

Frog Dissection Lab Report

Objective:

Frogs belong to the class amphibian. Although many differences exist between humans and frogs, the basic body plans are similar. Humans and frogs both belong to the phylum Chordata. By studying the anatomy of the frog, you will better understand the human body systems.

Purpose:

1. Investigate the anatomy and organ systems of the frog.
2. To observe the relationship between organ structure and function.
3. To compare frog and human anatomy to better understand body systems.

Vocabulary:

1. Dorsal – toward the back
2. Ventral – toward the belly
3. Lateral – toward the sides
4. Median – toward the middle
5. Anterior – toward the head
6. Posterior – toward the tail

Partner Roles:

Every other step will be hands on. Pick one person to start and then alternate. If you are the person dissecting, then the other person in the pair is assisting. After the dissection is completed, share your observations so that both people have a completed frog identification diagram. Conclusion questions will be individual work.

Materials:

Gloves	Dissecting tray	Preserved frog
Forceps	Scalpel	Dissecting scissors
Hand lens	Probe	Dissecting pins

Preparation:

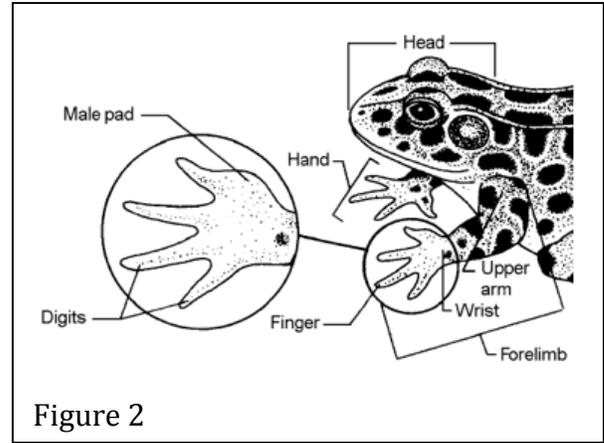
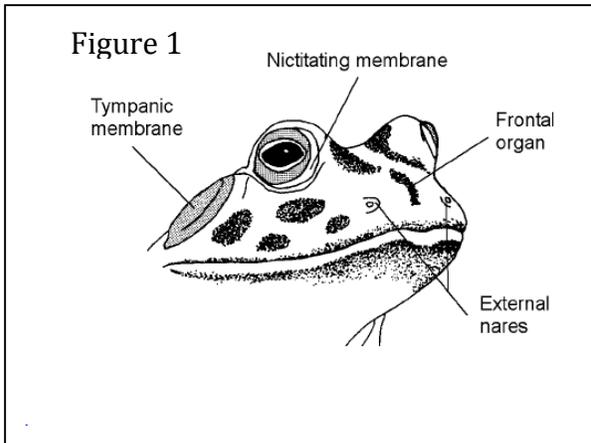
1. Tie hair back, put on apron if you desire and get a pair of gloves.
2. Partner 1 – get tray, frog
3. Partner 2 – get instruments and paper towel
4. Both partners lay out supplies at their lab table, placing the instruments on the paper towel.
5. Decide who will start the dissection, remember to alternate turns!
6. When you are ready to begin, look forward and be silent.

Procedure:

Part A - External Anatomy:

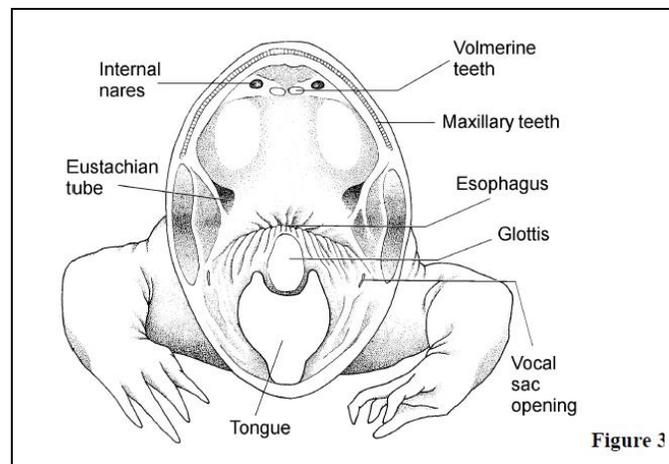
1. Make sure frog is right side up so that you can see the face.

2. Identify the eyes, which have a nictitating membrane that serves to moisten the eye.
3. Identify the tympanic membrane, or eardrum. It is located behind each eye. (Look at Figure 1)
4. Find the external nares or nostrils. (Look at Figure 1)
5. Find the digits, which are like fingers on both the fore and hind limbs (Figure 2)
6. Determine if your frog is male or female by looking at the innermost finger of the forelimb. The male pad is an enlarged darker patched pad that the male uses to grasp a female during mating. (Figure 2)



Part B - Mouth:

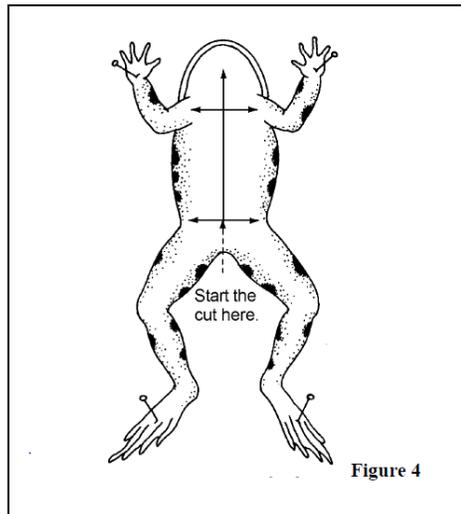
1. Pry open the mouth. Use the scissors to cut the corner of the mouth where the **maxilla** (upper jaw) and mandible (lower jaw) join together.
2. Find the tongue and pull it out.
3. Feel the **maxillary teeth** that are along the rim of the upper jaw. (Look at Figure 3). Notice that only the upper jaw has teeth.
4. Locate the glottis (Figure 3). It is a slit opening for the voice box on the floor of the mouth.
5. Find the esophagus (Figure 3) at the rear of the mouth.



Part C – Internal Anatomy: Dissection

Opening up the frog: (Figure 4)

1. Place the frog ventral side up (on its back) and pin its four limbs down
2. Lift the frog's skin with forceps between the rear legs.
3. Make a small cut through the lifted skin with the scalpel. Take care to cut only the skin. You are making a starting place for the scissors.
4. Use the scissors to continue the incision up to the midline all the way through the frog's skin.
5. Stop cutting when your scissors reach the frog's neck.
6. Now, you will cut horizontally. Use the scissors to make sideways incisions in the skin
7. The first incisions are made between the front legs. Then do the same with the rear legs.
8. Be careful to cut only skin, not muscle.
9. Pick up the flap of skin with the forceps.
10. Use a scalpel to help separate the skin from the muscle layer below. Then pin the skin to the dissection tray.



Cutting the Muscle and Bone:

First muscle incision -

1. Do the same incisions, this time through the abdominal muscle. You will find it easier to begin the vertical incision by lifting the muscle layer with the forceps. Do this between the rear legs of the frog.
2. Make a small cut with the scalpel.
3. Use the scissors to continue the incision up the middle to just below the front legs.
4. Don't cut too deeply, the muscle is thin. It is easy to damage the organs underneath.

Cutting the bone:

5. Cut through the chest bones. When you reach the point just below the front legs, turn the scissors blades sideways, so that you only cut through the bones in the chest. Be careful that you don't cut too deeply.

6. Stop cutting when you reach the frog's neck.

Second (Horizontal) Muscle Incision:

7. Make the horizontal (sideways) incisions, just as you did with the skin using the scalpel. The first incision is between the front legs, the second is between the rear legs.
8. Separate the muscle flaps from the organs below. Pull back and hold the muscle flaps with the forceps.
9. Use scalpel to separate the muscle from the organ tissue.
10. Pin the muscle flaps back far enough to allow easy access to the internal organs.

Part D – Internal Body Systems:

1. We are now ready to explore the frog's anatomy. To make our exploration easier, we will look at the organs in four different layers, beginning with the liver and heart layer.

Layer 1

2. The liver is a large, brownish colored organ covering most of the body cavity.
3. The heart is a small triangular shaped organ between the front legs, just above the liver.
4. The frog's heart has three chambers. The picture (right) shows only the lower chamber of the heart. Can you find all three chambers?

Layer 2

5. Reveal layer two. The heart and liver in layer one hide some of the organs below them.
6. Use the forceps and the probe to pick up the liver and reveal layer two.
7. Layer two includes the gall bladder, the stomach, and the small intestine.
8. Examine the gall bladder. Under the liver, we see a small, greenish sac. This is the gall bladder. You might also see it by separating the right and middle lobes of the liver.
9. Examine the stomach. The stomach looks like a sac on the frog's left side (on your right). It is a large firm organ.
10. Examine the small intestine. The small intestine is a long folded, tube like organ, that is posterior the stomach.

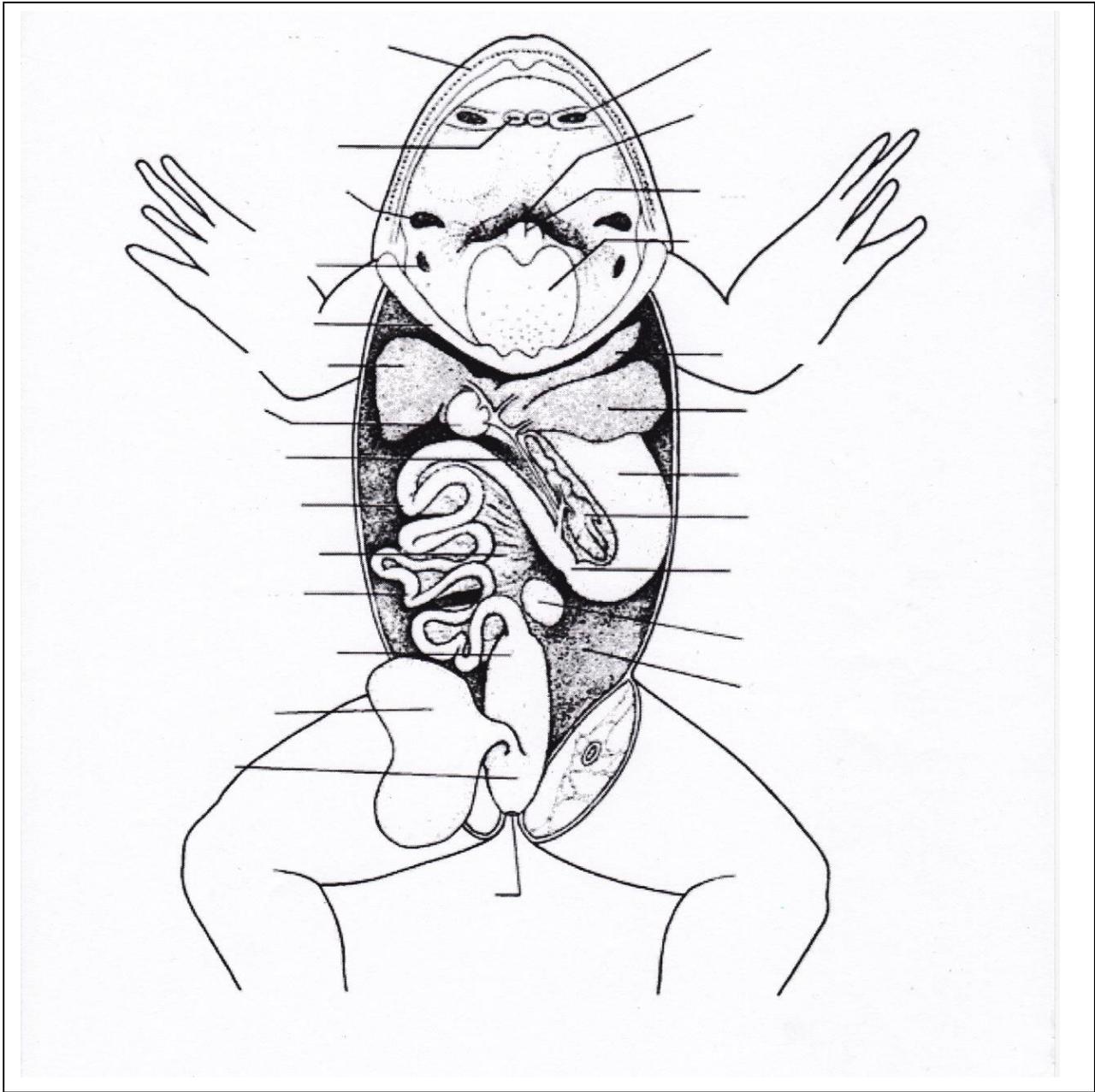
Layer 3

11. Reveal layer three. Remove the liver to see the organs in layer three.
12. The liver is easier to remove if you remove the gall bladder and heart at this time. Put to the side, but still on the tray.
13. Take a close look at the lungs and pancreas. The lungs are difficult to locate in a preserved frog. They are on either side of the heart.
14. You may need to remove the lungs and place them on the tray as well.
15. You can't see the pancreas without lifting the stomach and intestines with the forceps. The pancreas is a thin, yellowish ribbon.
16. The intestines are held in place by thin, transparent tissue called the mesentery.
17. If you have a female frog, you will need to remove the ovaries before you can see layer four. Place the organs in the tray.

Layer 4

18. To see layer four, you need to remove the stomach, small intestine, large intestine, and pancreas. Place on the tray.
19. Examine the spleen. Locate the spleen in the male frog. It is a small, round reddish organ. It is a little more difficult to find the spleen in a female frog
20. The kidneys are elongated, brownish colored organs found in the lower part of the frog's abdomen.
21. Female kidneys are located in the same place but can only be seen after removal of the ovaries and oviducts.

Part E - Identification: Label the parts, you can do this with your partner.



Clean Up

Clean up your work area and equipment. Return the cleaned dissecting equipment to the appropriate place.

Conclusion Questions – Independent work (Answer in complete sentences).

1. Did you have a male or female frog? How did you identify this fact? (be specific as to how you can tell the difference)
2. Where is the frog's liver and what is the purpose of this structure?
3. How are the feet of the frog adapted to swimming?
4. How does the length of the small intestine relate to its function in absorbing digested food?
5. The frog's heart is different than the human heart – describe the differences you saw. Later, research the differences and write a paragraph summarizing the differences. Make sure to provide a reference stating where you got your information.

Citation: