

Name _____ Partner(s) Name _____

Name your rat _____

Rat Dissection Lab

!!CAUTION!! You must follow all safety instructions as outlined in this lab manual and by your teacher. There are several sharp objects being used during this lab that can cut and/or puncture your skin. The rats are also preserved in a liquid that can be toxic to your health. Make sure to read all directions, follow all instructions, be careful when handling sharp objects, and always wear the necessary safety equipment as instructed. Do NOT leave the lab area with the safety equipment (gloves, apron, goggles) still on as this can cause cross-contamination.

INTRODUCTION:

You will be looking at the anatomy of the rat. Believe it or not, the rat is similar in composition to a human. It has the same circulatory system, similar muscles, and a similar skeletal structure.

The classification of the Rat (*Rattus norvegicus*)

Domain: Eukaryota
Kingdom: Animalia
Phylum: Chordata
Class: Mammalia
Order: Rodentia
Family: Muridae
Genus: *Rattus*
Species: *norvegicus*



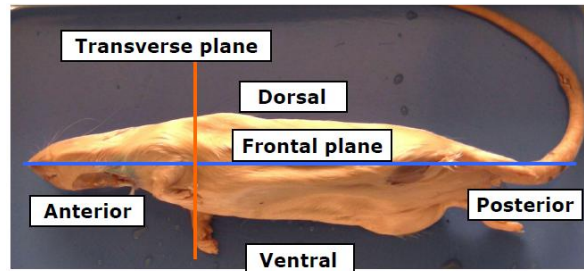
We will be looking at many different parts of the rat. Using the available material, instructions and diagrams, most students will be able to locate many structures for themselves. If after an earnest effort, you cannot find a structure, ask for assistance. Remember, this is a learning experience. It is quite permissible to discuss and observe other students' specimens. Compare your dissection with others, for animals often differ.

The specimen you will receive is a preserved double-injected specimen. Double injected refers to the arteries being filled with a red latex, and the veins being filled with blue latex.

Terms to know for dissection:

Dorsal - the back or upper surface
Ventral - the belly or lower surface
Lateral - the side
Anterior - the front or head end

Posterior - the hind or tail end
Medial - toward the midline of the animal
Proximal - closer to the midline of the body
Distal - farther from the midline of the body



Grading:

Your grade for this laboratory experiment will consist of four parts. Each part is worth 25 points out of 100 points total:

1. Participation, following directions, and proper handling of your rat.
2. Proper clean-up and handling of all laboratory equipment.
3. Achieving all checkpoints as initiated by your teacher (see procedure)
4. Answering all questions of the lab protocol and turning it in on time.

MATERIALS:

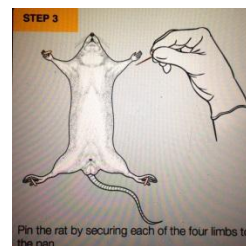
Your rat, goggles, gloves, apron, dissection pan with pad, scalpel, dissection scissors, 10 "T" pins, 2 forceps, 2 dissecting needles

PROCEDURE:

1. Put on your goggles, apron, and gloves.
2. Place your rat on the blue dissection pad with the ventral side **up**.

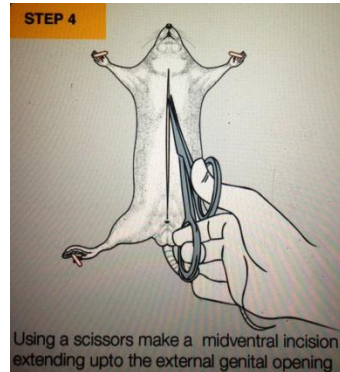


3. Spread both arms and legs apart and pin the rat's limbs to the blue pad using the "T" pins provided.

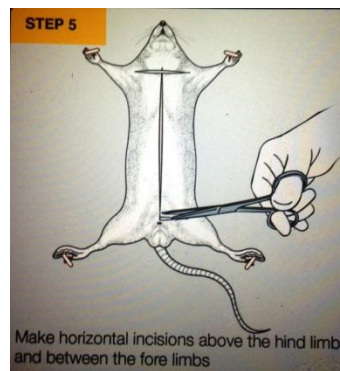


Checkpoint: Using Figure 1 as your guide; identify your rat as being male or female. Raise your hand and have your teacher verify that you are correct [Teacher's initials _____]

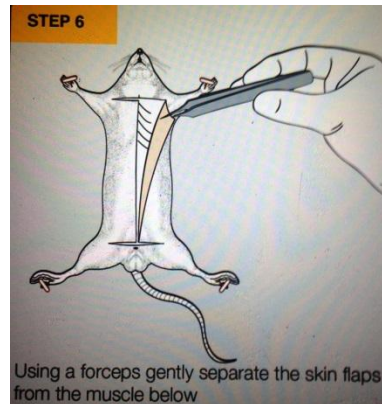
4. Pinch the skin upwards by the neck, take your scissors and cut a midventral incision down to the external genital opening. **Make sure to cut only the skin and not the muscle!**



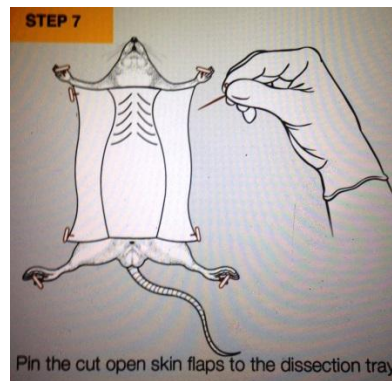
5. Now use the scissors to make horizontal incisions above the hind (back) limbs and between the fore (front) limbs.



6. Using forceps, gently separate the skin flaps from the muscle below.

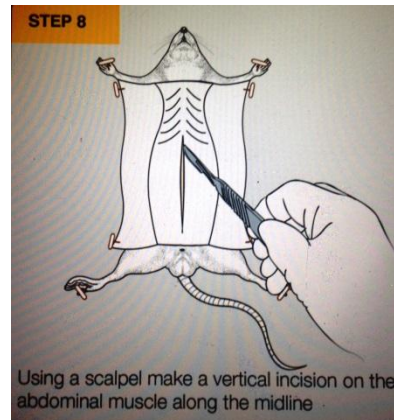


7. Pin the skin flaps to the dissection pad.



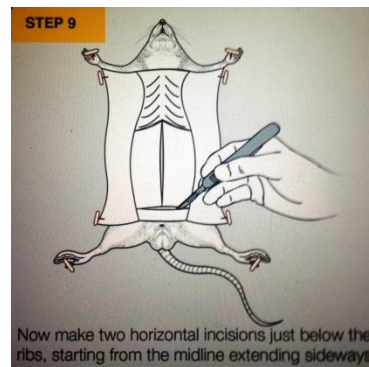
Checkpoint: Using Figure 2 as your guide; identify the external oblique muscle. Raise your hand and have your teacher verify that you are correct [Teacher's initials _____]

8. Using your scalpel, make a vertical incision on the abdominal muscle along the midline.

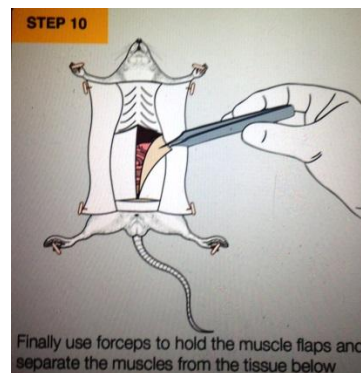


Checkpoint: Using Figure 3 as your guide; identify the sternum, femur, and carpal bones (or where they are located under the skin). Raise your hand and have your teacher verify that you are correct [Teacher's initials _____]

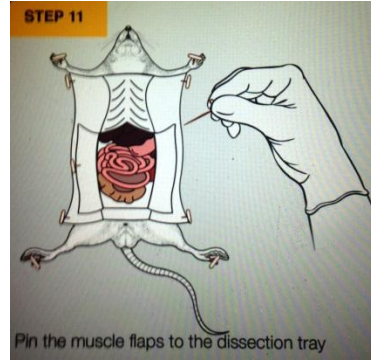
9. Now make two horizontal incisions just below the ribs, starting from the midline extending sideways.



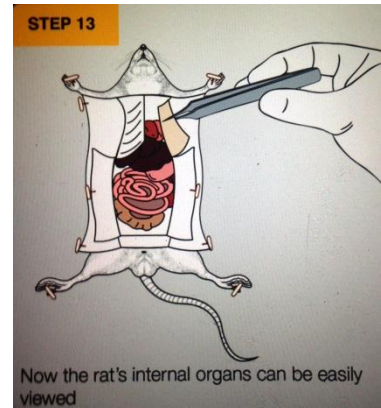
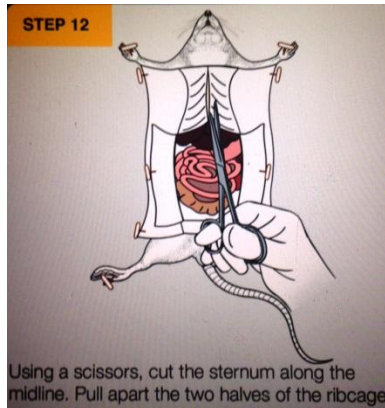
10. Finally, use your forceps to hold the muscle flaps and separate the muscles from the tissue below.



11. Using the "T" pins, pin the muscle flaps to the dissection pad.



12. Using scissors, cut the sternum (ribcage) along the midline. Pull apart the two halves of the ribcage with forceps.



13. Now the rat's internal organs can be easily viewed.

Checkpoint: Use figure 4 to help you identify to your teacher the following organs:

- | | |
|-----------------|----------------------------|
| Heart | [Teacher's initials _____] |
| Liver | [Teacher's initials _____] |
| Kidneys | [Teacher's initials _____] |
| Stomach | [Teacher's initials _____] |
| Small intestine | [Teacher's initials _____] |
| Large intestine | [Teacher's initials _____] |
| Lungs | [Teacher's initials _____] |
| Pancreas | [Teacher's initials _____] |

15. Once dissection is complete, take all "T" pins out of the rat and stick them back into the blue dissection pan like you found them.

16. Dispose of the rat in the disposal container provided by your teacher.

17. Gently wash out your dissection tray and pad. Be careful not to lose any "T" pins.

18. Gently wash and dry all dissection tools and place them where you found them.
19. Dispose your gloves in the same disposal container as the rat.
20. Remove your apron and goggles and place them back where you found them.
21. Make sure your lab station looks exactly how you found it when you first started the lab.

[Teacher's initials _____]

Figure 1

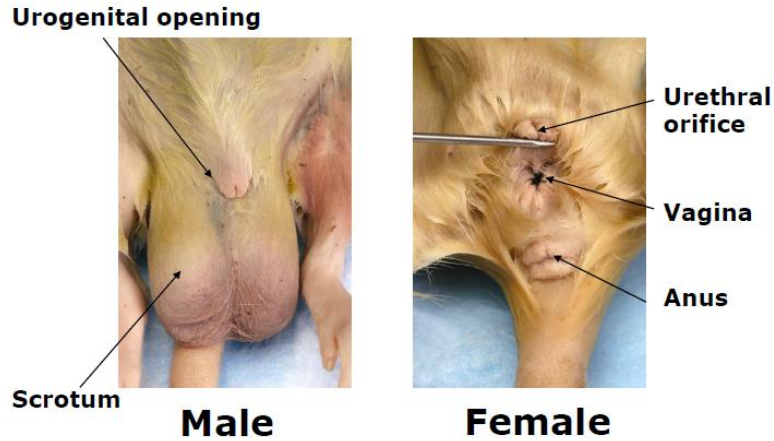


Figure 2

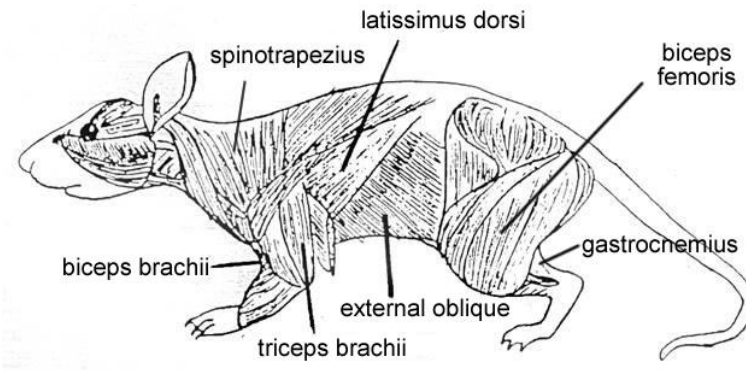


Figure 3

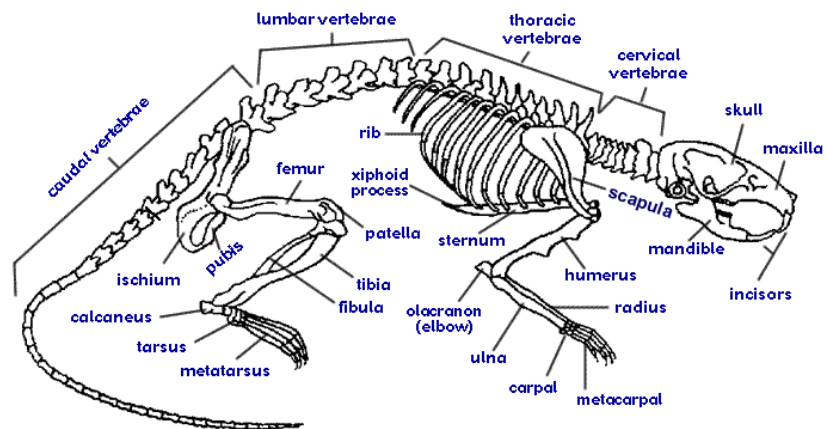
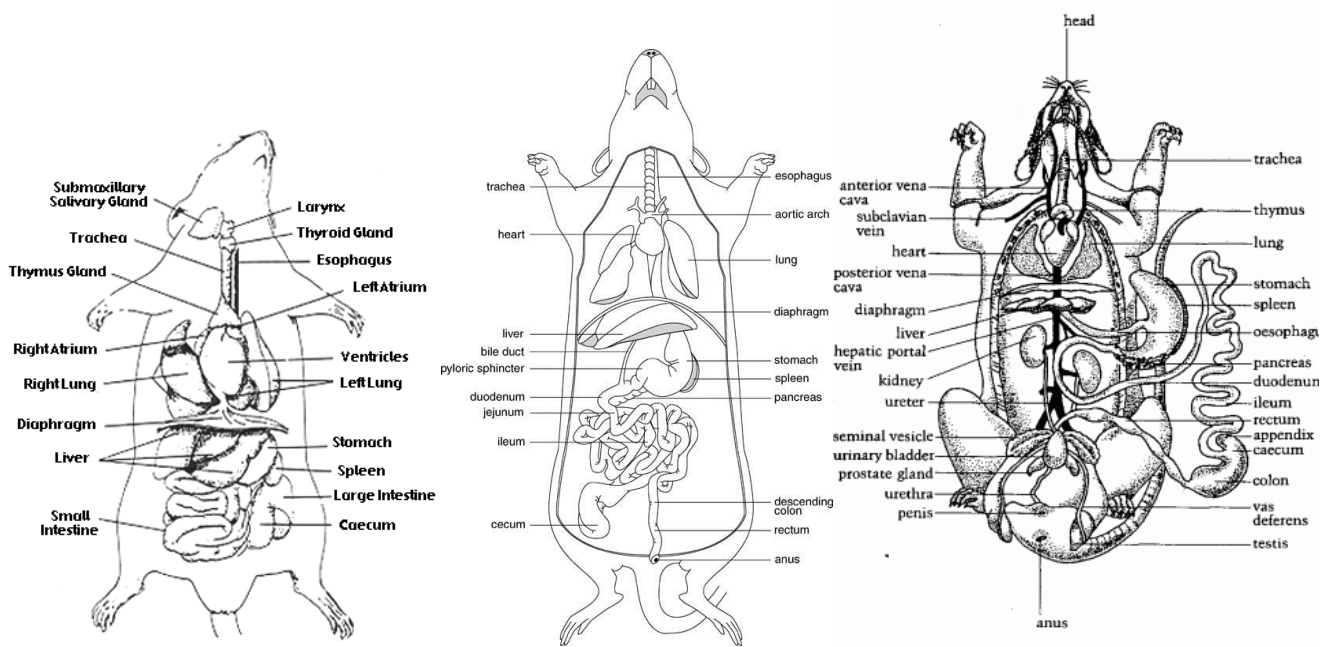


Figure 4



RESULTS/CONCLUSION:

1. Name the structure(s) you could identify that is part of the integumentary system

2. What is the function of the integumentary system?

3. Name the specific structure(s) you could identify that is part of the muscular system

4. What is the function of the muscular system?

5. Name the specific structure(s) you could identify that is part of the skeletal system

6. What is the function of the skeletal system?

7. Name the specific structure(s) you could identify that is part of the circulatory system

8. What is the function of the circulatory system?

9. Name the specific structure(s) you could identify that is part of the respiratory system

10. What is the function of the respiratory system?

11. Name the specific structure(s) you could identify that is part of the reproductive system

12. What is the function of the reproductive system?

13. Name the specific structure(s) you could identify that is part of the excretory system

14. What is the function of the excretory system?

15. Name the specific structure(s) you could identify that is part of the digestive system

16. What is the function of the digestive system?

17. Name the specific structure(s) you could identify that is part of the endocrine system

18. What is the function of the endocrine system?
