

Name: _____ Date: _____



Gen Bio 2 Lab #9: Amphibians, Reptiles, & Birds

Pre-Lab Reading: pages 692-700

Pre-Lab Vocabulary:

1. Endothermic –
2. Ectothermic –
3. Fat bodies –
4. Cloaca –
5. Atrium –
6. Ventricle –
7. 3-chambered heart –
8. 4-chambered heart –
9. Pulmonary circuit –

Procedure 1 Bird Skeleton – Observe the bird skeleton and note the bones of the wings and position of the pectoral and pelvic girdles. **Write 2 sentences about your observations.**

Procedure 2 Bird X-rays – Observe the X-Rays of birds. **How do they compare to one another? What differences do you notice?**

Procedure 3 Preserved Birds- Observe the preserved bird specimens. **Record any thoughts or observations.**

Procedure 4 Birds' nests – **What does the structure of the 2 bird nests say about these birds and parental care?**

Procedure 5 Preserved Reptiles – Observe the preserved specimens of Reptiles. **How many of these have you seen in the wild? Which reptiles do you find most interesting/gross/cool, and why?**

Procedure 6 Reptile X-Rays – Observe the X-rays of several reptiles. Note the internal skeleton of the turtle.

- 1) **Why does a turtle have bones and an exoskeleton?**

- 2) **What do the baby turtle eggs in the X-ray look like?**

- 3) **Can you see the dwarf crocodiles in the egg X-ray? What developmental stage are these at?**

Procedure 7 Frog X-Ray – Observe the X-ray of the frog. **Record any thoughts or observations.**

Procedure 8 Preserved Frogs – Observe the preserved frogs. **Record any thoughts or observations.**

Procedure 9 Frog Poster – Look at the cool 3D frog poster. **Record any thoughts or observations.**

Procedure 10: Frog Dissection—Follow the Directions below to complete your frog dissection. **Be sure to answer all the questions.**

Self-Guided Frog Dissection

Objectives:

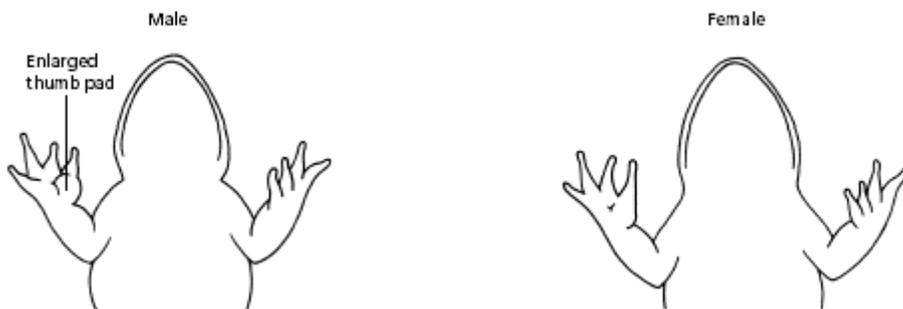
- *Describe* the appearance of various organs found in the frog.
- *Name* the organs that make up various systems of the frog.

Materials:

- gloves
- forceps
- preserved frog
- dissecting pins (6–10)
- dissecting tray and paper towels
- plastic storage bag
- scissors
- marking pen
- dissecting needle

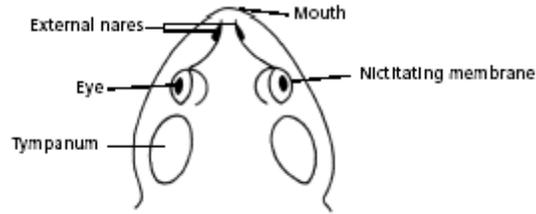
Procedure:

1. **Put on gloves.**
2. Place a frog on a dissection tray. To determine the **frog's sex**, look at the hand digits, or fingers, on its forelegs. A male frog usually has thick pads on its "thumbs," which is one external difference between the sexes, as shown in the diagram below. Male frogs are also usually smaller than female frogs. Observe several frogs to see the difference between males and females.

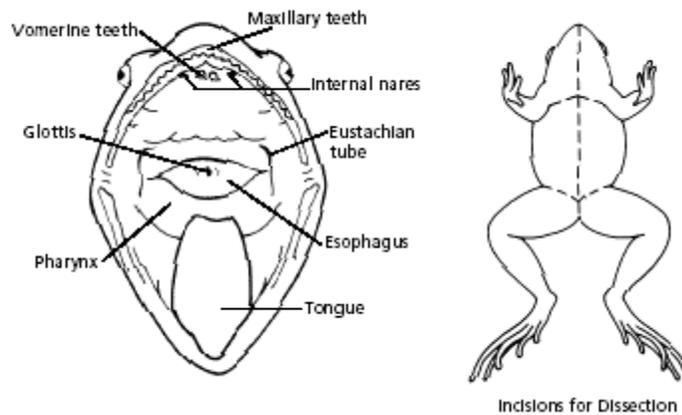


What is the sex of your frog specimen? _____

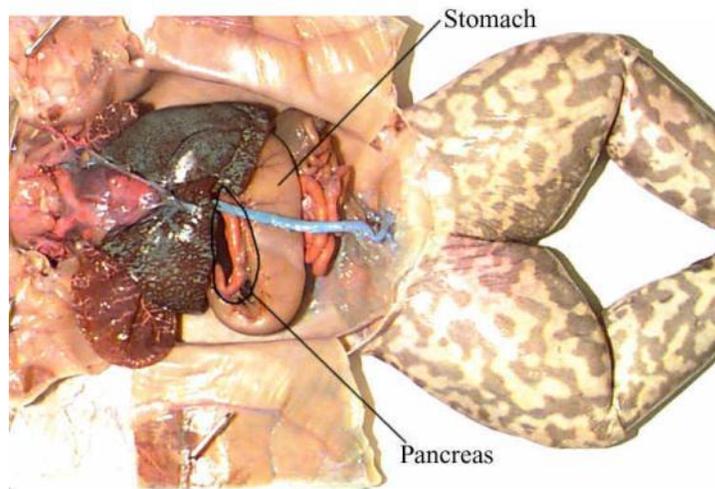
3. Use the diagram below to locate and identify the external features of the head on your dissection specimen: **mouth, external nares, tympani, eyes, and nictitating membranes.**



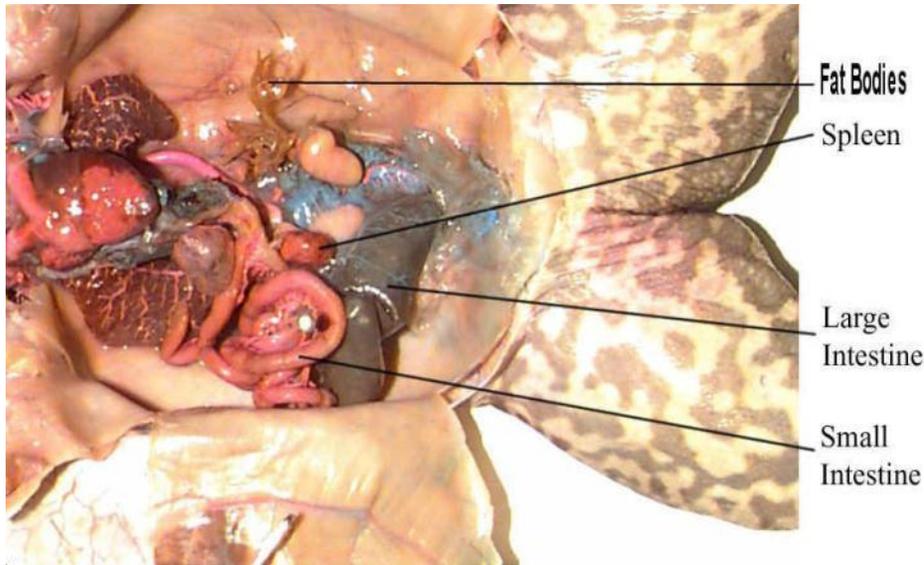
- Turn the frog on its back (dorsal surface) and pin down the legs. Cut the hinges of the mouth and open it wide. Use the diagram below to locate and identify the structures inside the mouth. Use a probe to help find each part: the **vomerine teeth**, the **maxillary teeth**, the **internal nares**, the **tongue**, the openings to the **Eustachian tubes**, the **esophagus**, the **pharynx**, and the slit-like **glottis**.



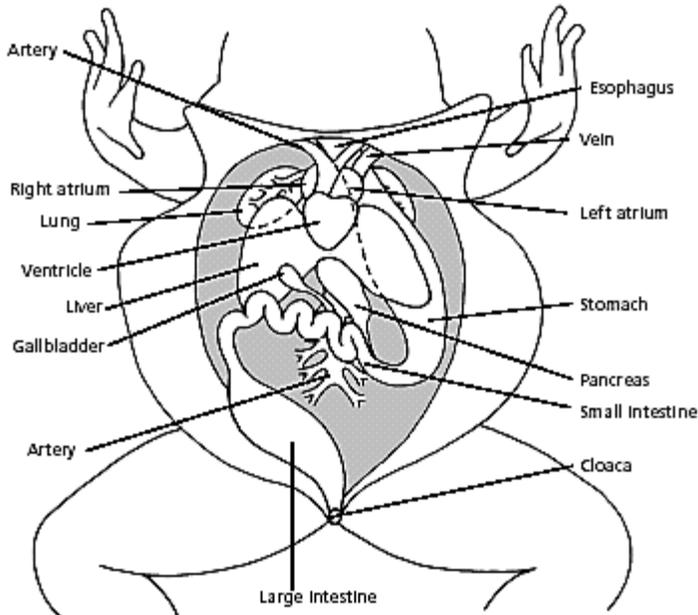
- Look for the opening to the frog's **cloaca**, located between the hind legs. Use forceps to lift the skin and use scissors to cut along the center of the body from the cloaca to the lip. Turn back the skin, cut toward the side at each leg, and pin the skin flat. The diagram above shows how to make these cuts.
- Lift and cut through the muscles and breast bone to open up the body cavity. If your frog is a female, the abdominal cavity may be filled with **dark-colored eggs**. If so, remove the eggs on one side so you can see the organs underlying them.



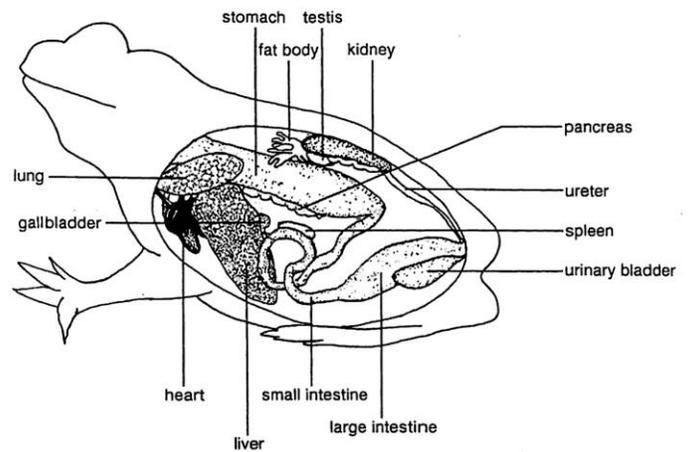
7. Use the diagrams below and on the next page to locate and identify the organs of the digestive system: **esophagus, stomach, small intestine, large intestine, cloaca, liver, gallbladder, and pancreas.**



Ventral view of Abdominal & Chest Cavities of the Frog



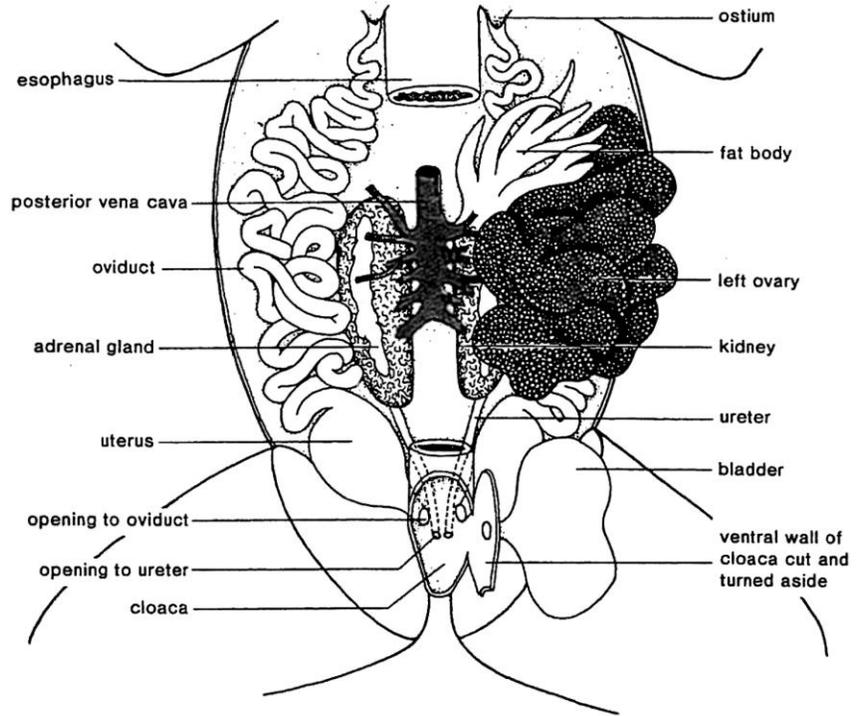
Lateral view of Abdominal & Chest Cavities of the Frog



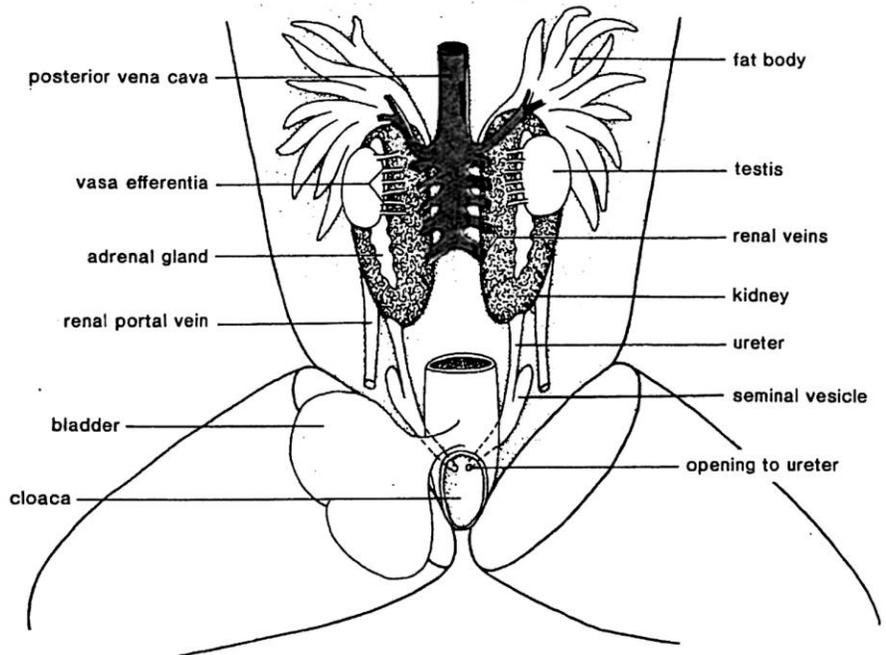
8. Refer to the diagrams above to identify the parts of the circulatory and respiratory systems that are in the chest cavity. Find the **left atrium, right atrium, and ventricle** of the heart. Find an **artery** attached to the heart and another artery near the backbone. Find a **vein** near one of the shoulders. Find the **two lungs**.

9. Use a probe and scissors to lift and remove the **intestines** and **liver**. Use the diagrams below identify the parts of the urinary and reproductive systems. Remove the **peritoneal membrane**, which is connective tissue that lies on top of the red kidneys. Observe the yellow **fat bodies** that are attached to the kidneys. Find the **ureters**; the **urinary bladder**; the **testes** and **sperm ducts** in the **male**; and the **ovaries**, **oviducts**, and **uteri** in the **female**.

Female ♀



Male ♂



10. Remove the **kidneys** and look for threadlike **spinal nerves** that extend from the spinal cord. Dissect a thigh, and trace one nerve into a **leg muscle**. Note the size and texture of the leg muscles.
11. Dispose of your materials according to the directions from your teacher.
12. Clean up your work area and wash your hands before leaving the lab.

Follow-up and Dissection Analysis Questions

1. What do you think is the function of the nictitating membrane, and why?
2. A frog does not chew its food. What do the positions of its teeth suggest about how the frog uses them?
3. In words, trace the path of food through the digestive tract.
4. In words, trace the path of blood through the circulatory system, starting at the right atrium.
5. In words, trace the path of air through the respiratory system.
6. In words, trace the paths of sperm in a male and eggs in a female.

7. In words, trace the path of urine in both sexes.

8. Which parts of the frog's nervous system can be observed in its abdominal cavity and hind leg?

9. Suppose in a living frog the spinal nerve extending to the leg muscle were cut. What ability would the frog lose? Why?

10. The abdominal cavity of a frog at the end of hibernation season would contain very small fat bodies or none at all. What is the function of the fat bodies?

11. Structures of an animal's body that fit it for its environment are adaptations. How do the frog's powerful hind legs help it to fit into a life both in water and on land?

12. During one mating interaction between 2 frogs, the female lays some 2000-3000 eggs in water as the male sheds millions of sperm over them. How do these large numbers relate to the frog's fitness for life in water?