 days
2.8 cm	49 days
4.0 cm	56 days
22 cm	100 days
30 cm	birth

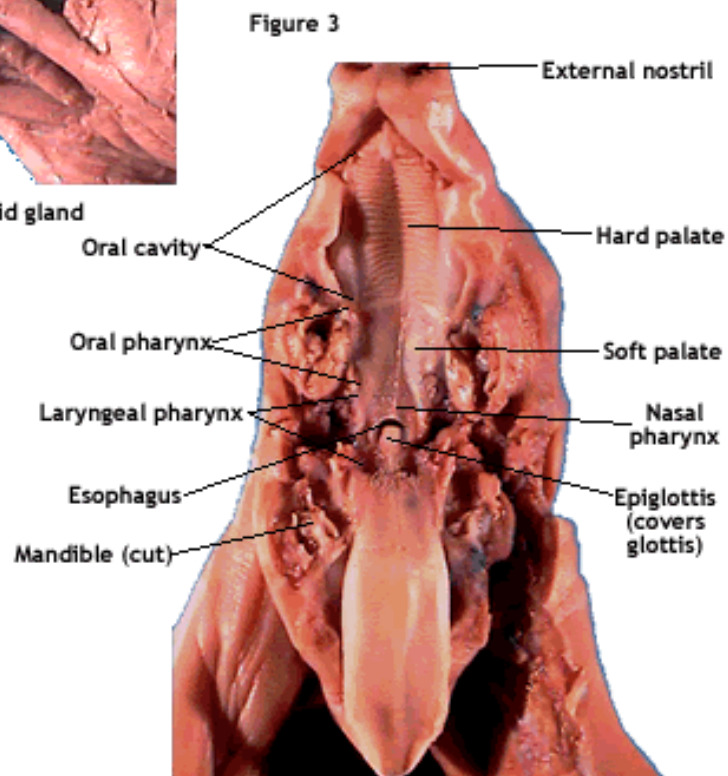
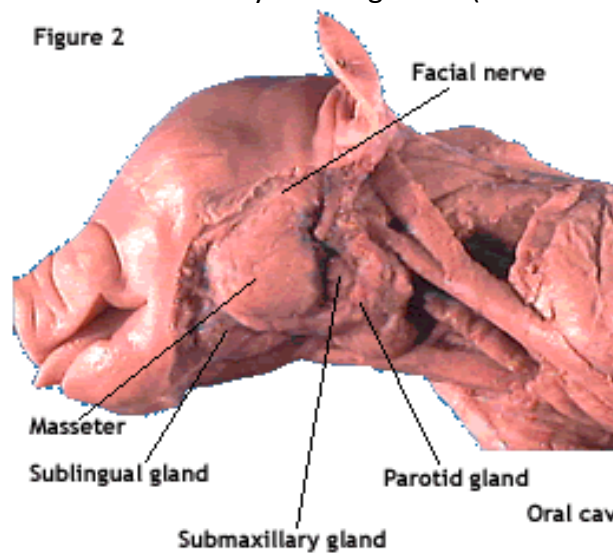
- Examine the pig's head. Locate the eyelids and the external ears or **pinnae**. Find the external nostrils or **nares**.



- Study the pig's appendages and examine the pig's toes. Count and record the number of toes and the type of hoof the pig has.
- Locate the **umbilical cord**. With scissors, cut across the cord about 1 cm from the body. Examine the 3 openings in the umbilical cord. The largest is the umbilical vein, which carries blood from the placenta to the fetus. The two smaller openings are the umbilical arteries which carry blood from the fetus to the placenta. The smallest opening is the allantotic stalk which connects the fetal bladder to the placenta.
- Lift the pig's tail to find the anus. Study the ventral surface of the pig and note the tiny bumps called **mammary papillary**. These are present in both sexes. In the female these structures connect to the mammary glands.
- Determine the sex of your pig by locating the urogenital opening through which liquid wastes and reproductive cells pass. In the male, the opening is on the ventral surface of the

pig just posterior to the umbilical cord. In the female, the opening is ventral to the anus. Record the sex of your pig.

- Lay your pig on its side. Using your scalpel, remove a patch of skin from just behind the mouth to the shoulder area. (To remove the skin, you must gently tease the skin away from the underlying muscle tissue). You will now be able to see the large **masseter muscle**, the major muscle used in chewing. Just posterior to the masseter muscle, you will see the **parotid gland**. The parotid is the largest of the salivary glands and can be recognized by its triangular shape and lobed appearance. If you look carefully, you can see the **parotid duct**, also known as Stenson's duct, which exits the parotid gland and then crosses the bottom of the masseter muscle on its way to the mouth. It opens up inside the mouth. If you can locate the duct--open the pig's mouth and tug gently on the duct--you should be able to actually see the opening for the duct! The **submaxillary gland** (also known as the mandibular gland), lies just beneath and ventral to the parotid gland. The submaxillary gland empties into the mouth at the base of the tongue. The sublingual gland is long and slender, with only its caudal portion visible under the duct for the mandibular gland. All three **salivary glands** secrete fluids whose function is to maintain the membranes of the mouth and pharynx in a moist condition. They also produce enzymes responsible for the initiation of carbohydrate digestion (which starts in the mouth).



9. With scissors, make a 3-cm incision in each corner of the pig's mouth. Your incision should extend posteriorly through the jaw.
10. Spread the jaws open and examine the tongue.
11. Observe the **palate** on the roof of the mouth. The anterior part of the palate is the hard palate, while the posterior part is the soft palate.
12. Locate the **epiglottis**, a cone-shaped structure at the back of the mouth. Above the epiglottis, find the round opening of the **nasopharynx**. This cavity carries air from the nostrils to the **trachea**, a large tube in the thoracic which supplies air to the lungs.
13. Dorsal to the **glottis**, find the opening to the esophagus. Examine the tongue and note tiny projections called **sensory papillae**.
14. Examine the teeth of the pig. **Canine** teeth are longer for tearing food, while **incisor** are shorter and used for biting. Pigs are **omnivores**, eating plants and animals.
15. Clean up your materials and work area. Wrap the pig in damp paper towels and put it in a zip-lock plastic bag. Obtain a piece of masking tape and label your bag with your names. Return your lab equipment and pig to the supply cart and then thoroughly wash your hands with soap.