

Names _____

Date: _____

Lab: Rat Dissection

Friendly Reminder before we begin: Getting to participate in this lab is a privilege and not a right. The tools that we are using in this lab can be dangerous if not used the way they are intended. Additionally, the rats are to be used for scientific purposes only, any misuse (playing around) with the rats is considered disrespectful and will result in automatic exclusion from the lab. Any activities that you are not allowed to complete due to misbehavior will be given an automatic **ZERO!**

Day 1: Signed: _____

Day 2: Signed: _____

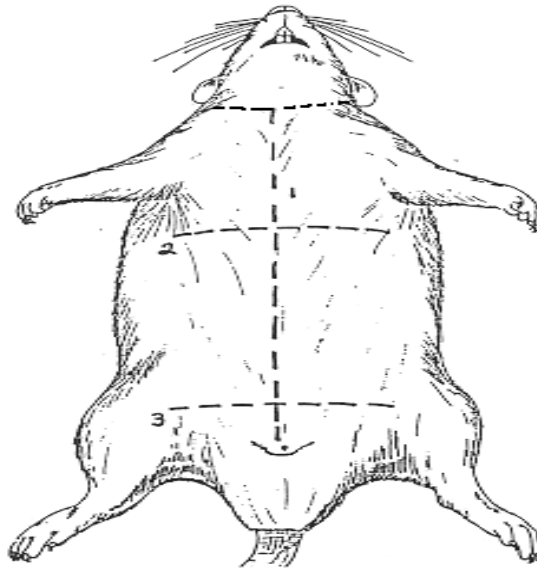
Ms. Smith's initials _____

Your Rat's Name: _____

PROCEDURE

A). Removing the skin and exposing the muscles of the rat

1. Obtain a set of dissecting tools, a rat, as well as a dissecting pan.
2. Using scissors make the incisions in the rat, and follow the guided numbers to carefully remove the skin. Move slowly and make sure to not cut too deeply and keep the point of the scissors facing upward. Once the skin is removed start seeing what muscles you are able to observe (gastrocnemius, biceps femoris, external oblique, spinotrapezius, latissimus dorsi, biceps, and triceps).
3. Before you go any further, show your teacher and have them initial your lab worksheet.



Ms. Smith's Initials _____

B) Remove all tissue from one leg exposing the skeletal bones; femur, tibia, & fibula.

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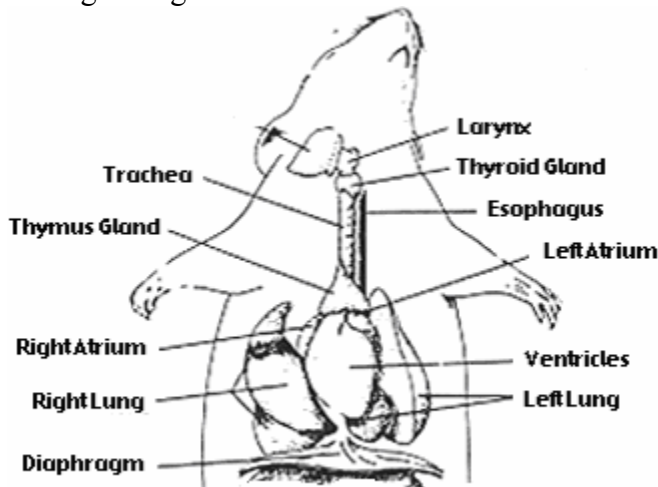
C) Thoracic Cavity Investigation (place a check mark in the space once you have correctly identified each structure). Refer to the diagram on the next page if you need help identifying the organs.

- ____ 1. Locate the **diaphragm**. This is the thin layer of muscle that separates the thoracic from the abdominal cavity.

____ 2. Locate the **heart**. This is located in the center of the cavity. Note the four chambers: 2 atria and 2 ventricles.

____ 3. Locate the thymus gland. This is located directly above the heart. The thymus gland is involved in the development of T cells in the immune system.

____ 4. Locate the trachea, bronchi, and lungs. The trachea is a hard ridged structure descending from the pharynx. The trachea will branch off in two tubes called bronchi, and then lead to the large soft tissue of the left and right lungs.



Before you go any further, show Ms. Smith these organs and have them initial that you have completed this section.

Ms. Smith's initials _____

D) Abdominal Cavity and Organ Investigation (place a check mark in the space once you have correctly identified each structure). Refer to the diagram on the next page if you need help identifying the organs.

____ 1. Locate the **liver**. The liver is the large dark purple/brown structure just underneath the diaphragm used for producing bile as well as storing glycogen and detoxifying the blood. You will not see a gall bladder in the rat as they do not have them!

____ 2. Locate the **esophagus**. The esophagus moves down from the pharynx through the thoracic cavity and into the abdominal cavity ending at the stomach. It is next to the trachea and lacks the rings of cartilage that the trachea has. **See above picture for reference.**

____ 3. Locate the **stomach**. The stomach is located underneath the diaphragm in the left side of the abdominal cavity.

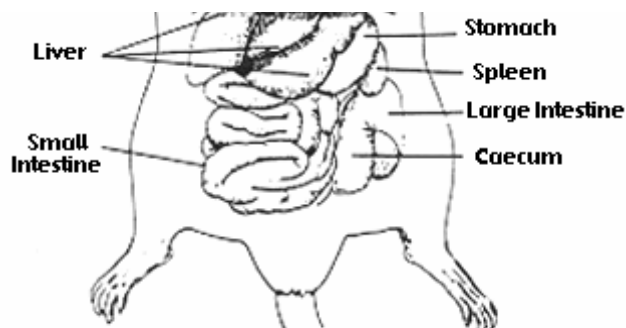
____ 4. Locate the **spleen**. This a small dark purple/brown structure attached to the stomach. The spleen functions in the destruction of blood cells as well as blood storage.

____ 5. Locate the **pancreas**. The pancreas is located in the tissue between the stomach and small intestine. It is brown and flat. Look for a thin, membranous structure to find the pancreas.

____ 6. Locate the **small intestine**. The small intestine is thin and coiled as well as descends from the stomach.

____ 7. Locate the **large intestine/colon**. This is the large green colored tube that extends from the small intestine to the anus.

____ 8. Locate the **cecum**. This is the large sac most often confused with the large intestine. It is actually the point at which the small intestine becomes the large intestine.

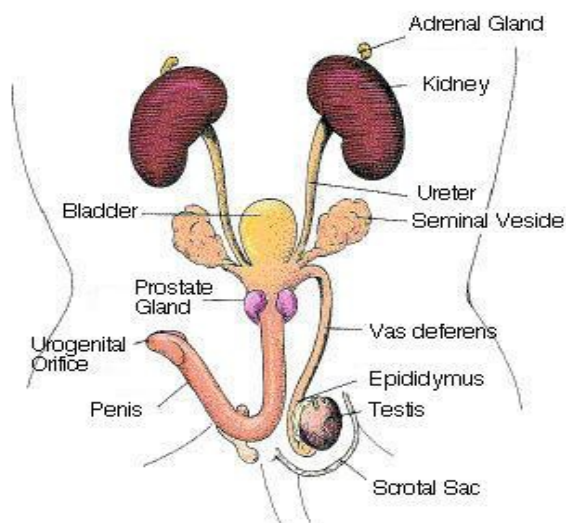


Before you go any further, show Ms. Smith these organs and have them initial that you have completed this section.

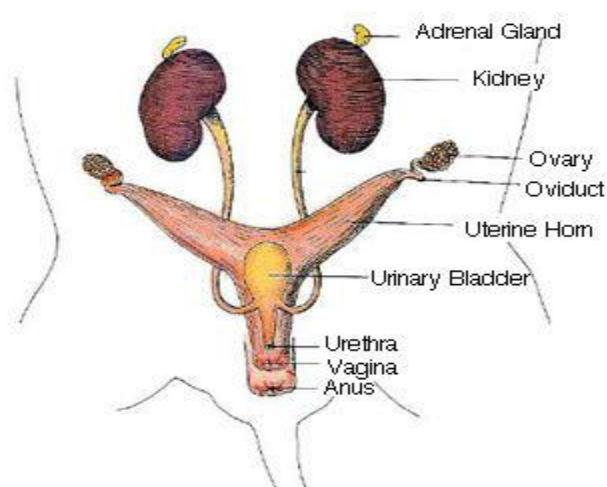
Ms. Smith's initials _____

D) Reproductive System Investigation. Use the pictures below to help you determine the sex of your rat. Follow the instructions to see the organs after you have determined if you have a male or female rat. Take a look at a group with a different sex and compare the anatomical differences between the two.

MALE



FEMALE



If your rat is Male:

1. The major reproductive organs of the male rat are the **testes** (singular: testis) which are located in the **scrotal sac**. Cut through the sac carefully to reveal the testis. On the surface of the testis is a coiled tube called the **epididymus**, which collects and stores sperm cells. The tubular **vas deferens** moves sperm from the epididymus to the **urethra**, which carries sperm through the penis and out the body.
2. The lumpy brown glands located to the left and right of the urinary bladder are the **seminal vesicles**. The gland below the bladder is the **prostate gland** and it is partially wrapped around the penis. The seminal vesicles and the prostate gland secrete materials that form the seminal fluid (semen).

If your rat is Female:

1. The short gray tube lying dorsal to the urinary bladder is the **vagina**. The vagina divides into two **uterine horns** that extend toward the kidneys. This duplex uterus is common in some animals and will accommodate multiple embryos (a litter). In contrast, a simple uterus, like the kind found in humans has a single chamber for the development of a single embryo.
2. At the tips of the uterine horns are small lumpy glands called **ovaries**, which are connected to the uterine horns via **oviducts**. Oviducts are extremely tiny and may be difficult to find without a dissecting scope.

Before you go any further, show Ms. Smith these organs and have them initial that you have completed this section.

Ms. Smith's initials _____

D.) Clean up

Day 1:

1. Ask for a plastic bag. Place your rat in the plastic bag, seal and label with your rat's name. Place your rat in the lab where your teacher tells you to.
2. Rinse and disinfect trays and tools and put them back where you found them.
3. Wipe down and disinfect lab.

Ms. Smith's Initials: _____

Day 2:

1. Wrap your rat with wet paper towels and place in the plastic bag you used yesterday. Give this to your teacher.
2. Rinse and disinfect trays and tools and put them back where you found them.
3. Wipe down and disinfect lab bench.

Ms. Smith's Initials: _____

Conclusion Question: To be completed after your dissection

1. Was your rat is male or female? How do you know?
2. How is the structure and function of the male and female reproductive system beneficial for the species to exist? Address both male and female systems in your answer.
3. The liver is an extremely important organ of the body with very complex function. Explain and support this statement using specific examples.
4. Compare and contrast the rat and human muscular structures. How are they similar, yet different?
5. How do the fur on a rat and hair on a human serve similar purposes? How are they different in *function* and *location*?
6. What is the function of the diaphragm?