LAB PART 2- THE FETAL PIG -THE DIGESTIVE SYSTEM

The fetal pig has been chosen as a dissection specimen to acquaint you with the structure of the mammalian body. While a biologist would be concerned with the anatomy of this organism alone, the reason for this dissection is somewhat broader. One of the goals of the biology course is to provide knowledge of human anatomy and physiology. Being a mammal, the anatomy of the pig is very much like that of the human, and, at the same time, since the fetal pig is readily available, it is a practical high school dissection specimen.

At the outset of the dissection, a few incisions will have to be made with a razor blade and/or scissors to open the specimen. Thereafter, most of the dissecting should be done very carefully picking away surrounding connective tissue in order to separate and expose organs. DO NOT cut out any organs unless specifically directed to do so, but always pick away enough of the surrounding tissue to see all of an organ clearly. A good dissection should reveal all of the organs clearly enough so that another person could examine the specimen and see the essential relationships of the organs and their connections with other organs without any difficulty.

Specific observations have been included in the dissection to help guide your work. You will need to make notations on this lab guide that will help you remember the wealth of information involved in the fetal pig dissection. MAKE SURE YOU JOT DOWN THE ANSWERS TO THE OBSERVATIONS SO YOU WILL HAVE THIS INFORMATION WHEN YOU WRITE UP THE LAB.

PURPOSE:

To become familiar with the basic body plan of mammals and thusly become more familiar with human anatomy.

OBJECTIVES:

1. Learn the location and function (when appropriate) of the organs and systems of the fetal pig.
2. Become familiar with the descriptive materials of the fetal pig so that comparisons can be made with human structures and functions.

MATERIALS:

Fetal pig, dissecting pan, razor blade, scissors, probe, forceps,
and 2 pieces of string 60 centimeters long.

FORMAL LAB WRITE UP: Observations 10-15 and Questions 7-18 in Full Sentences

PART 2 - DIGESTIVE SYSTEM

Procedure 7 Tie your pig to your dissecting pan as shown in the tape with the two strands of string. (60 cm)

Procedure 8 Make your dissection cuts as explained by your teacher. Cut all the way through the body wall with a sharp razor blade, but gently lift the body wall toward you with a pair of forceps to prevent cutting into any internal organs. Make all cuts without removing any pieces of tissue or cutting any blood vessels.

Procedure 9 You will notice that the umbilical vein that extends from the umbilical cord to the liver prevents the midventral flap from being turned back. IDENTIFY THIS UMBILICAL VEIN AND SHOW IT TO YOUR TEACHER. Once this has been done, this vein may be cut and this whole flap will move back between the legs.

Procedure 10 The flaps of skin that you have cut on the side of the pig may be removed. You may have to use a pair of scissors to cut through the ribs. These flaps of tissue may be discarded in the smaller yellow waste basket.

PIG LAB Pt 2 - INTERNAL EXAM CONT.-DIGESTIVE SYSTEM

Procedure 11* At this point, you may need to wash out any coagulated blood and preserving fluid in the internal cavity of your fetal pig in order to get a good view of the internal organs. If you wish, Doc will wash out the internal cavity for you - if you are not one of the lucky ones who has a clean internal cavity.

Procedure 12 Now you are ready to view the internal organs. The most conspicuous organ in the abdominal cavity is the liver which fits under the dome of the diaphragm. It is a large reddish-brown mass split into several sections or lobes. Determine how many lobes make up the liver by examining it carefully.

Observation 10. How many lobes are present on the liver?

Procedure 13 Now raise the right lobe (on your left as you look at the pig) of the liver to observe the gall bladder. The gall bladder is a greenish-gray sac that may appear somewhat shrunken and embedded right into the liver.

Procedure 14 Locate the common bile duct leading from the liver and gall bladder to the small intestine. (Check with Doc)

Procedure 15 At this point you may remove and discard ONLY THE LIVER. Do not remove any other tissues or organs.

Procedure 16 To the right of where the liver was found, you will find the stomach. The stomach is a large sac-like, somewhat curved organ. Very carefully remove the stomach as one whole structure. If any other organ appears to be attached to the stomach make sure that it is cut free (not removed) before removing the stomach.

Procedure 17 Now cut open the stomach and wash it out. The stomach may contain a greenish material that represents bile stained mucus and sloughed off epithelial cells of the skin and lining of the digestive tract. If you wish Doc will cut the stomach open for you and wash it out.

Observation 11. Did the stomach have any contents?

Procedure 18 After the stomach has been washed out, try to turn it inside out and examine it for two circular smooth muscles - called sphincter muscles. Located at the end of the esophagus leading into the stomach is a small sphincter muscle called the cardiac valve. Also located in the stomach is a second larger sphincter muscle found at the end of the stomach called the pyloric valve. It is very important that you see these valves so be sure to show them to Doc

Observation 12. Explain what these valves look like.

Procedure 19 What seemingly had been attached to the stomach and lying along the body wall is a long thin finger shaped, reddish-brown strip of tissue which is the spleen. This organ, as many others, is actually held in place by a filmy mass of connective tissue called mesentery. Show both the spleen and mesentery to your instructor.

Procedure 20 Attached to the back body wall in the area where the stomach was located is a grayish mass of glandular tissue called the pancreas. Show this gland to your instructor. This organ, as the spleen, is also held in place by the mesentery.

PIG LAB Pt 2 - INTERNAL EXAM CONT.-DIGESTIVE SYSTEM

Observation 13. Explain what this gland looks like.

Procedure 21 Locate the small and large intestine. The small intestine is longer in length and smaller in diameter whereas the larger intestine is shorter in length and larger in diameter. These intestines form a tightly coiled spiral mass held together by mesentery.

Procedure 22 Deep within the pelvic cavity lying on the body wall is the rectum. It opens on the body surface through the anus.

Procedure 23 By carefully cutting near the body wall, remove the intestines in one large mass. Examine carefully until you find a finger-like projection that is found where the small and large intestines join - this structure is called the caecum. This is important to find, so shows this structure to your teacher. In humans, the tip of the caecum forms the appendix.

Procedure 24 OPTIONAL The caecum is the dividing point between the small and large intestine. Use a sharp razor blade and separate the small and large intestines. (Check with Doc - You probably will need help in doing this).

Observation 14. As you cut the mesentery to separate the intestines,
What do you think is the function of this tissue called mesentery? Check with your teacher

Procedure 25* Cut open a small section of the small intestine, wash it out and pin it down in a dissecting pan. Examine under a dissecting microscope. SHOW THIS TO YOUR TEACHER.

Observation 15. Describe the appearance of the insides of the small intestine.

ANSWER THE FOLLOWING QUESTIONS IN YOUR LAB UNDER QUESTIONS (Tomorrows Class)

Questions:

7. Name the complex fluid that the liver produces that is used in digestion.
8. What is the function of the gall bladder?
9. What is the function of the cardiac valve?
10. What is the function of the pyloric valve?
11. What is the function of the spleen?
12. Name two functions of the pancreas.
13. Why do you think it is so important for pancreatic juice to neutralize stomach acids as food moves from the stomach into the small intestine. THINk
14. What are the 2 major functions of the small intestine?
15. What is the major function of the large intestine?
16. What is the pink and/or blue material in the mesentery of the small intestine?
17. What is the importance of these blood vessels found in the mesentery? (They Are Very Important)
18. All of the organs that you examined in this section, with the exception of the spleen, belong to what Life System? (A general question)