

# Rabbit Dissection

\*\*\*Your group needs to check your dissecting kits every day to make sure all pieces are cleaned, dried and present. Your area needs to be cleaned every day with cleaner after dissection. If you do not clean your area, points will be deducted from your lab. Make sure you put NO animal parts in the sink.\*\*

### Peach Kit:

- |             |                   |
|-------------|-------------------|
| 1. Ruler    | 5. Straight Probe |
| 2. Forceps  | 6. Bent Probe     |
| 3. Scissors | 7. Scalpel        |
| 4. Dropper  |                   |

### Black Kit:

1. Forceps
2. Scissors
3. Scalpel
4. Straight Probe

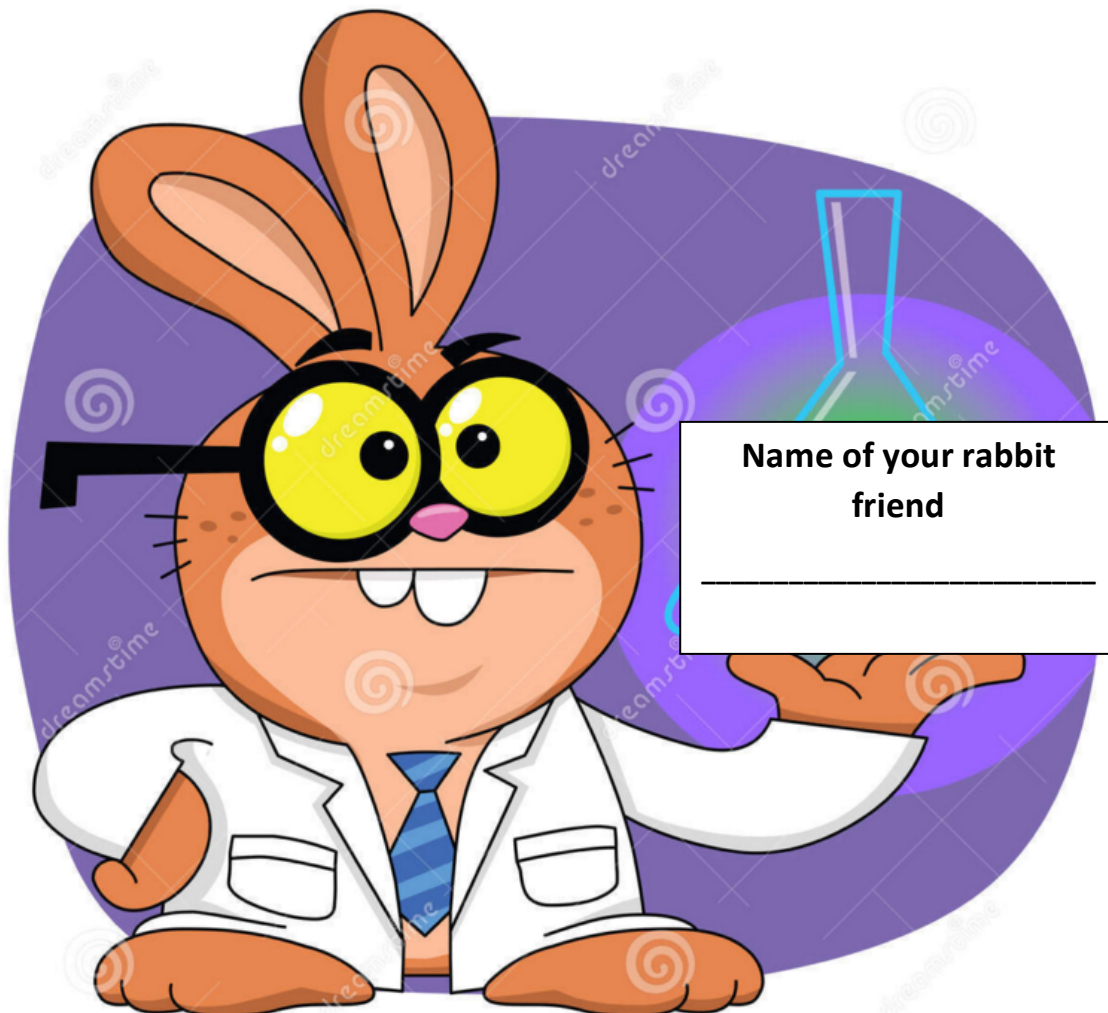
### Round pin holder:

20 pins

**Names** \_\_\_\_\_

**Teacher** \_\_\_\_\_

**Period** \_\_\_\_\_



**INTRODUCTION:**

In the dissection of a mammal, you are studying one of the most complex forms of life - an animal belonging to the biological group including man himself. Needless to say, the mammal is a complicated, but extremely interesting subject for study. Whether the dissection is made individually or as a group study, follow each step in the directions carefully. Proceed slowly, making close observations as you work. Make sure you answer and questions and make observations when needed.

The rabbit that you will be dissecting is what is referred to as a “common lab rabbit”. These rabbits are the result of interbreeding of two wild rabbit species: white and black rabbits. You will either receive a dominant white (W) or recessive spotted (w) lab rabbit for dissection. Rabbits with black eyes (B) are dominant to rabbits with red eyes (b). These rabbits are raised for the function of vertebrate anatomical study.

1. Complete a dihybrid Punnett Square: If a heterozygous female rabbit with white fur and black eyes was crossed with a heterozygous male rabbit with white fur and homozygous for red eyes, what would the phenotypic ratio be of the offspring?


**PURPOSE:**

To study the internal anatomy of a representative of the class Mammalia.

**MATERIALS:**

A preserved rabbit, dissecting tray, and dissecting kit.

**SAFETY:**

Gloves, safety goggles, and apron must be worn at all times!! Anyone not wearing these items will NOT dissect. Be sure to follow all lab safety rules!

2. **CLASSIFICATION:** Classify the common lab rabbit from largest taxonomic group down to the smallest. (continued on next page)

Domain: \_\_\_\_\_

Kingdom: \_\_\_\_\_

Phylum: \_\_\_\_\_

Class: \_\_\_\_\_

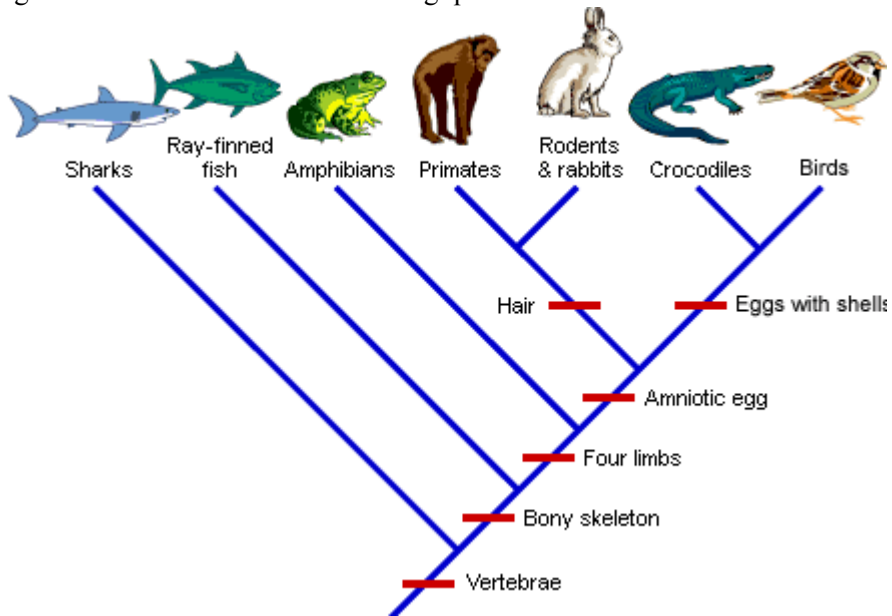
Order: \_\_\_\_\_

Family: \_\_\_\_\_

Genus: \_\_\_\_\_

Species: \_\_\_\_\_

Use the cladogram below to answer the following questions.



3. What trait according to the cladogram separates rabbits and rodents from crocodiles and birds?
4. What traits do the rabbits and rodents share with ray-finned fish?
5. What organism is the rabbits and rodents closely related to?
6. What characteristics do the rabbits and rodents share with primates?

**DIRECTIONAL TERMS:**

- Cranial - toward the head
- Caudal - toward the rear
- Dorsal - toward the spinal cord (back)
- Ventral - toward the belly
- Medial - toward the middle
- Distal - away from
- Lateral - to the side

PROCEDURE:

Observe the external features of the rabbit.



7. Humans sweat when they are too hot and shiver when they are too cold. Rabbits cannot sweat, so through the use of their ears they can cool their body down when they are too hot. What is this an example of?

---



8. Observe the front incisor teeth of your rabbit. How many do you see? \_\_\_\_\_ Describe how the rabbit would use these teeth to eat its food.

---

---

---



9. Observe the bottom of your rabbit's feet. How do the bottom of the rabbit's feet differ from a cat or dog?

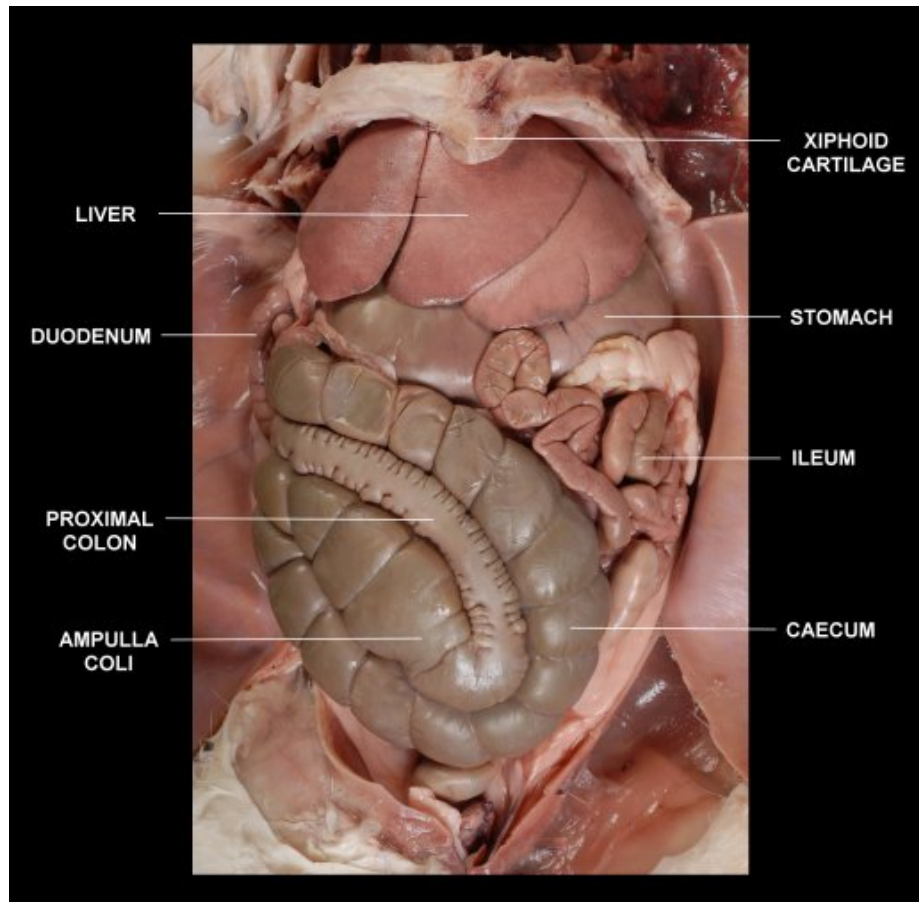
---

---

---

Place the rabbit in the dissecting tray, ventral side up. Tie the legs securely to the corners of the tray by passing a string or rubber bands (2 bands together) under the tray from front leg to front leg and hind leg to hind leg. Be sure that the specimen is held firmly before you begin dissecting.

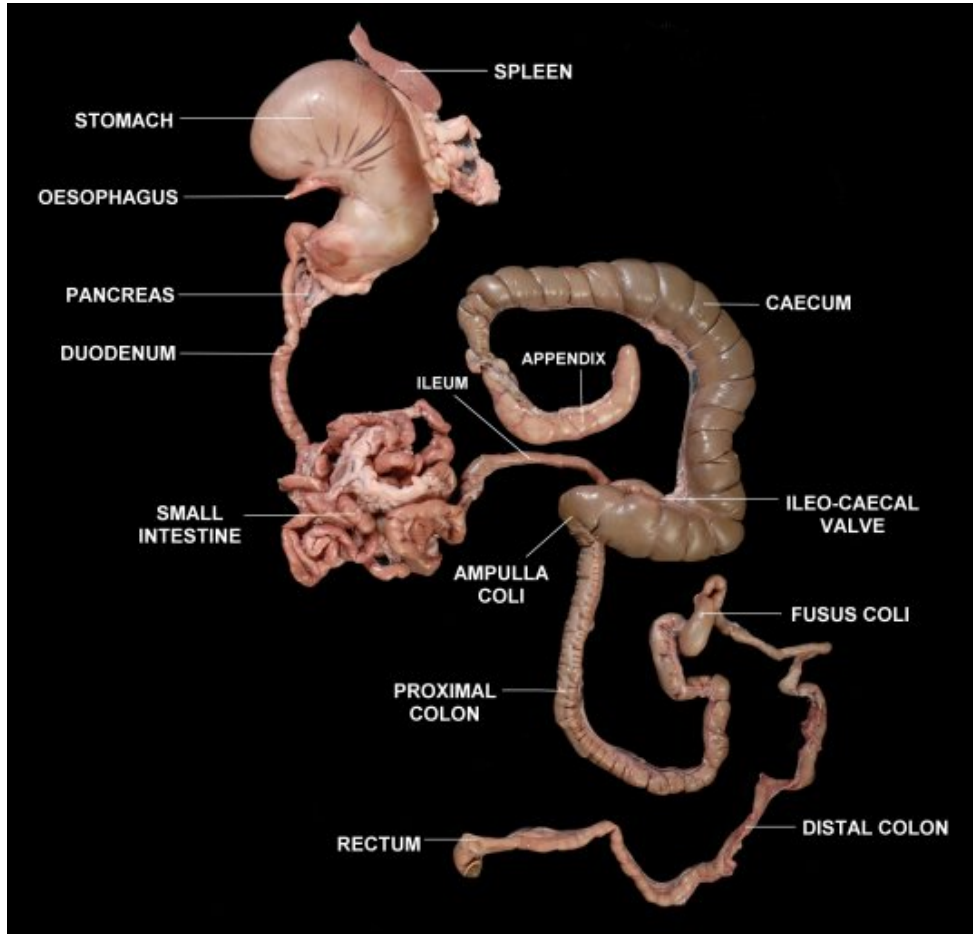
Find the lower edge of the sternum (breastbone) and make an incision through the skin from that point to the pelvis. This will expose the layers of the abdominal muscles. Strip the skin well back to the sides and examine the muscle layer. Using the scissors or the scalpel, make another incision through the muscle layer. This will expose a thin membrane, the peritoneum, which lines the abdominal cavity. Cut through the peritoneum to expose the abdominal organs. Open the abdominal cavity wide by making several lateral cuts and pulling the skin and muscle layer well to the side. Use pins to pin back the cut sections of skin and muscle.



Locate the diaphragm, which divides the abdominal cavity from the thoracic or chest cavity. Using your scissors, cut through the ribs along the left and right side of the breastbone to the neck. Continue the incision to the larynx which you detect as a hard oval lump just below the throat. The incision in the throat should be deep enough to expose the trachea. Most of the organs you will now study are now exposed.

Locate the liver, which occupies the upper right area in the body cavity, just below the diaphragm. Raise the liver with your forceps and find the prominent gall bladder, and the bile duct, which leads to the small intestine. Notice the blood vessels which lead to the liver from the lower side and to the heart from the upper region. The stomach is very prominent, although it may be partially hidden by a lobe of the liver. Find the gullet which passes through the diaphragm and enters the stomach

at its upper end. At the point where the lower end of the stomach joins the small intestine is a muscular valve, the pylorus. The pancreas is large in the mammal and is located below the stomach. It appears as a white, granular organ. Examine it closely to see if you can find the pancreatic duct which empties into the intestine near the entrance of the bile duct.



10. What is the function of the liver? \_\_\_\_\_

\_\_\_\_\_

11. What is the function of the pancreas? \_\_\_\_\_

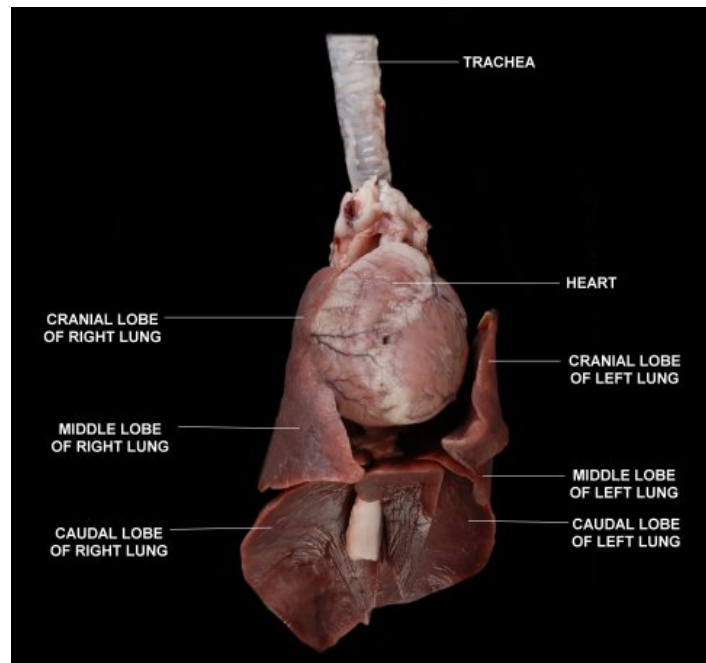
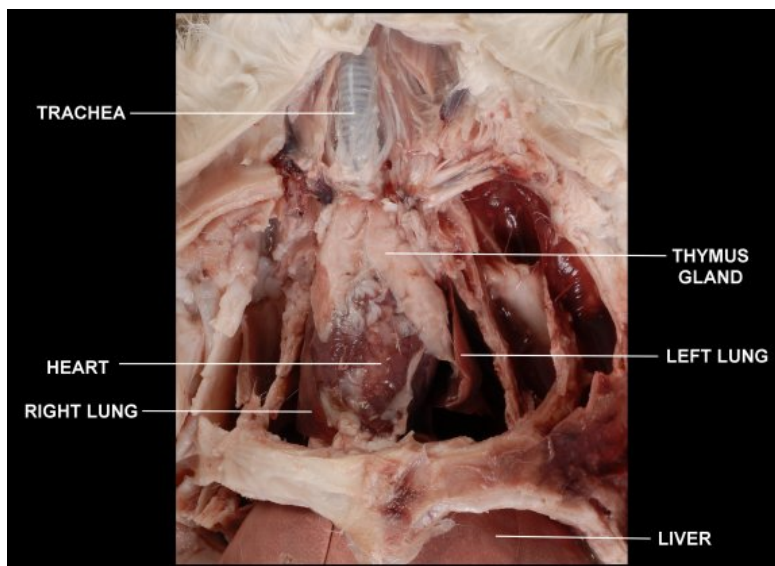
\_\_\_\_\_

The small intestine is a coiled and twisted tube, many feet in length. It is held in place by fan-like folds of the mesentery. Raise the small intestine at several points and examine the mesentery. Notice the many blood vessels along the surface of the intestine through which the absorption of food takes place. The small intestine begins at the stomach and ends at the junction with the large intestine. The large intestine appears as a compact coil. Find the junction of the large and small intestine. Below the junction is a large, blind end, the caecum. Trace the large intestine from the caecum to the point where it leads to the anal opening.

Press the digestive organs to one side and find the kidneys, located on either side of the spinal column. They are red in color and bean-shaped. Find the small tubes, the ureters, which lead from the interior side of each kidney to the bladder.

Spread the ribs apart and examine the heart. It lies in a thin-walled sac, the pericardium. Open the pericardium and examine the surface of the heart and the great blood vessel connected to it. On either side of the heart are the large, spongy lungs. Find the trachea which leads to the lungs. Just above the lungs, the trachea divides to form a Y. Try to find this with your probe. Immediately under the trachea is the gullet leading to the stomach. Follow the trachea to the larynx. As you cut through the neck tissues, watch for white, granular lymph glands and the thyroid glands which appear as two pinkish, rounded structures, one on either side of the trachea, but below the pharynx.

12. What is distinguishable about the trachea? \_\_\_\_\_



Loosen the liver from the diaphragm and cut the gullet, passing through the diaphragm just above the stomach. Grasp the liver and pull downward gently. Using your scissors, cut the membranes which fasten the digestive organs along the back. Continue pulling and cutting the membranes, using care NOT to cut the large vessels running along the back or to damage the kidneys and ureters. Follow the lower end of the large intestine and cut it just above the anal opening. You should now be able to lift out the digestive organs and spleen in one piece. Remove the liver and spleen. Unravel the small intestine from the stomach to the large intestine and determine its length. Loosen the coils of the large intestine and determine the length of this portion of the digestive tract. Now estimate the length of the gullet you removed and by adding the lengths of the gullet, stomach, small and large intestine, you should be able to determine the total length of the alimentary canal. Cut the stomach and the pylorus laterally and examine the muscle layers.

13. Trace (write) the pathway of the rabbit's digestive tract. \_\_\_\_\_

\_\_\_\_\_

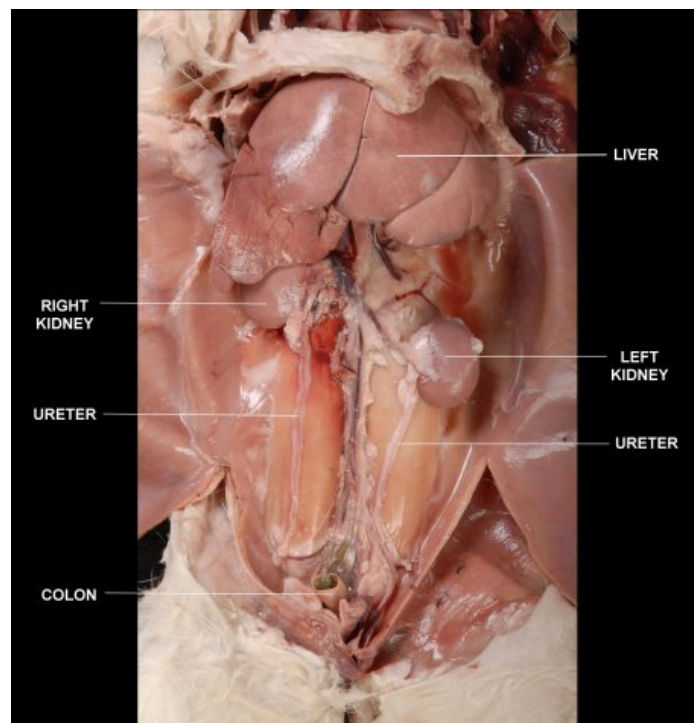
14. How long does the small intestine measure in feet? \_\_\_\_\_

15. What is the function of the small intestine? \_\_\_\_\_

16. Describe the stomach contents. \_\_\_\_\_

\_\_\_\_\_

Discard the digestive organs and examine the kidneys. Cut under each kidney and remove it along with the ureter tube. Cut a kidney laterally and examine its internal structure. You should find a spongy cortex on the outer curved side and a hollow pelvis on the inner concave side. See if you can find the renal blood vessels which lead to and from the kidneys. Discard the kidneys.



17. Describe the

inside of the



kidney. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

18. What is the function of the kidney? \_\_\_\_\_

19. Cut the trachea about halfway down its length. Now insert the pipette with attached bulb into the part of the trachea still leading to the lungs. What things do you observe when you squeeze the bulb?

\_\_\_\_\_

\_\_\_\_\_

Cut around the larynx located high in the neck and raise it with your fingers. Using your scalpel, cut along the trachea, lifting it as you cut. You should be able to lift the heart and the lungs from your specimen. Cut the large blood vessels. Find the aorta, which passes between the lungs on the back side of the heart. Cut the aorta loose. The other tube is the gullet. Trace it to the upper side of the larynx and remove it. Now lay the lungs and heart aside. Find the epiglottis, a muscular valve at the top of the larynx. Notice the cartilaginous rings composing the trachea. Follow the trachea to the Y just above the lungs. Each of these divisions is called a bronchus. Cut through the lobe of the lung to see the large bronchial tubes.

Remove the heart from the lungs by cutting the pulmonary arteries and veins. If the heart is sufficiently large, you should find the vena cava and the pulmonary veins leading to the atria and the aorta and the pulmonary artery leading from the ventricles. Cut the heart laterally and examine the chambers. The string-like structures in the ventricles are the tricuspid and the bicuspid valves, which are controlled by tendons.

20. How many chambers are there in the rabbit heart? Name them. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

The dissection of the brain is difficult and tedious work. Turn the animal so that the dorsal side is up. To expose the brain, remove the skin from the entire skull. The simplest method to exposing the brain with the instruments you have is to cut through the skull near the center, using extreme care not to break the brain membranes. After the skull is opened, use the handle of the scalpel to chip away the pieces. Do NOT use the blade of the scalpel for chipping. When chipping, hold the scalpel by the side of the handle, NOT BY THE BLADE. If bone cutters or heavy forceps are available, use them in preference to the scalpel handle for chipping. When the brain is completely exposed, you should find the two large cerebral hemispheres and the cerebellum posterior to the cerebrum. Unless the brain is removed, you will not find the medulla, although the spinal cord can be found below the brain.

21. Label and color the following structures on the rabbit diagram on the next page.

- Diaphragm (Yellow)
- Heart (Red)
- Kidney (Pink)
- Large Intestine (Brown)
- Liver (Black)
- Lung (Purple)
- Small Intestine (Light Green)
- Spleen (Green)
- Stomach (Light Blue)
- Trachea (Dark Blue)
- Urinary Bladder (Orange)

