

Fetal Pig Dissection

Mrs. Simpson's Anatomy and Physiology Class



This dissection is meant to take 5 class periods

- Monday – External Anatomy
- Tuesday – Digestive System
- Wednesday – Digestive System Cont.
- Thursday – Respiratory and Circulatory System
- Friday – Urogenital System
- There will be questions on the pig included in the final



Why do we dissect pigs in a HUMAN anatomy course?



- In the following laboratory exercise, you will examine in some detail the external and internal anatomy of a fetal pig (*Sus scrofa*).
- As the pig is a mammal, many aspects of its structural and functional organization are identical with those of other mammals, including humans.
- Thus, a study of the fetal pig is in a very real sense, a study of humans.



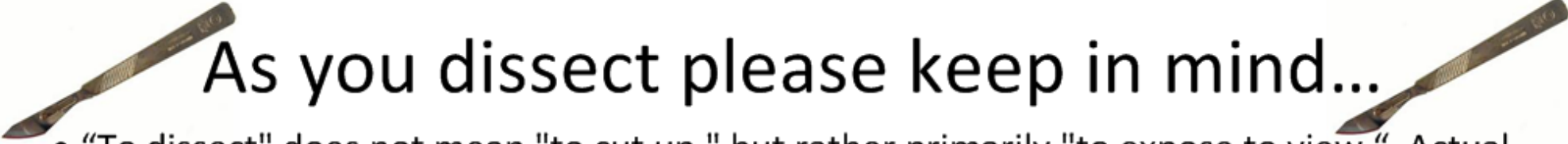
Poor unborn baby pigs! I feel so bad!

- The fetuses you will use in the following week were salvaged from pregnant sows being slaughtered for food. They are not raised specifically for dissection purposes.
- The fetuses are removed from the sow and embalmed with a preservative, which is injected through the umbilicus.
- Following this, the arterial and venous systems are injected under pressure and arteries (red) are injected through the umbilicus; veins (blue) are injected through one of the jugular veins at the base of the throat.



Can't I just label a diagram or do a virtual dissection instead?

- With the possible exception of the abdominal cavity, organs rarely appear as they are presented in a diagram.
- If the purpose of this exercise were simply to have you memorize diagrams (or computer screens), we would do only that and bypass the expense, time, and controversy of dissecting!
- Dissection is a powerful teaching method, especially for concrete thinkers and visual learners.
- Only by dissecting can you really appreciate the structural and functional role of the many membranes, mesenteries, and connective tissues that will impede your progress every step of the way.



As you dissect please keep in mind...

- “To dissect” does not mean “to cut up,” but rather primarily “to expose to view.” Actual cutting should be kept to a minimum.
- Tissues are picked and teased apart with needle probes, forceps, and blunt probes in order to trace the pathways of blood vessels, nerves, muscles, and other structures.
 - Never cut or move more than is necessary to expose a given part.
- Second, pay particular attention to the spatial relationships of organs, glands, and other structures as you expose them. Realize that their positions are not random.
- Third, you are encouraged to engage in collaborative discussions with your classmates and compare dissections.

Dissection Hygiene

- Practice safe hygiene when dissecting. Do not place your hands near your mouth or eyes while handling preserved specimens.
- Although most of the preservatives in use today are non-toxic to the skin, they may cause minor skin irritations.



- If the preservative gets on your skin, wash with soap and warm water.
- If the preservative gets in your eyes, rinse them thoroughly with the safety eyewash.
- Never splash the preservative in the pig buckets or bags.
- Wear lab gloves. These gloves are an expense--please don't waste them.



**Eye Wash Station.
Keep Area Clear.**

- After bagging your pig and placing it in the mortuary cabinet, rinse your tray and stack it neatly by the sink.
- Wipe up your station. Dirty stations will result in a point deduction in your daily grade.

Lab Materials

- fetal pig
- dissecting tray
- dissection kit (scissors, scalpel, blunt probe, needle probe, forceps)
- lab gloves
- paper towels
- string
- daily lab handout



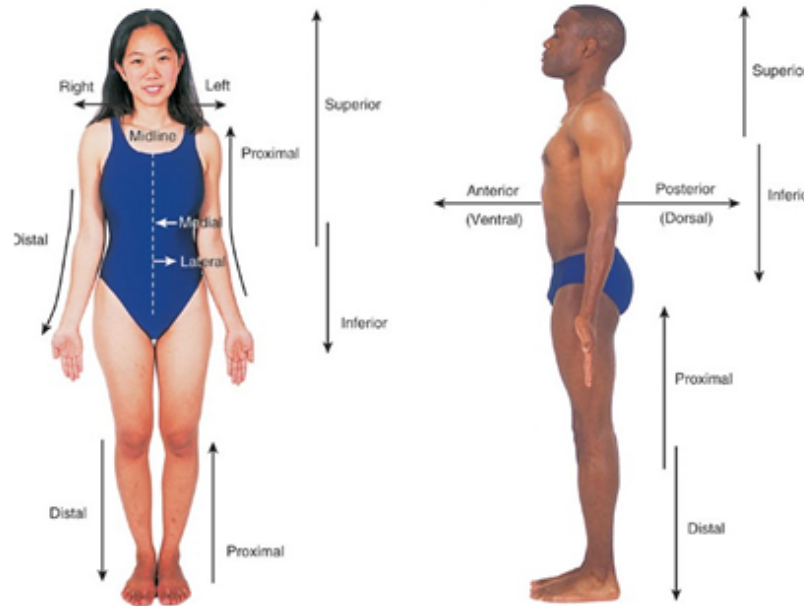
Lab Objectives

- Perform a whole-body dissection of a vertebrate.
- Identify the major anatomical features of the vertebrate body in a dissected specimen.
- Understand the relationship between structure and function in the vertebrate body and relate concepts covered in lecture to structures found in your pig.
- Understand mammalian fetal circulation from a mechanical, physiological, and evolutionary perspective.
 - Apply knowledge and understanding acquired to problems in human physiology.
- Apply knowledge and understanding acquired to explain organismal adaptive strategies.

Day 1 External Anatomy

Determine the anatomical orientation of your specimen.

As a review, as the term is identified, indicate each directional term by pointing to them on your fetal pig.



Indicate each directional term by pointing to it on your fetal pig.

- dorsal: toward the back of the body



Indicate each directional term by pointing to it on your fetal pig.

- ventral: toward the underside of the body



Indicate each directional term by pointing to it on your fetal pig.

- anterior (cranial): toward the head end of the body



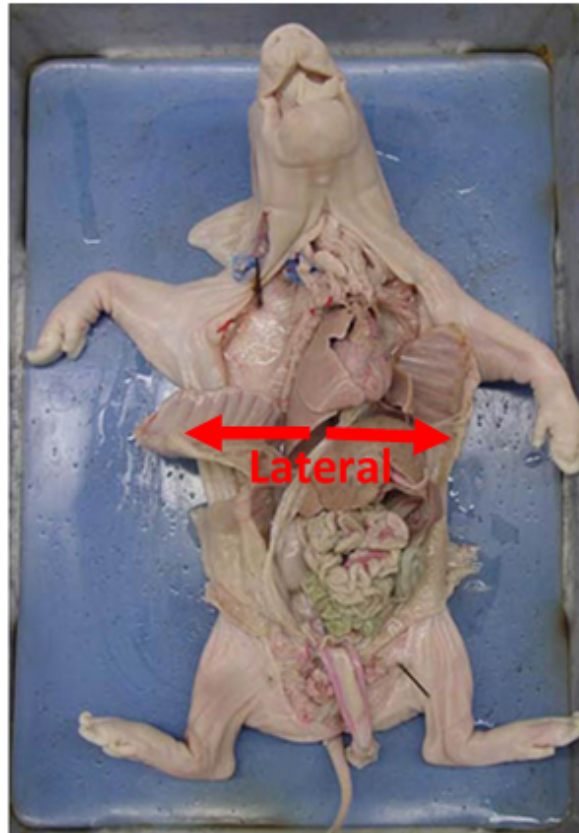
Indicate each directional term by pointing to it on your fetal pig.

- posterior (caudal): toward the tail end of the body



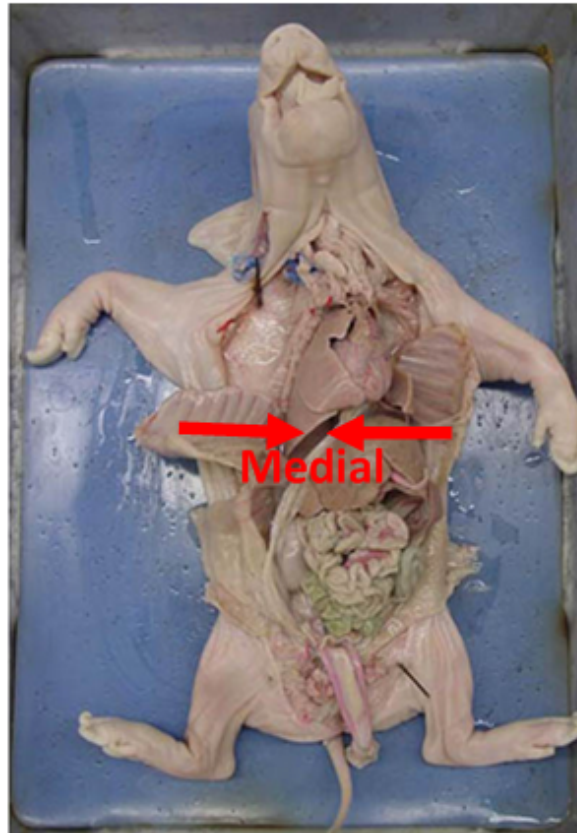
Indicate each directional term by pointing to it on your fetal pig.

- lateral: to the side of the body



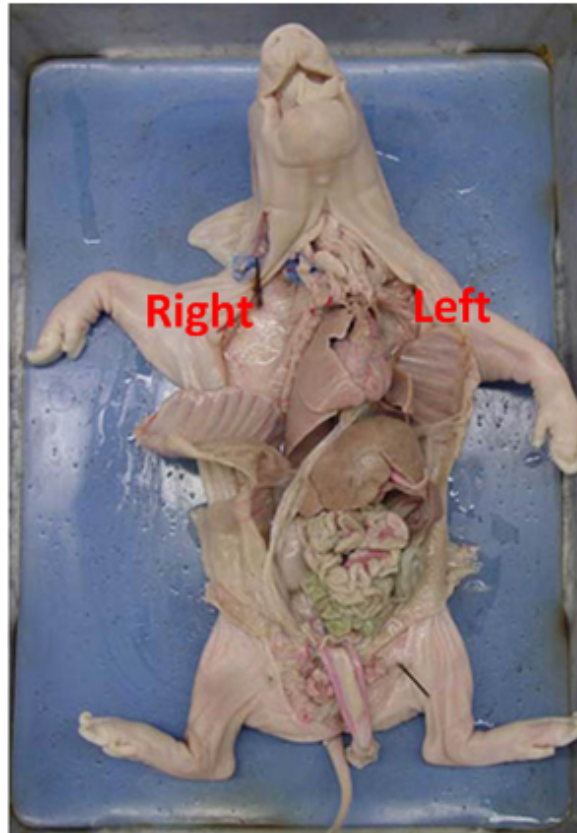
Indicate each directional term by pointing to it on your fetal pig.

- medial: toward the center of the body



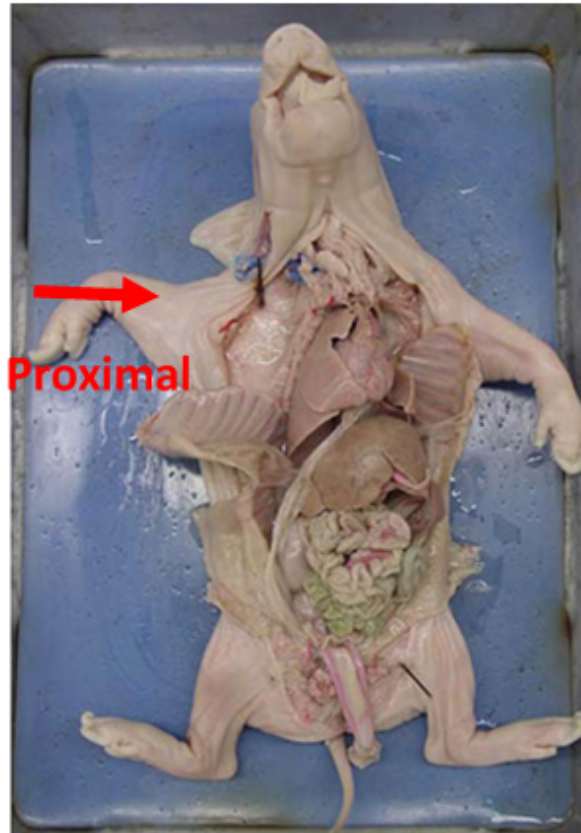
Indicate each directional term by pointing to it on your fetal pig.

- right and left: the pig's right and left, not yours



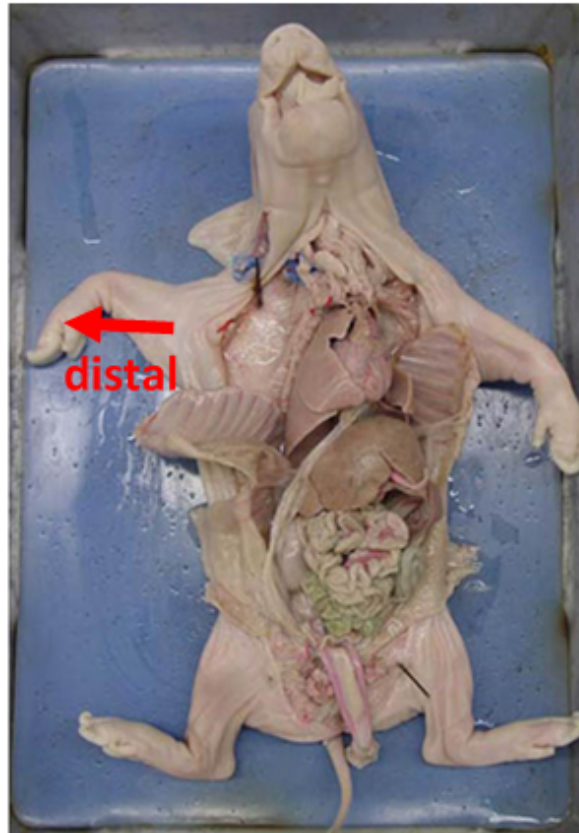
Indicate each directional term by pointing to it on your fetal pig.

- proximal: closer to the point of attachment



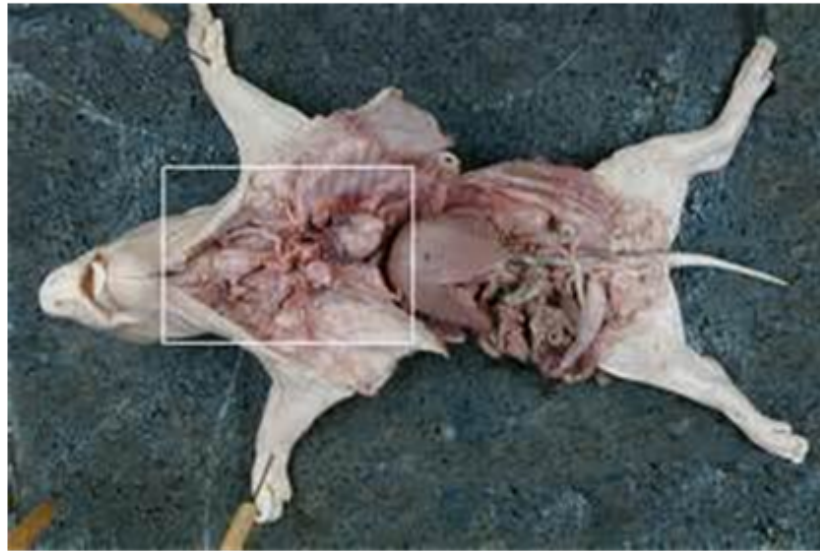
Indicate each directional term by pointing to it on your fetal pig.

- distal: farther from the point of attachment



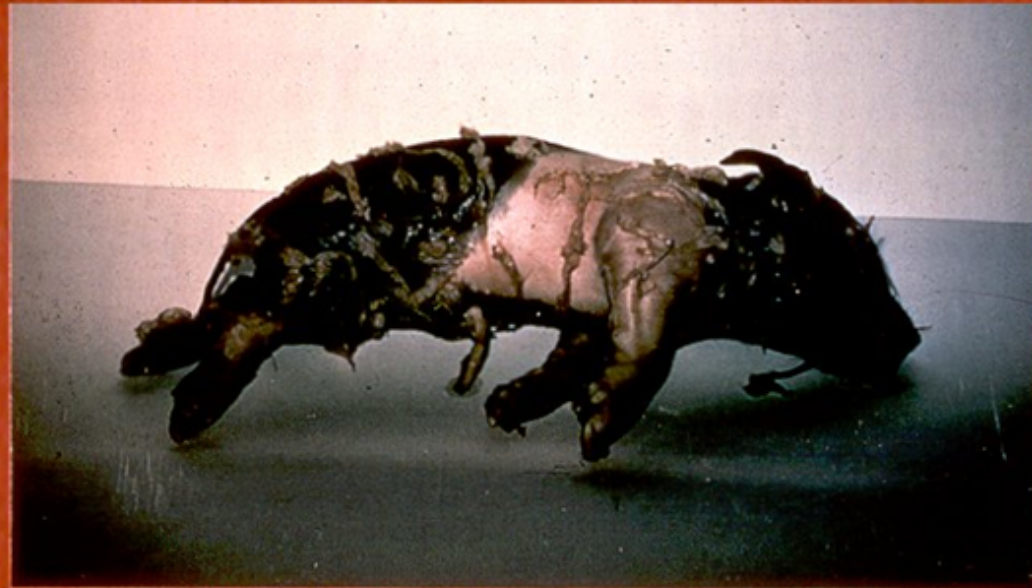
Also know....

- superficial: lying closer to the body surface
- deep: lying under or below



Epitrichium

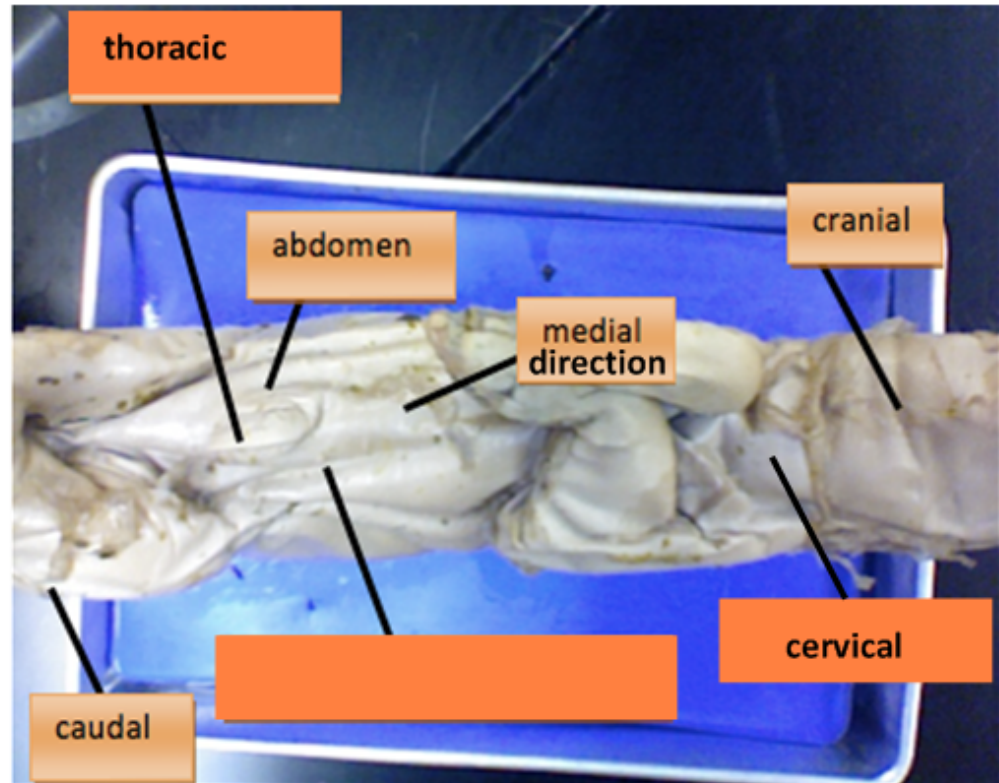
- Note the thin peeling layer of tissue covering the body of your pig. This layer is the epitrichium, a layer of embryonic skin that peels off as hair develops beneath it.



THE FETAL PIG IS COVERED WITH A LOOSE SKIN-LIKE LAYER CALLED THE EPITRICHUM. THIS LAYER IS TO BE REMOVED.

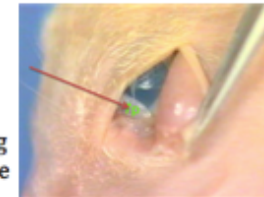
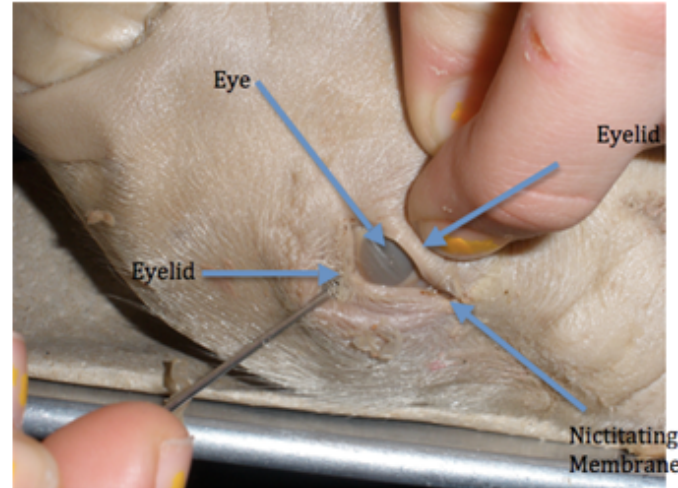
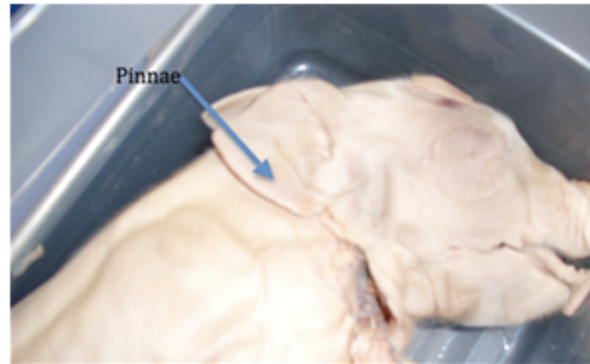
Identify the following regions of the pig

- cranial region
- cervical region
- thoracic region / abdominal region
- caudal region



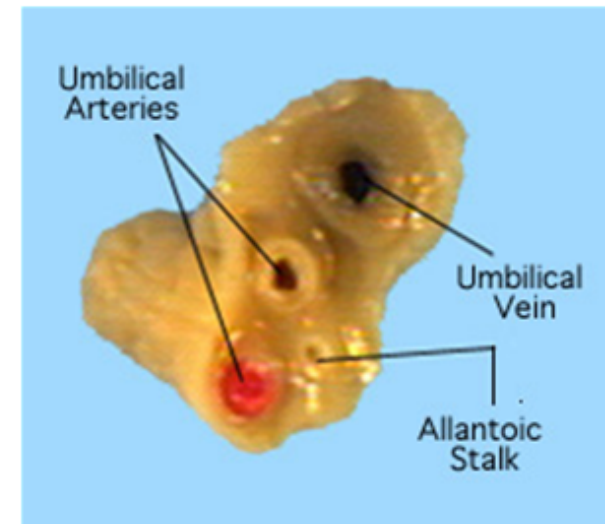
Identify the following features of the pig's head

- pinna (auricle): external ear
- external nares (nostrils)
- upper and lower eyelids
- nictitating membrane (third eyelid used for protection)



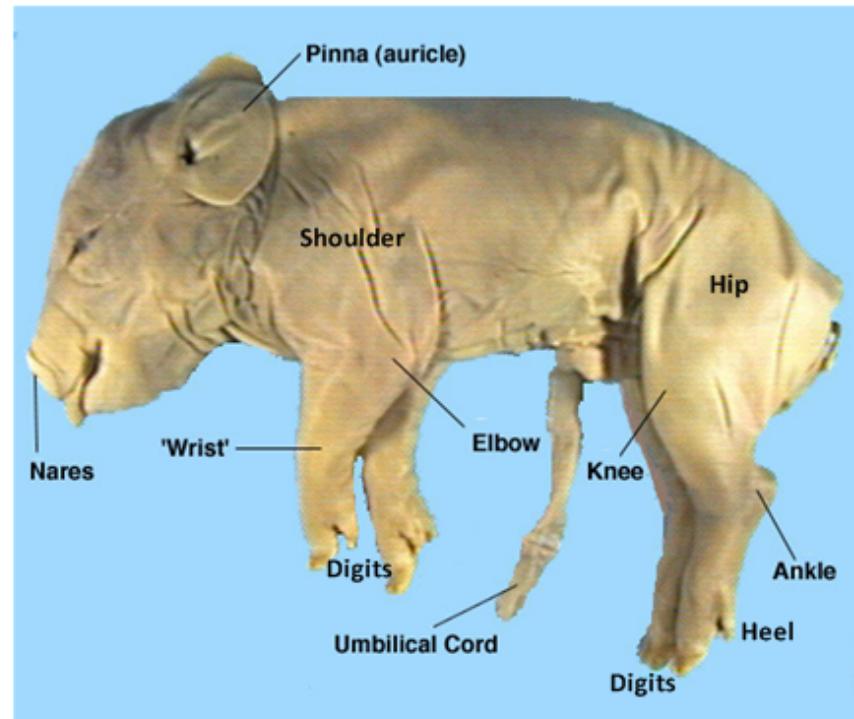
Identify the following features of the pig's trunk

- Umbilical cord; it connects the fetus to the placenta of the mother and later becomes the navel
- Cut off the very tip (0.5 cm) of the umbilicus to more clearly see the following:
 1. umbilical arteries: two arteries, carry deoxygenated blood from fetus to placenta
 2. umbilical vein: a single large vein, carries oxygenated blood from placenta to fetus
 3. allantoic duct: channels urine to the allantois, an extra-embryonic sac



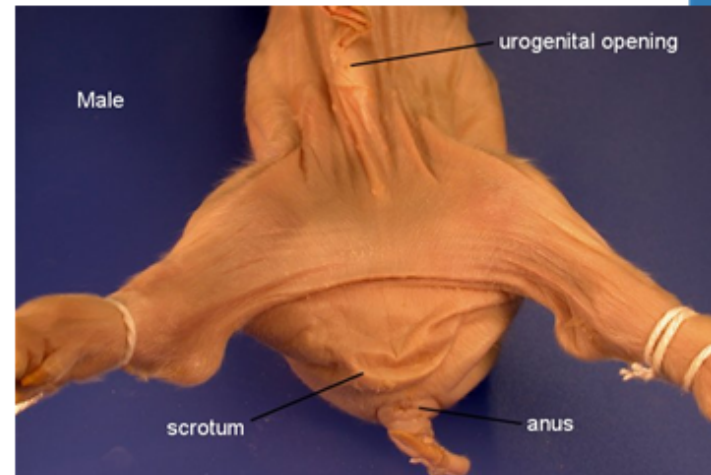
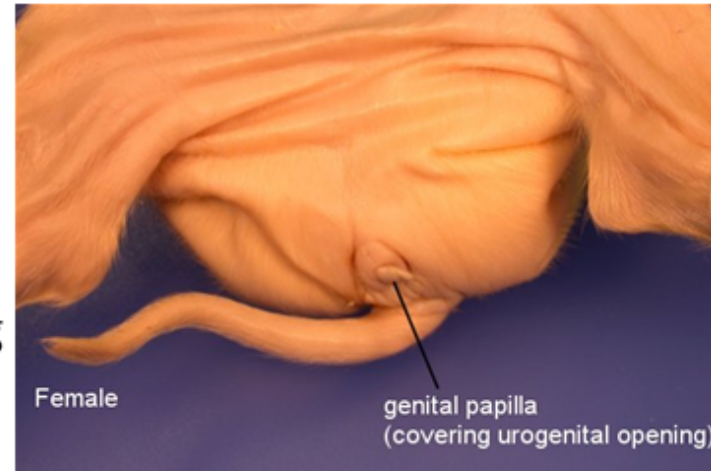
Identify the following features of the pig's appendages

- On the forelimb find the shoulder, elbow, wrist, and digits
- On the hind limb find the hip, knee, ankle, heel, and digits



It's a Boy! It's a Girl!

- Determining the sex (gender) of your pig:
 1. Female: Look for a single urogenital opening just ventral to the anus. A prominent genital papilla projects from the urogenital opening.
 2. Male: Look for the scrotum, a sac-like swelling containing the testes and located ventral to the anus. The male urogenital opening is faintly visible just posterior to the umbilicus.
- Note that males as well as females have multiple nipples = teats = mammary papillae.



How old is my baby?

- Gestation for the fetal pig is 112-115 days.
- The length of the fetal pig can give you a rough estimate of its age.

11mm - 21 days | 17 mm - 35 days | 2.8 cm - 49 days | 4 cm - 56 days | 22 cm - 100 days | 30 cm -- birth

