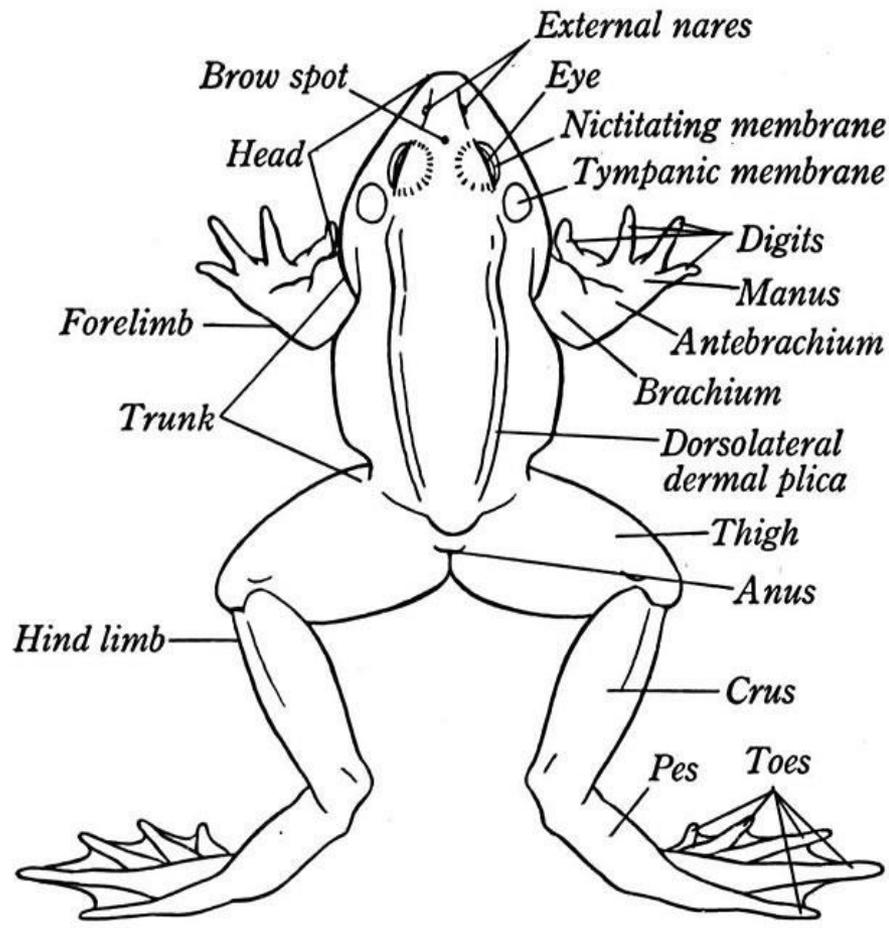
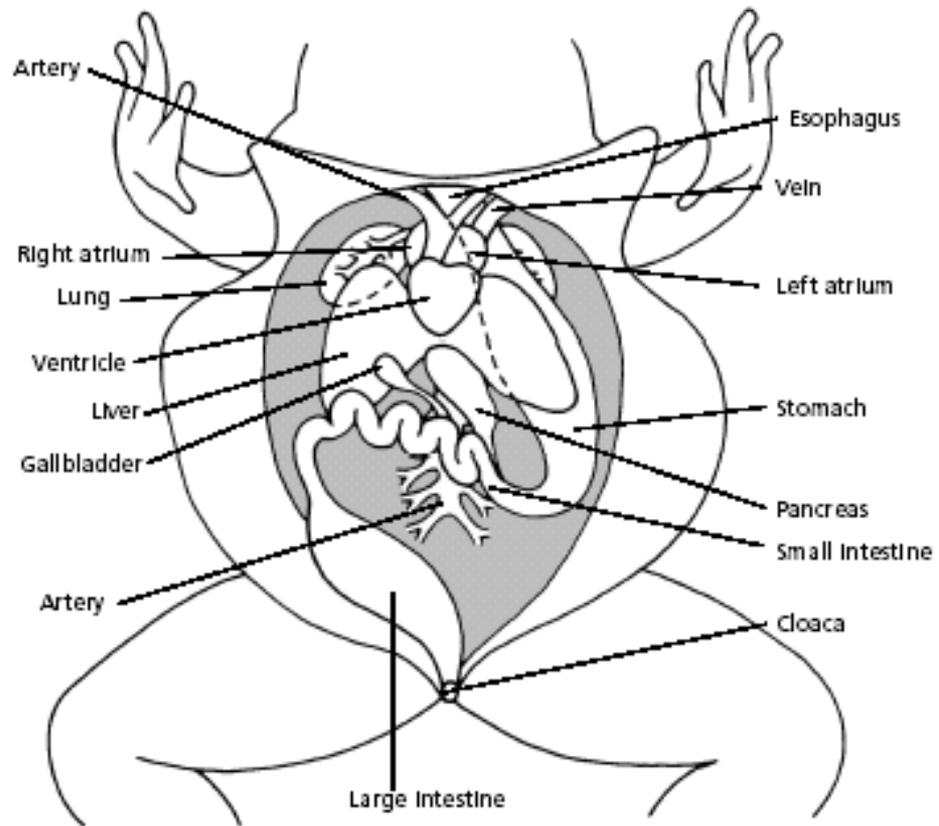


Amphibian; External Structure, Locomotion, Skeletal & Digestive system



Abdominal and Chest Cavities of the Frog



External Structure and Locomotion

- ▶ The skin of amphibians functions in defense, gas exchange, temperature regulation, and absorption and storage of water.
 - ▶ Skin is highly glandular, these glands keep the skin moist to prevent drying.
 - ▶ The glands also produce a sticky secretion that helps them cling to mates during sexual activities.
 - ▶ The glands produce toxic chemicals that discourage predators.
- ▶ The bone structure is set up in a way that makes terrestrial locomotion possible.
 - ▶ They have joints at the shoulder, hip, elbow, knee, wrist, and ankle allow freedom of movement and better contact with the substrate.

Locomotion Continued

- Each type of Amphibian has a distinct form of movement Salamanders move like a fish swims through water, a Caecilian has accordion movement like a snake, and Frogs have strong hind limbs specialized for jumping.
- The terrestrial skeleton is modified to provide support against gravity and it must be strong enough to support the relatively powerful muscle that propel terrestrial vertebrates across land.
- The amphibian skull is flattened, smaller, and has fewer bony elements than the skull of fishes.
 - This lightens the skull so it can be supported out of water.
- Changes in jaw structure and musculature allow terrestrial vertebrates to crush prey held in the mouth.

Locomotion Continued

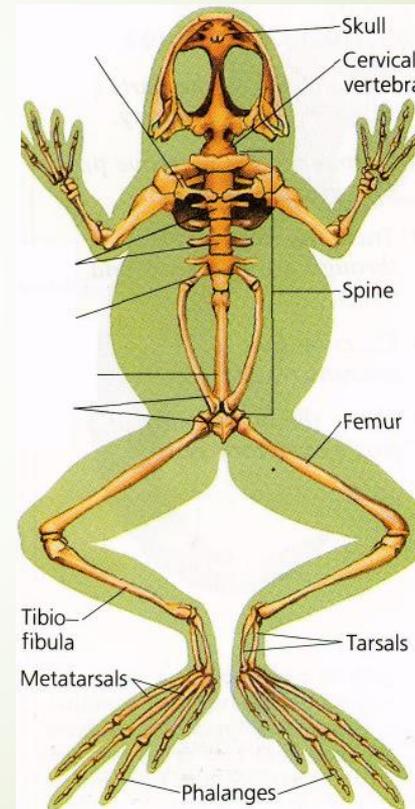
- ▶ Salamanders move in a way that is reminiscent of the undulatory waves that pass along the body of a fish.
 - ▶ Terrestrial salamanders also move by a pattern of muscle contractions that throw the body into a curve to advance the stride of a limb.
- ▶ Caecilians have an accordion-like movement where adjacent body parts push or pull forward at the same time.
- ▶ The long hind-limbs and pelvic girdle of anurans are modified for jumping.
 - ▶ The dorsal bone of the pelvis (ilium) extends anteriorly and securely attaches to the vertebral column, and the urostyle extends posteriorly and attaches to the pelvis.



- ❑ The frog's powerful hind legs are equally effective in jumping or swimming. On land frogs sit with their hind legs folded against the body, poised to jump at the first sign of danger.
- ❑ Most frogs can make leaps many times their body length

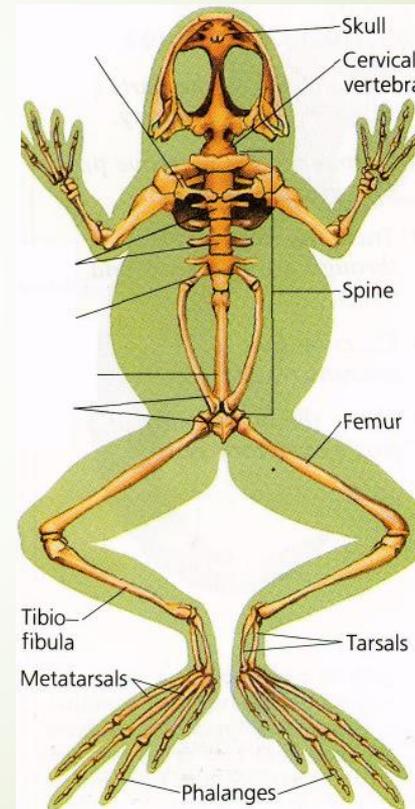
Skeletal System

- ❑ The frog's spine has nine vertebrae
- ❑ The cervical vertebra at the anterior end of the spine allows neck movement that helps frogs catch prey



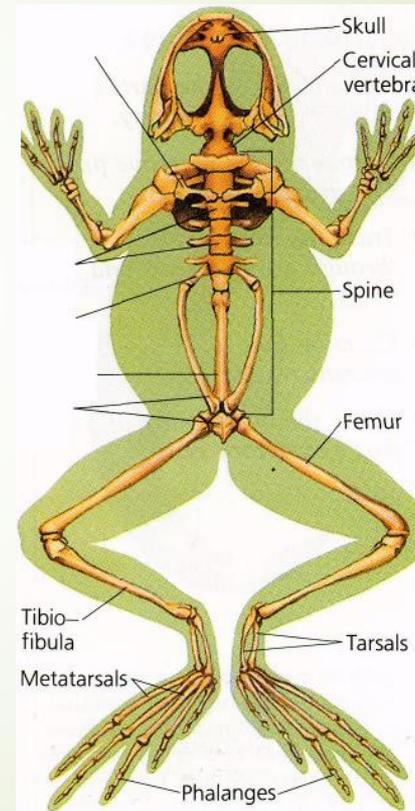
Skeletal System

- Posterior to this are seven trunk vertebrae, and then a single sacral vertebra that supports the hind legs
- A long, slim bone called the urostyle extends from the sacral vertebra



Skeletal System

- ❑ Bones of the pectoral girdle, which form the shoulders, connect to the front legs
- ❑ They also provide the primary protection to the internal organs, since the frog has no ribs
- ❑ The pelvic girdle connects to the hind legs



Nutrition and Digestion System

- **Adult amphibians are carnivores that feed on a wide variety of invertebrates.**
 - **However, some anurans are more diverse. For example, some bullfrogs on small mammals, birds, and other anurans.**
- **Main factor that determines what amphibians eat is prey size and availability.**
- **Most larvae are herbivorous and feed on algae and other plant matter.**
- **Most amphibians locate prey via sight and simply wait for prey to pass by.**
 - **Olfaction plays an important role in prey detection by aquatic salamanders and caecilians.**

Anura Feeding



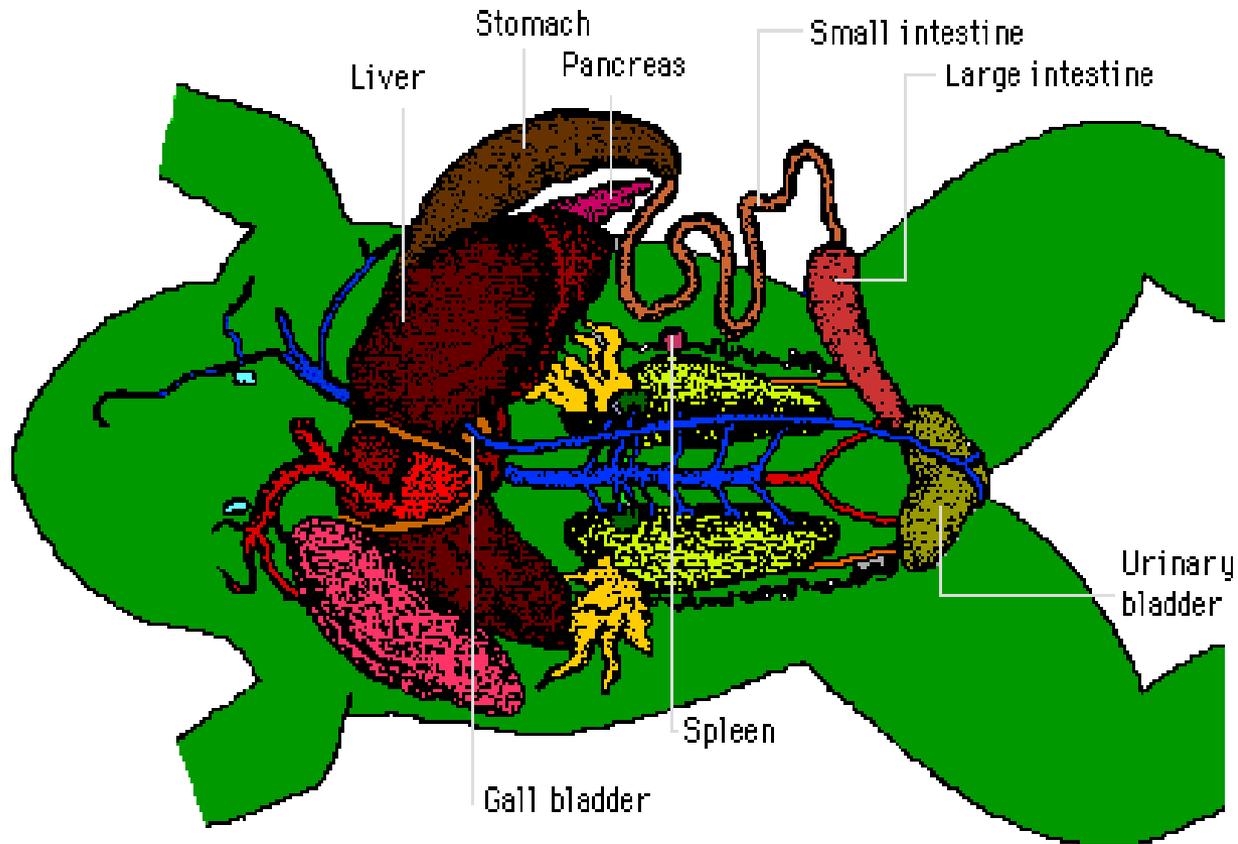
- They mostly eat small insects and some plants.
- They utilize a sticky tongue, located on their lower jaw, that is extended from their mouth as a sort of sticky lasso to catch their prey.
- Most frogs sit and wait for their prey. Their skin colors and textures perfectly camouflages them in their surroundings.



Nutrition and Digestive System

- Most salamanders use just their jaws to capture prey but anurans and plethodontid salamanders use their tongues and jaws.
- A true tongue is first seen in amphibians.
- The anuran tongue attaches at the anterior margin of the jaw and folds back over the floor of the mouth.
 - Mucous and buccal glands on the tip of the tongue exude sticky secretions.
- When prey comes within range, an anuran flicks out its tongue and uses it as a sort of sticky lasso to capture its prey.

Digestive System



Digestive System

- ❑ Most frogs feed on insects, and their digestive system is adapted to their diet
- ❑ A frog's tongue is an excellent insect catcher. The frog simply flicks out its long sticky tongue, curls it around its prey, and pulls the insect back into its mouth. Then the frog snaps its mouth shut and swallows.



Digestive System

Frogs have two types of teeth that hold on to prey. A row of maxillary teeth line the perimeter of the upper jaw. Two patches of vomerine teeth project from bones in the roof of the mouth.



Digestive System

- ❑ Sometimes the frog blinks, pulls its eyes inward, and presses them against the roof of its mouth. This action helps push the food down its throat
- ❑ Digestion in frogs takes place in the alimentary canal, which includes the esophagus, stomach, small intestine, large intestine, and cloaca

