

## Foetal Pig Dissection

### General Instructions:

1. Each time you begin a day of dissection you should gently rinse the animal prior to handling it.
2. Each time you put the dissection away for the day you should:
  - a. spray the dissection with the holding solution.
  - b. refrigerate it in a labeled plastic bag.
  - c. wash & dry all dissection tools & instruments.
  - d. wipe down your work area thoroughly.
3. Hand washing after the dissection should be thorough after handling the preserved animals.
4. Dispose of all tissues in the biological waste container provided.
5. Take extra care when using sharp dissection tools and always cut AWAY from yourself & others.
6. Please perform the following tasks as you dissect the foetal pig.

### **Day 1**

1. Put on goggles, apron and gloves. Gloves are optional, but wash hands thoroughly when complete.
2. Rinse the pig thoroughly at a sink in cold water.
3. Determine the gender of your pig. Males will only have one orifice under the tail (the anus). The urethral opening of the male close to where the umbilical cord is found.
4. Take an image of the animal in the correct anatomical position from the ventral aspect.
5. Make an incision from the edge of the mouth to just below the ear on one side of the pig.
6. Locate salivary glands, take an image of the gland.
7. Mark out the incisions with a marker on the surface of the skin only using the pattern shown in your reference handout.

### ***The abdominopelvic cavity***

#### Digestive System

1. Make incisions through the skin and muscle layer attempting to leave the peritoneum intact (this is the sac that lines the abdominal cavity)
2. With scissors, open the peritoneum and take an image.
3. At this point you and your partners will need to decide if you want to remove the organs as a block or remove them one by one. Be very careful about what gets cut in the posterior portion of the abdominal cavity.

4. Locate the liver. Count the number of lobes, locate hepatic portal vein, and check for connection to umbilical cord. Locate the gall bladder. Take an image of the posterior surface of the liver with the gall bladder in view.
5. Locate and remove stomach. Make a lateral incision to open the stomach into two equal halves. Rinse the organ thoroughly at the sink. Take an image.
6. View the inner lining of the stomach on the dissecting scope.
7. Begin to organize the organs according to their respective systems (Digestive, Circulatory, Respiratory, Urinary, Reproductive, and Nervous).
8. Locate and remove the small and large intestine. Dismantle the small intestine by snipping the mesentery (the connective tissue holding it in a block). Measure their lengths and diameters and categorize them appropriately. Take an image of the small intestine. Take an image of the large intestine.
9. Locate the remainder of the organs of the digestive system (rectum, esophagus, and pancreas). Consider the concept of an accessory organ which means that the organ does not directly contact the food or waste yet contributes to the overall system function. Can you think of 3 accessory organs for the digestive system?

### Excretory System

1. Locate kidneys, ureters, bladder and urethra. Cut off fat deposits with forceps and a scalpel. Remove a kidney from the posterior wall of the abdominal cavity. Take an image showing the urethral attachment and vessels that provide blood supply.
2. Make an incision in the frontal or coronal plane to cut one kidney in half. Take an image of the cross-section of the kidney.

## ***The thoracic cavity***

### Respiratory & Circulatory Systems

1. Remove the lungs. Make observations regarding the texture of the lung and the trachea. Take an image.
2. Make an incision through the transverse plane to further make observations regarding the texture of the tissue and to observe the bronchial tubes within. Take an image of the tubes within.
3. Remove the heart; take an image of the ventral surface.
4. Make an incision in the frontal or coronal plane to cut through all four chambers of the heart. Make observations about the thickness of the walls of the heart. Locate the valves, the chordae tendinae. Check for the hole in the wall separating right atrium from the left atrium AND for the arterial duct; both of these structures prevent blood from flowing to the lungs.
5. Take an image of the internal view of the heart labeling as many chambers and valves as possible.

## ***The Pelvic Cavity***

### Reproductive System

*If male:*

1. Locate testes (check scrotum if you can't find them in the abdominal cavity). Locate the vas deferens. If intact, follow the path of the vas deferens to the outside of the body. Compare this to where the urethra leaves the body.
2. Remove a testis & make a lateral incision of the testis and take an image.
3. Find another group that has a female and when convenient make a comparison to your own pig.

*If female:*

1. Locate ovaries (in abdominal cavity). Follow the fallopian tube to the uterus and then to the outside of the body. Compare this to where the urethra leaves the body.
2. Remove an ovary and make a lateral incision to take an image of any internal structures. (use the dissecting scope)
3. Find another group that has a male and when convenient make a comparison to your own pig.

## ***The Cranial Cavity***

### **Nervous System**

1. With a pair of cutters make an incision on the dorsal surface of the skull (all the way to the snout) to expose the brain. This is best started at the ocular opening. The skull will come off in one piece if you are lucky, but may have to be removed in smaller pieces. Try to leave the tough dura intact that surrounds the brain if you can.
2. Remove the brain keeping as much of the brain stem intact as possible. Make a cross section of the brain in the sagittal plane along the midline. Take an image of the cross-cut surface.
3. The rest of this day is to tie up any loose ends from day 2. Double check that you have all images that were specified above. There should be 15 in total.

## ***Other Dissection Explorations.***

### **Skeletal System**

1. Remove a hind limb and remove at the hip joint and remove all the skin tissue surrounding the limb. Discover the muscles that control flexion and extension of the metatarsals relative to the tibia.
2. Remove the muscles by cutting the tendons that join the muscle to the bone. Examine the joint capsule composed of many ligaments underneath. Cut the ligaments to expose the ends of the bones. Examine the smooth cartilage.
3. Consider the terms: sprain, strain, pulled muscle, arthritis, osteoporosis, stress fracture, compound fracture, dislocation.

### **Sensory Organs**

1. Remove an eyeball from its socket in the skull. Dissect to produce a cross-section of the pupil. Locate the iris, pupil, cornea, lens, retina, optic nerve, vitreous humor, sclera.
2. Make an incision into the auditory canal and try to find the tympanic membrane that separates the outer ear from the inner ear.

3. Inside the tympanic membrane, search for the cochlea that transform the vibrations from sound into a neural signal, and the semi-circular canals that give the pig vestibular control (a sense of balance). Insert a blunt probe into the Eustachian tubes on the other side of the tympanic membrane and determine where these tubes terminate.
4. Make a deep incision on both sides of the animal's head from the corners of the mouth to the base of the ear and open the jaw wide.
5. Locate the hard and soft palate.
6. Identify the glottis, epiglottis, the nasopharynx, teeth, & tongue. With a blunt probe, explore where each of these openings go to.
7. Cut into the soft palate to open the sinuses and insert a blunt probe into the nostril to confirm that it leads to the nasopharynx.
8. Slice a portion of the tongue off with a good size portion of the surface on it and view underneath the dissecting microscope.

### Neck Region

1. Make an incision from the base of the chin along the midline in the posterior direction.
2. Remove the skin, fat tissues & muscles.
3. Find the larynx (voicebox), thyroid gland, trachea, esophagus, carotid arteries & jugular veins.