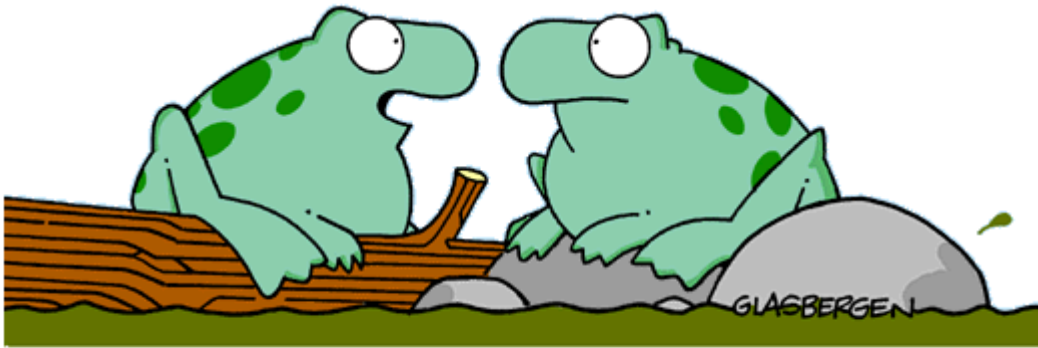


# Frog Dissection Guide



**“Looks aren’t everything. It’s what’s inside you that really matters. A biology teacher told me that.”**

## Part I - External Anatomy

- Get a frog from your teacher.

**A. Head** – the anterior end of the frog extending to and including the eardrums

**mouth** – the large opening at the anterior end of the head made up of a **maxilla** and **mandible**

**maxilla** – the upper jaw bone

**mandible** – the lower jaw bone

**external nares** (i.e. nostrils) – two small openings on the dorsal surface of the head near the tip

**eyes** – two eyes protrude from the head just posterior to the external nares

**nictitating membrane** – an extension of the lower eyelid that can come up to protect the eye

**tympanum** (i.e. eardrum) – round membranes just posterior and ventral to the eyes

**B. Trunk** – the posterior end of the frog extending from the head to the hindlimbs

**cloacal opening** – the hole at the posterior end of the frog (it’s the anus but has more functions)

**C. Appendages** – the limbs that extend from the trunk including the **forelimbs** and **hindlimbs**

**forelimbs** – short extensions from the anterior end of the trunk

**arm** – the uppermost section of the forelimb extending from the shoulder to the elbow

**forearm** – the middle section of the forelimb extending from the elbow to the wrist

**hand** – the lowermost section of the forelimb extending outward from the wrist

**hindlimbs** – long extensions from the posterior end of the trunk

**thigh** – the uppermost section of the hindlimb extending from the hips to the knee

**shank** – the middle section of the hindlimb extending from the knee to the ankle

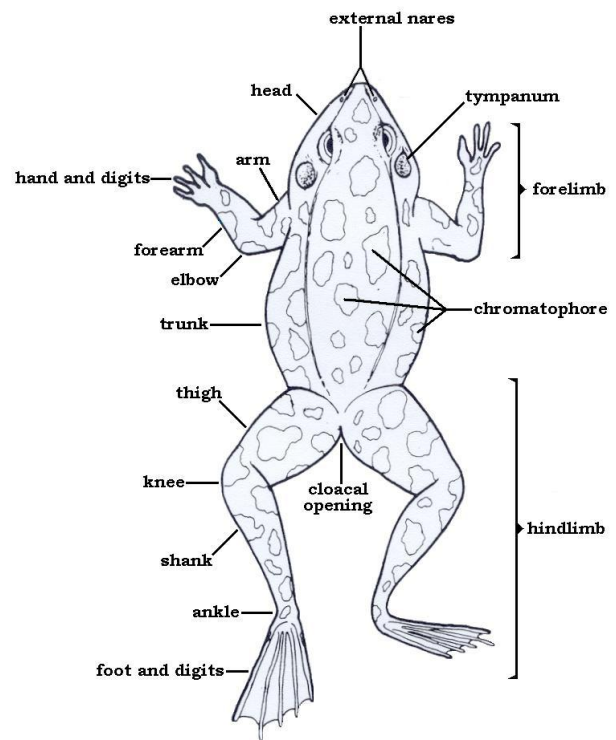
**foot** – the lowermost section of the hindlimb extending outward from the ankle

**digits** – the fingers and toes; note: there are four finger digits but five toe digits

**D. Skin** – the outer covering of the head, trunk, and appendages; it is smooth and moist

**epidermis** – the outer layer of the skin containing pigment granules for coloration

**dermis** – the skin layer under the epidermis containing **chromatophores** (i.e. pigment cells)



# Frog Dissection Guide

## Part II – Internal Anatomy

### Observe the Anatomy of the Frog's Mouth

- Turn the frog on its back and pin down the legs. Cut the hinges of the mouth and open it wide.

**mandible** – the lower jaw

**maxilla** – the upper jaw

**maxillary teeth** – a row of teeth found on the margin of the maxilla

**vomerine teeth** – two small patches (bumps) of teeth found on the roof of the mouth in the center of the anterior area

**internal nares** – the nostril openings on the roof of the mouth just lateral to the vomerine teeth

**eye sockets** – on the roof of the mouth where the eyes bulge inward

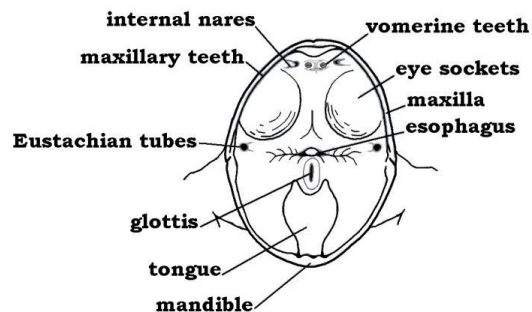
**Eustachian tubes** – the openings for these tubes are found on each side of the roof of the mouth near the hinge of the jaws

**esophagus** – the opening for this tube is at the back of the mouth (it leads down the throat to the stomach)

**glottis** – this is the opening for the trachea; it is just anterior to the opening of the esophagus on the floor of the mouth

**tongue** – found on the floor of the mouth; hinged at its anterior end

**buccal cavity** – the inside cavity of the mouth



### Structures of the Body Cavity

- 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.

**heart (atria and ventricle)** – in the center at the anterior end between the forelimbs; atria – red brown, ventricle - white

**liver** – on both sides of the heart; contains three lobes (sections); largest organ in body; brownish to greenish

**gall bladder** – under the liver and attached to it; small round sac; yellow-green and slightly transparent

**esophagus** – attached to back of throat and stomach; cut as high up as you can; do not separate from stomach; white

**stomach** – widest part of digestive tract; very muscular; white

**small intestine** – extends from stomach to large intestine; smaller diameter than large intestine; white

**large intestine** – extends from small intestine to cloaca; larger diameter than small intestine; white

**cloaca** – the very end of the digestive tract; cut as low down as you can; white

**mesentery** – the connective tissue holding the different areas of the small intestine together; very thin but strong; clear

**spleen** – round body similar in size to the heart; found in the mesentery; makes red blood cells; dark reddish brown

**lungs** – to the right and left of the heart underneath the liver; spongy sacs; color varies – dark gray to reddish brown

**kidneys** – long, flat structures along the dorsal surface of the coelom near the posterior end of the cavity; dark brown

**fat bodies/ovaries** – yellow or brown wormlike structures in the mid abdominal area (ovaries are too small to see)

**fat bodies/testes** – yellow or brown wormlike structures in the mid abdominal area (testes will be small, oval and white)

**Lung Inflation:** Insert the tip of a pipette into the glottis in the mouth. When you squeeze the pipette you should see the lungs inflate if you have not damaged the lung.

**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.

