

Name: _____

Date: _____

Life Science

Period: _____

Section C5.2: *Amphibians*



FROG DISSECTION

Student Instructions

Purpose:

To investigate the internal and external structures of a frog and relate the structure of the frog to that of other vertebrates.

Materials:

- Dissecting tray
- Probe
- Scissors
- Forceps
- Frog
- Dissecting pins

PART ONE: External Structure

Carefully observe the frog, as your homework analysis questions will be based on what you saw during the dissection.

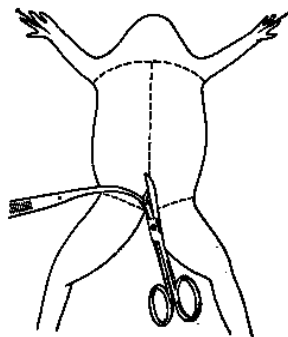
1. Take a look at both the fore (front) and hind legs. Compare their length and structure. Try to stretch out the hind legs to see their full length.
2. Observe the **eyes** of your frog. The eyes are located on the top of the frog's head, as opposed to on the front (like yours) or on the sides (like a fish).
3. Notice the membrane on the eyes. Refer to your frog sandwich to identify the name of this protective feature.
4. Notice the difference in color between the dorsal (top) and ventral (belly) sides of the frog. Think about how this difference may help the frog survive in its natural environment.
5. Open your frog sandwich to the digestive system/oral cavity view.
6. Open the frog's **mouth**. Locate the vomerine teeth just behind and between the internal nostrils. Feel the vomerine teeth by running one of your fingers over them.

7. Run your finger around the edge of the upper and lower jaws. The top jaw of the frog's mouth (and yours, too) is called the maxillary. If you need to, refer to your frog sandwich to locate the maxillary teeth.
8. Observe the ears (**tympanic membranes**) located behind the eyes. Now look at the roof of the mouth. You will see two openings on each side of the jaw. **Carefully** insert the probe into the openings. These are the **eustachian tubes** which lead to the ears. The tympanic membrane and the eustachian tubes aid in the frog's hearing.
9. On either side of the **vomerine teeth** (refer to your frog sandwich), you will see two small openings; these are the **nostrils**. **Carefully** insert the probe into one of the openings. Notice where the probe then comes out.
10. Observe the **tongue** and notice where it is attached. How is its attachment different than yours?

PART TWO: Internal Features

11. Place the frog on its back on the dissecting tray. Using a pair of scissors, make an incision through the skin at the top of the frog's **left leg**. Cut all the way around the leg and remove the skin from the leg. You should be able to pull it off using a pair of forceps (it should come off like pulling a sock off your leg, turning it inside out).
12. Examine the muscle bundles. They are held together by thin tissue, but you should be able to separate some of them. Notice the knee joint.
13. The muscles that you can see in the leg are called skeletal muscles because they are attached to bone. As in your body, they are in opposing pairs, like your bicep and tricep. Try squeezing the muscles at the front of the thigh and calf, and notice what happens with the movement!
14. Pick up the loose skin between the hind legs with a pair of forceps and snip away the skin from the entire ventral (belly) side of the abdomen. Cut through the abdominal muscles up the middle from between the legs to the jaw. Be careful not to damage the internal organs; cut just below the skin.

Make your incisions in the frog as diagrammed below (according to the dotted lines):



15. When you get near the top of the abdomen, you will encounter the bones of the pectoral girdle; the arms are attached to the pectoral girdle. (In your body, you can feel part of the pectoral girdle – collar bones and shoulder blades). Cut through the bones of the pectoral girdle and remove the muscle from the abdomen.

16. Use your frog sandwich to identify the internal organs on your frog, according to their descriptions, and check off the box once you locate them:

- a) **Liver** – largest internal organ; brown, three lobed; located at the top end of the body cavity.
- b) **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)
- c) **Stomach** – white J-shaped organ
- d) **Esophagus** – connects to the top end of the stomach
- e) **Small intestine** – connects to the bottom end of the stomach
- f) **Pancreas** – small bit of tissue that lies in between the stomach and the first loop of the small intestine
- g) **Large intestine** – short but wide tube
- h) **Cloaca** – leads to the outside
- i) **Kidneys** – large, paired organ that runs down the center of the frog's abdomen and is connected to the bladder
- j) **Lungs** (not in proceeding diagram) - Locate the lungs by looking underneath and behind the heart and liver. They are two spongy organs

STOP!

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

17. If you have time, carefully remove the stomach from the inside of the frog and cut it open. You may find what remains of the frog's last meal in there. Look at the texture of the stomach on the inside – is it smooth or does it have ridges?

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Analysis Questions

1. You observed a protective layer over the frog's eye at the beginning of this lab. What is the name of this membrane and what two benefits does it provide for the frog's eyes?

2. Why do you think the placement of the eyes is particularly beneficial to the survival of the frog in its environment?

3. The frog is colored slightly different on its dorsal (top) and ventral (bottom/belly) sides. How does this difference in coloration aide in the survival of the frog in their natural environment?

4. The frog has two different kinds of teeth: maxillary and vomerine. Based on their appearance, do you think that the frog is able to chew its food? Why or why not?

5. The lungs are rather puny compared to the frog's overall size. Why do you think it may not be so important for the frog to have large, well-developed lungs?

6. The cloaca is the only opening through which material exits the frog's body. It services the reproductive (both male and female), excretory and digestive systems. Identify which materials exit the body through the cloaca from each of these three body systems.

7. Using your frog sandwich and the organs you observed during the dissection (also listed on page 3 of the lab packet), identify the organs on the diagram below:

