

# Use Of Fetal Pigs To Study Human Anatomy

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Lab Report



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# USE OF FETAL PIGS TO STUDY HUMAN ANATOMY

## Introduction

### *Why do we use the fetal pig to study human anatomy?*

Fetal pigs are pigs yet to be born, commonly used in elementary and advanced biological classes as samples for dissection. The classification of pigs, as mammals, provides good specimens for the study of human physiology. Many classroom dissections involve the use of fetal pigs for several reasons. Fetal pigs are cheap and easy to find within the pork industry. The low cost of fetal pigs also attracts many schools, as they are affordable which is essential for dissection use by schools. Fetal pigs are simple to dissect since they consist of very soft tissues and they have bones made of cartilage. The fetal pigs are relatively large with well-developed organs that are visible. The main reason why the fetal pig is useful in studying human anatomy is that they have identical structures and organs to human beings. The fetus is identical to a human's.

### *Significance of using fetal pigs to study human anatomy*

Use of the fetal pig to study human anatomy as a laboratory component improves students' understanding and comprehension of basic anatomical concepts and ideas. Fetal pig dissection allows students to undertake high quality human-like dissection on the fetal pigs. They focus on all the skeletal, muscular, nervous, cardiovascular, endocrine, urinary, digestive, respiratory and reproductive systems.

Dissection of fetal pigs is a hands-on activity for learners for purposes of investigation necessary for students of human anatomy. Using fetal pigs, students are able to test the accuracy of what they find in human anatomy books. Dissecting the fetal pigs in studying human anatomy



engages the student in clearer observational learning. It enables students to easily recognize and appreciate the structure and dimension of the human body.

The connectivity between organ and organ systems in fetal pigs and the uniqueness of a fetal pig allows students to appreciate learning human anatomy. Dissecting fetal pigs increases the students' grasp of existing variation in the natural world. No two normal fetal pigs will look the same. Dissecting different fetal pigs during studying human anatomy allows the student to understand more. Occasionally, significant anatomical anomalies will exist in the different dissected fetal pigs, helping the student to improve his or her observation skills.

## Hypothesis

Fetal pigs have similar structures and organs to human beings. If many similarities exist between humans and the fetal pig in terms of anatomical features, then fetal pigs are useful specimens for studying human anatomy.

## Methods

### Incision:

- 1) In the dissecting tray, ensure that the ventral side of the fetal pig faces upward.
- 2) Place a string securely around a forelimb. Place the string to run under the tray and tie it tightly on the other forelimb. Replicating the same procedure with the hind limb allows proper examination of internal organs.
- 3) To examine the inner organs of the fetal pig, five incisions are necessary. The first incision involves cutting the ventral surface using sharp dissecting scissors. An incision of 10-15 cm involves making a cut



in front of the umbilical cord moving towards the head. The second incision is making a cut moving toward the posterior surface using a scalpel. The third incision is to cut toward the lateral surface using scissors. The fourth incision is to cut the fetal pig on the posterior portion lying on the abdominal cavity using a scalpel. The fifth incision involves making a cut to separate the thoracic and abdominal cavities using scissors. The incision starts at the midline and extends laterally on both sides of the pig. The cut incisions expose the body parts, and the peritoneum (thin layer of tissues lining the body cavity).

### Mini experiments

The mini experiments conducted include exposing the abdominal cavity and thoracic cavity. Separating the flaps at incision 5 of the fetal pig helps to identify structures more easily.

### Observations

The human characteristics existing in fetal pigs are lungs, liver, kidneys, stomach, intestines, ribcage, spinal cord, skull and brain.

**Circulatory system:** It is possible to locate the heart and major passageways (Aorta, pulmonary veins, cardiac arteries and the vena cava). The heart position is above the diaphragm in the middle of the chest, a similar position to human beings. The heart has two atria, a ventricle with two chambers, and a pulmonary trunk joining the aorta. Outside the heart is the coronary vessel. The intercostal arteries run near the ribs. The dorsal side of the heart has the anterior and posterior vena cava.

**The digestive system:** consist of the diaphragm, brown-coloured liver, tube-like esophagus, a sac-like stomach, small intestines, sphincters, u-shaped duodenum, pancreas, gall bladder, mesenteries, jejunum, ilium, large intestines, caecum, rectum and the spleen.



Respiratory system: consist of two spongy lungs, and pleura protecting the lungs. Other structures observed include the trachea, cartilaginous rings, bronchial tubes, bronchioles, alveoli, thyroid gland, larynx, epiglottis and the pharynxes.

Urogenital system: consists of the bean-shaped kidneys covered by the peritoneum, ureters, urinary bladder, umbilical arteries and the urethra.

## Discussion

### Hypothesis accuracy

The hypothesis was correct, and fetal pigs have many similar organs to human beings, although some minor differences exist. A fetal pig's anatomy is close to a human's, has many similarities to humans, and can be used to study human anatomy. Fetal pigs are useful dissecting specimens that enable students to participate in laboratory work when learning human anatomy. Students can effectively use fetal pigs to study human anatomy to sharpen their skills and gain hands-on experience. The hypothesis is true because many organs similar to the ones existing in human beings exist in fetal pigs. Fetal pigs are useful for enhancing the knowledge of students studying human anatomy.

### Evidences to support the investigative question

The evidence in the autopsy answering the investigative question includes the presence of a circulatory system with passageways similar to the ones existing in humans. The digestive system and respiratory systems are identical to that of human beings.

### Further questions that require research

Why do the lungs of fetal pigs feel spongy? What are the main functions of the cartilage rings located on the trachea?



## REFERENCES

Miller, James S., Ph.D. (1998). Why fetal pigs are good dissection specimens. *Fetal pig dissection guide: including sheep heart, brain, and eye*. (3rd). Goshen College.

