

Name: _____ Period: _____ Date: _____

Frog Dissection Academic

[Bullfrog Intro Video](#)

Virtual Options:

[Virtual Dissection](#)

[External Anatomy](#) Photos

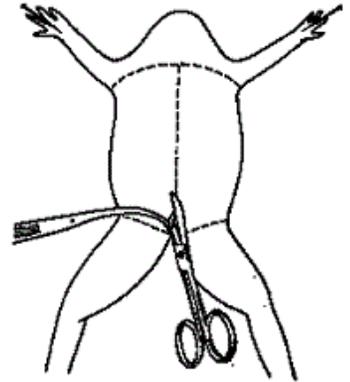
[Dissection](#) Photos

[External Frog Diagram](#)

*Lab Safety:

Goggles, gloves, aprons, long pants and closed-toed shoes must be worn. Specimen must be kept in tray at all times and disposed of properly.

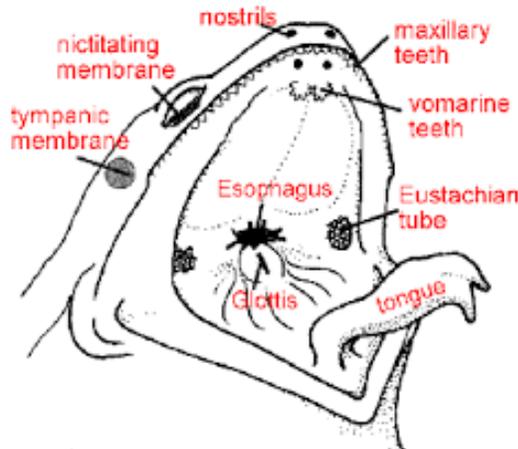
Scissors/tweezers should be use care and slicing should be made away from student.



Dissection Instructions

1. Place the frog in the dissecting pan ventral side up.
2. Use scissors to lift the abdominal muscles away from the body cavity. Cut along the midline of the body to the forelimbs.
3. Make transverse (horizontal) cuts near the arms and legs.
4. Life the flaps of the body wall and pin back.

*If your specimen is a female, the body may be filled with eggs. You may need to remove these eggs to view the organs. Males have eyes smaller than the tympanum.



Locate each of the organs below. Check the box to indicate that you found the organs.

1. Fat Bodies --Spaghetti shaped structures that have a bright orange or yellow color, if you have a particularly fat frog, these fat bodies may need to be removed to see the other structures. Usually they are located just on the inside of the abdominal wall.

2. Peritoneum A spider-web like membrane that covers many of the organs; you may carefully pick it off to get a clear view

3. Liver--The largest structure of the the body cavity. This brown colored organ is composed of three lobes. The **right lobe**, the **left anterior lobe**, and the **left posterior lobe**. The liver is not primarily an organ of digestion, it does secrete a digestive juice called bile. Bile is needed for the proper digestion of fats.

4. Heart - at the top of the liver, the heart is a triangular structure. The **left and right atrium** can be found at the top of the heart. A single **ventricle** located at the bottom of the heart. The large vessel extending out from the heart is the **conus arteriosis**.

5. Lungs - Locate the lungs by looking underneath and behind the heart and liver. They are two spongy organs.

6. Gall Bladder --Lift the lobes of the liver, there will be a small green sac under the liver. This is the gall bladder, which stores bile. (hint: it kind of looks like a booger)

7. Stomach--Curving from underneath the liver is the stomach. The stomach is the first major site of chemical digestion. Frogs swallow their meals whole. Follow the stomach to where it turns into the small intestine. The **pyloric sphincter valve** regulates the exit of digested food from the stomach to the small intestine.

8. Small Intestine--Leading from the stomach. The first straight portion of the small intestine is called the **duodenum**, the curled portion is the **ileum**. The ileum is held together by a membrane called the **mesentery**. Note the blood vessels running through the mesentery, they will carry absorbed nutrients away from the intestine. Absorption of digested nutrients occurs in the small intestine.

9. Large Intestine--As you follow the small intestine down, it will widen into the large intestine. The large intestine leads to the cloaca, which is the last stop before solid wastes, sperm, eggs, and urine exit the frog's body. (The word "cloaca" means sewer)

10. Spleen--Return to the folds of the mesentery, this dark red spherical object serves as a holding area for blood.

11. Esophagus--Return to the stomach and follow it upward, where it gets smaller is the beginning of the esophagus. The esophagus is the tube that leads from the frogs mouth to the stomach. Open the frogs mouth and find the esophagus, poke your probe into it and see where it leads.

STOP! If you have not located each of the organs above, do not continue on to the next sections!

Removal of the Stomach: Cut the stomach out of the frog and open it up. You may find what remains of the frog's last meal in there. Look at the texture of the stomach on the inside.

Measuring the Small intestine: Remove the small intestine from the body cavity and carefully separate **the mesentery** from it. Stretch the small intestine out and measure it. Now measure your frog. Record the measurements below in centimeters.

Frog length: _____ cm Intestine length _____ cm

Urogenital System

The frog's reproductive and excretory system is combined into one system called the urogenital system. You will need to know the structures for both the male and female frog

Kidneys - flattened bean shaped organs located at the lower back of the frog, near the spine. They are often a dark color. The kidneys filter wastes from the blood. Often the top of the kidneys have yellowish stringy fat bodies attached.

Testes - in male frogs, these organs are located at the top of the kidneys, they are pale colored and roundish. □

Oviducts - females do not have testes, though you may see a curly structure around the outside of the kidney, these are the oviducts. Oviducts are where **eggs** are produced. Males can have structures that look similar, but serve no actual purpose. In males, they are called vestigial oviducts. □

Bladder - An empty sac located at the lowest part of the body cavity. The bladder stores urine. □

Cloaca - mentioned again as part of the urogenital system - urine, sperm and eggs exit here. □

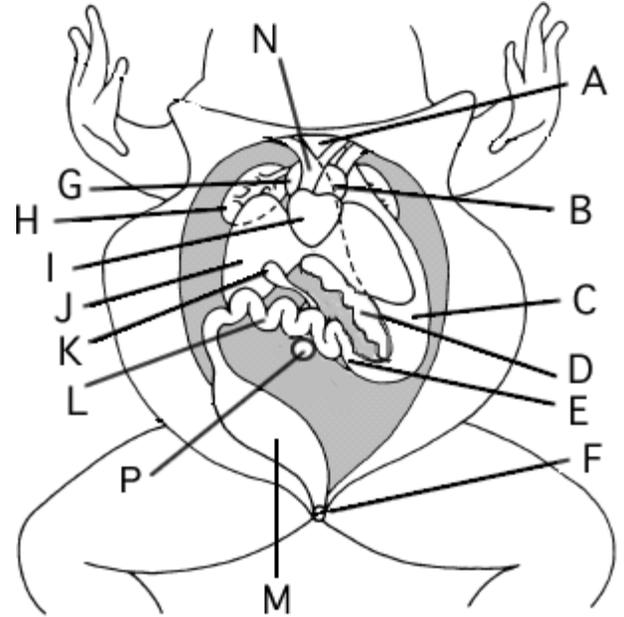
Post Lab Questions (14 pts)

1. The membrane holds the coils of the small intestine together:
__mesentery_____
2. This organ is found under the liver, it stores bile: _____
3. Name the 3 lobes of the liver: _____, _____,

4. The organ that is the first major site of chemical digestion: _____
5. Eggs, sperm, urine and wastes all empty into this structure: _____
6. The small intestine leads to the: _____
7. The esophagus leads to the: _____
8. Yellowish structures that serve as an energy reserve: _____
9. The first part of the small intestine (straight part): _____
10. After food passes through the stomach it enters the: _____
11. A spiderweb like membrane that covers the organs: _____
12. Regulates the exit of partially digested food from the stomach: _____
13. The large intestine leads to the _____
14. The largest organ in the body cavity: _____

Label the Diagram (14 pts)

- A. _____
- B. _____
- C. _____
- D. _____
- E. _____
- F. _____
- G. _____
- H. _____
- I. _____
- J. _____
- K. _____
- L. _____
- M. _____
- N. _____



Analysis Questions (12 pts)

1. How does an organ differ in the *Rana catesbeiana* compared to *Homo sapiens*? Why would the frog have this difference? To what system does this organ belong? 4 pts

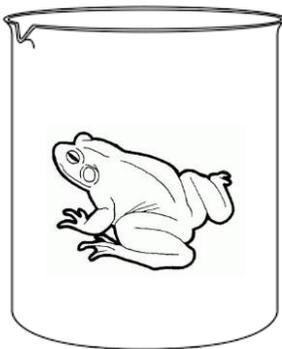
2. How does the frog maintain homeostasis in different environmental conditions?

3. Name three ways bullfrogs ensure their own survival. This could include structures, functions and/or behavior. 3 pts

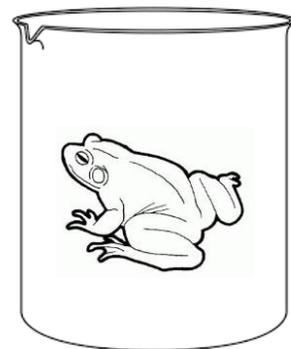
4. How does osmosis and cell transport help bullfrogs survive? Go to this link to investigate: <https://cptv.pbslearningmedia.org/resource/lps07.sci.life.evo.frozensfrogs/frozen-frogs>

- Click on Support Materials>Background Reading
- Watch the video
- Answer the following questions.

- A. Why is it beneficial for the wood frog to become frozen during the winter?
- B. What evolutionary process is at work here?
- C. Why can the frog freeze and thaw but you cannot?
- D. What adaptations for protection from the cold do other animals in temperate regions have?
- E. Model the movement of water in the winter and the summer below. Use arrows to show water movement and star symbol ★ to show relative number of solutes.



Winter



Summer

Type of Solution? _____

Extension: Read [this chapter](#) from Survival of the Sickest Chapter and answer the [questions](#).