Table 1. Organs of the Frog.

Organ/ structure	Description	Location	Function	Interactions with other organs in the system	Interrelationships with other organ systems
Liver	- hood-like organ. largest organ.	- located in upper mid-region of the body.	- processes materials and removes toxins. - produces bile, which helps digest fats.	- removes toxins from food. - removes toxins from blood.	helps produce materials to help the digestive system digest food.
Heart	- muscular organ. contains two atria and one ventricle.	- located in the mid-region of the body. - located between the lungs.	- pumps blood throughout the frog.	- receives oxygen from lungs. - receives nutrients from small intestine.	- also related to respiratory system.
Pancreas	- small and rod-shaped glandular organ.	- located in the mid- region of the body, below the liver and next to the stomach.	• produces insulin to regulate glucose level in blood • produces pancreatic juice for digestion	• related to the digestive system	• also related to the endocrine system
Spleen	- small round organ.	- located in the mid-region of the body, next to the stomach.	• holding area for blood	• receives blood from circulatory system	• also related to the lymphatic system

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Gall bladder	- small green organ.	- located below the pancreas and liver, in the lower mid-region of the body.	- stores bile, necessary for digestion of fats.	- releases bile salts into the small intestine through a duct.	gets signal from the endocrine system
Stomach	- long J-shaped organ.	- located in the mid-region of the body.	- houses acids and digestive enzymes responsible for breaking down food. chemical digestion.	- gets food from mouth/esophagus. - releases chyme (digested food) into the small intestine for nutrient absorption.	- uses smooth muscles and nerve tissue to facilitate churning/ physical digestion.
Intestines	- long, tube-like organs.	- located in the lower mid-region of the body.	composed of a lining that... - absorbs nutrients (small intestine). - absorbs water and vitamins (large intestine).	- receives food from the stomach. - removes waste via the cloaca. - nutrients go to bloodstream.	- uses smooth muscles to move chyme (digested food) throughout intestines.
Lungs	- large, sac-like structures x2.	- located in the upper mid-region of the body.	- contain alveoli that allows oxygen to enter the bloodstream. - also facilitates the removal of carbon dioxide from the bloodstream.	- connected to nostrils through trachea, larynx, pharynx, and nasal cavity. - connected to circulatory system through capillaries.	- uses muscular diaphragm. When diaphragm contracts, air can enter into the lungs/alveoli.

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Kidneys	- bean-shaped organs x2.	- located in the lower mid-region of the body. centre of body.	• **filters waste from blood**	• waste in kidneys go to bladder	• clean blood goes back to the circulatory system • urine goes to the cloaca
Reproduct-ive organs	- round organs connected through smaller tubular organs.	- located in the lower mid-region of the body.	• **testes: produce sperms** • **oviduct: produces and transports eggs**	• send sperms or eggs to the cloaca and out the body	• interacts with the urinary system through the cloaca

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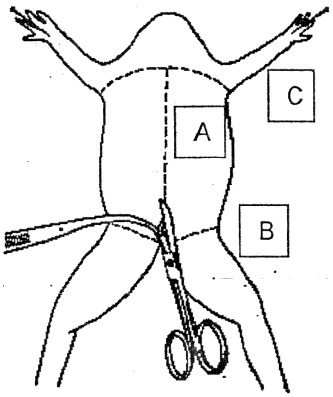
upper mid-region = anterior section of the frog.
lower mid-region = posterior section of the frog.
mid-region = torso.

FROG DISSECTION

.....NAME _____

Dissection Instructions



1. Place the frog in the dissecting pan ventral side up. Pin limbs down.

2. Make a vertical incision (A) from the head to anus, one horizontal incision across the forelimbs (C) on the ventral side, and a second horizontal incision from one hind leg to the other (B). Cut through the skin first, then through the muscle wall. At the intersection of the A and C, there is a bone, gently but firmly, cut through it.

3. Lift the flaps of the body wall and pin them back.

*If your specimen is a female, the body may be filled with eggs and an enlarged ovary. You may need to remove these eggs to view the organs.

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

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. ☐

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

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**. ☐

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

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)

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. ☐

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. ☐

Large Intestine--As you follow the small intestine down, it will widen into the large intestine. The large intestine is also known as the **cloaca** in the frog. The cloaca is the last stop before wastes, sperm, or urine exit the frog's body. (The word "cloaca" means sewer) ☐

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

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 frog's mouth to the stomach. Open the frog's 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.

What did you find in the stomach? Answers may vary, ex. grasses, insects

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: ~15 cm Intestine length ~8 cm

Answers will vary.

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. ☐

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-q type 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. ☐

Post Lab Questions

1. The membrane holds the coils of the small intestine together: mesentery
2. This organ is found under the liver, it stores bile: gall bladder
3. Name the 3 lobes of the liver: right, left anterior, left posterior
4. The organ that is the first major site of chemical digestion: mouth (saliva contains amylase) ~~or stomach~~
5. Eggs, sperm, urine and wastes all empty into this structure: cloaca
6. The small intestine leads to the: large intestine
7. The esophagus leads to the: stomach
8. Yellowish structures that serve as an energy reserve: fat bodies
9. The first part of the small intestine (straight part): duodenum
10. After food passes through the stomach it enters the: small intestine
11. The large intestine leads to the cloaca
12. Organ found within the mesentery that stores blood: spleen
13. The largest organ in the body cavity: liver

Write the name of the body part next to the letter below in the space given. Note you are not required to know all the parts in the diagram.

B. Left atrium of the heart

C. Stomach

D. Pancreas

F. Cloaca

G. Right atrium of the heart

H. lungs

I. Ventricle of the Heart

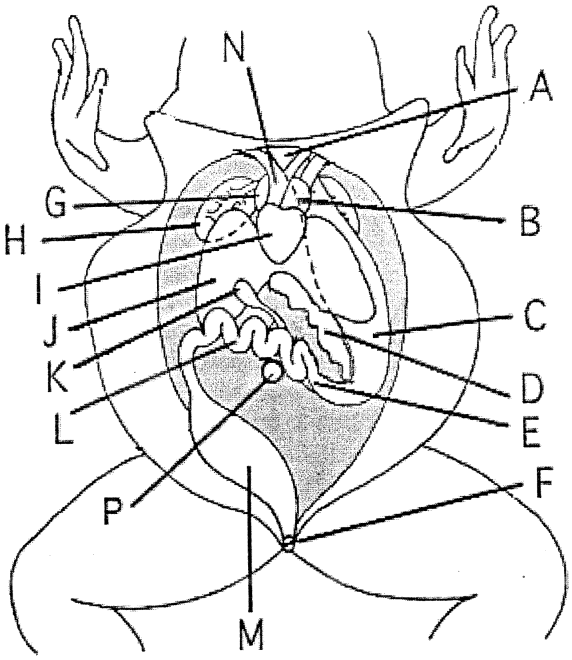
J. Liver

K. Gall bladder

L. Small intestine

M. Large intestine (cloaca)

P. Spleen



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The Biology Corner, 2010. Accessed on August 31, 2010. http://www.biologycorner.com/worksheets/frog-dissection.html