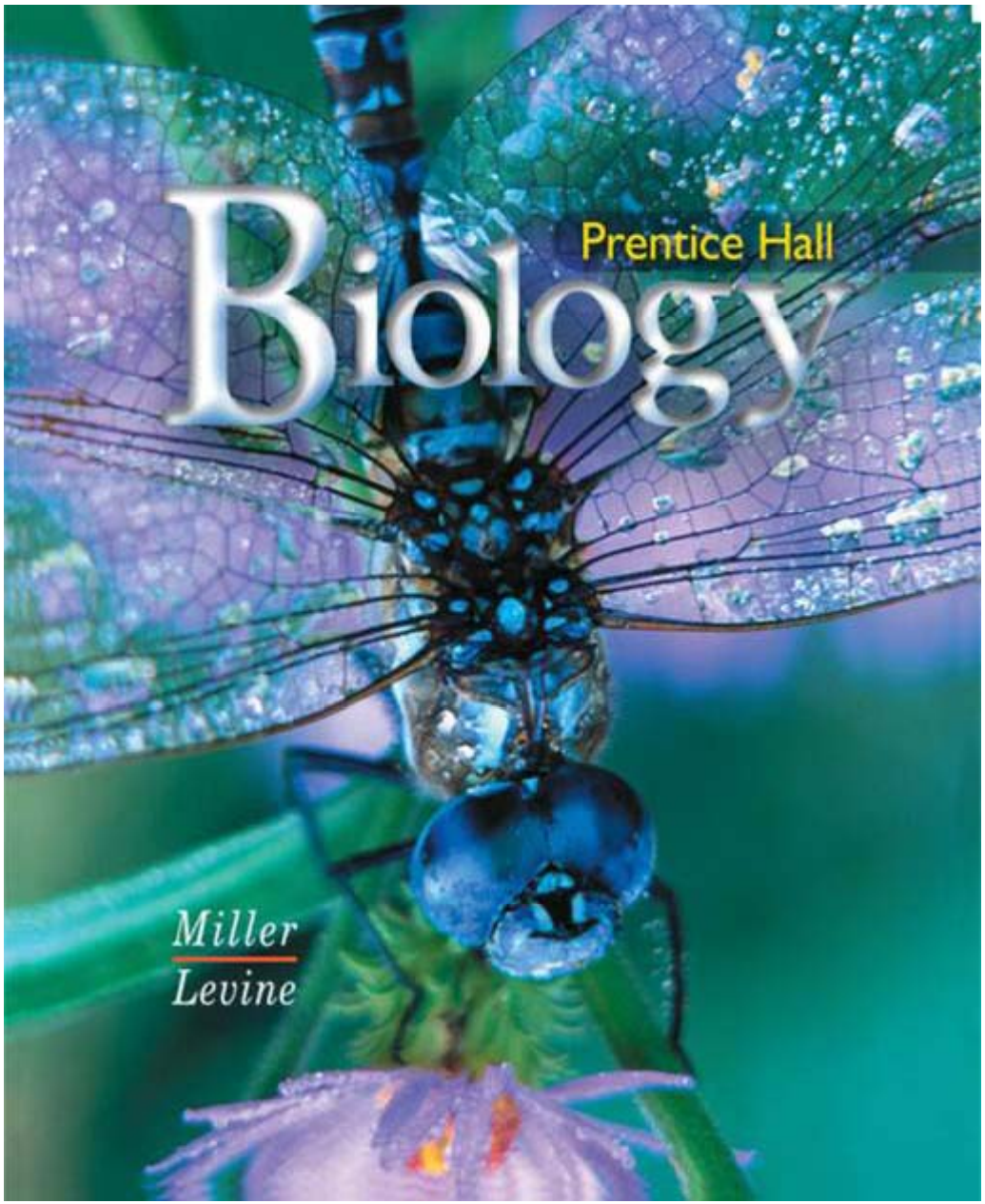


Copyright Pearson Prentice Hall

Before starting Amphibians, 2 videos on fishes:

hagfish slime (40sec):

https://www.youtube.com/watch?v=pmaal7Hf0WA

Lamprey, paddlefish parasites (3min):

https://www.youtube.com/watch?v=AzZao6SVMyc

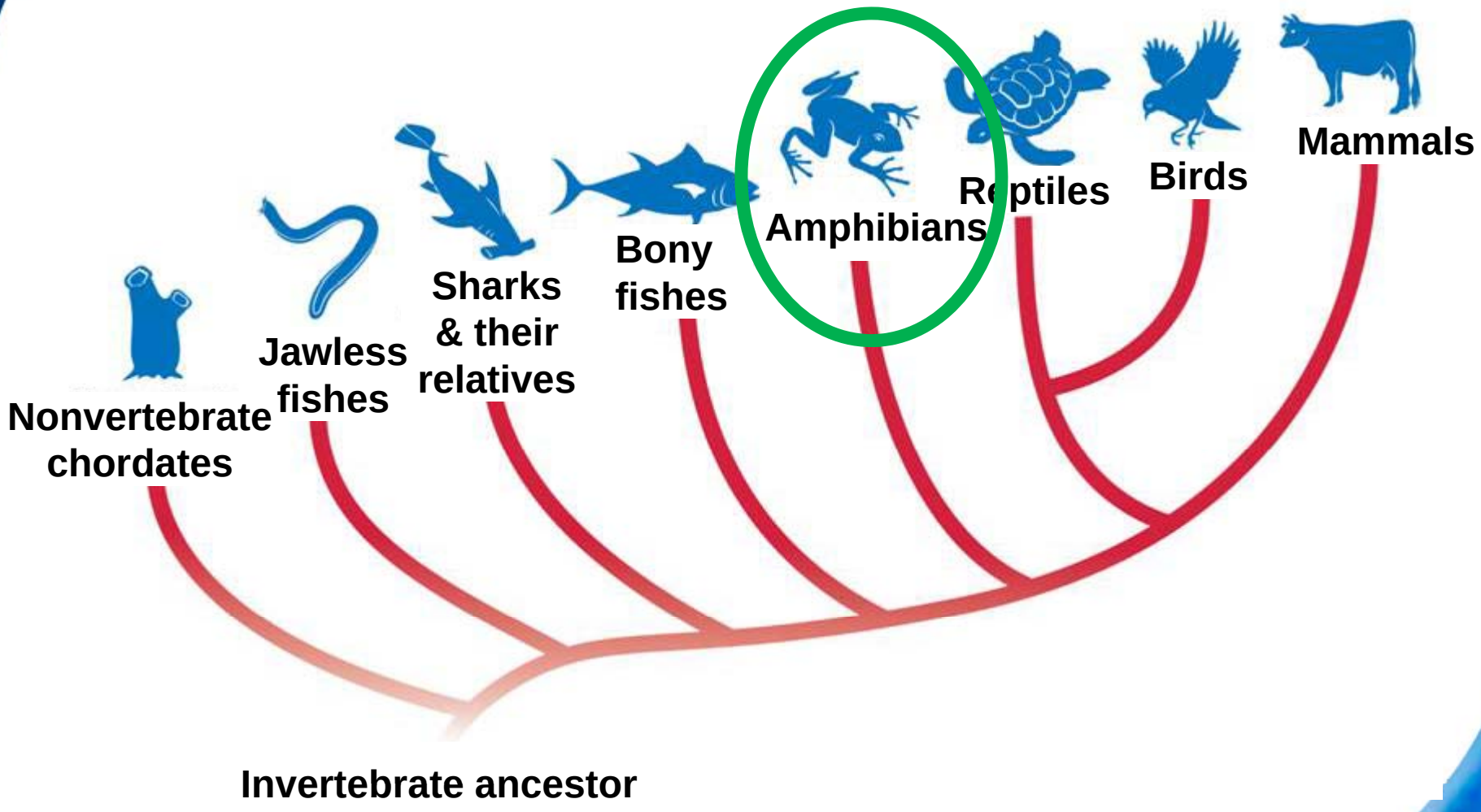
Copyright Pearson Prentice Hall

30-3 Amphibians

End Show

Copyright Pearson Prentice Hall

Phylogeny of Chordates



End Show

Copyright Pearson Prentice Hall

What Is an Amphibian?

- The word amphibian means “double life” – they live both in **water** and on **land**.
- The **larvae** are fishlike aquatic animals that respire using **gills**.
- The **adults** are usually terrestrial that respire using **lungs** and skin.
- Adults have moist skin that contains mucous glands, lacks scales and claws.

End Show

Copyright Pearson Prentice Hall

Form and Function in Amphibians

The **class Amphibia** is relatively small and diverse.

Form and Function of Amphibians

- Feeding
- Respiration
- Circulation
- Excretion
- Reproduction
- Movement
- Response

Copyright Pearson Prentice Hall

Feeding
p784

- Ex. Frog

Tadpole – filter feeders or herbivores that graze on algae – long coiled intestine.

tadpole long coiled intestine

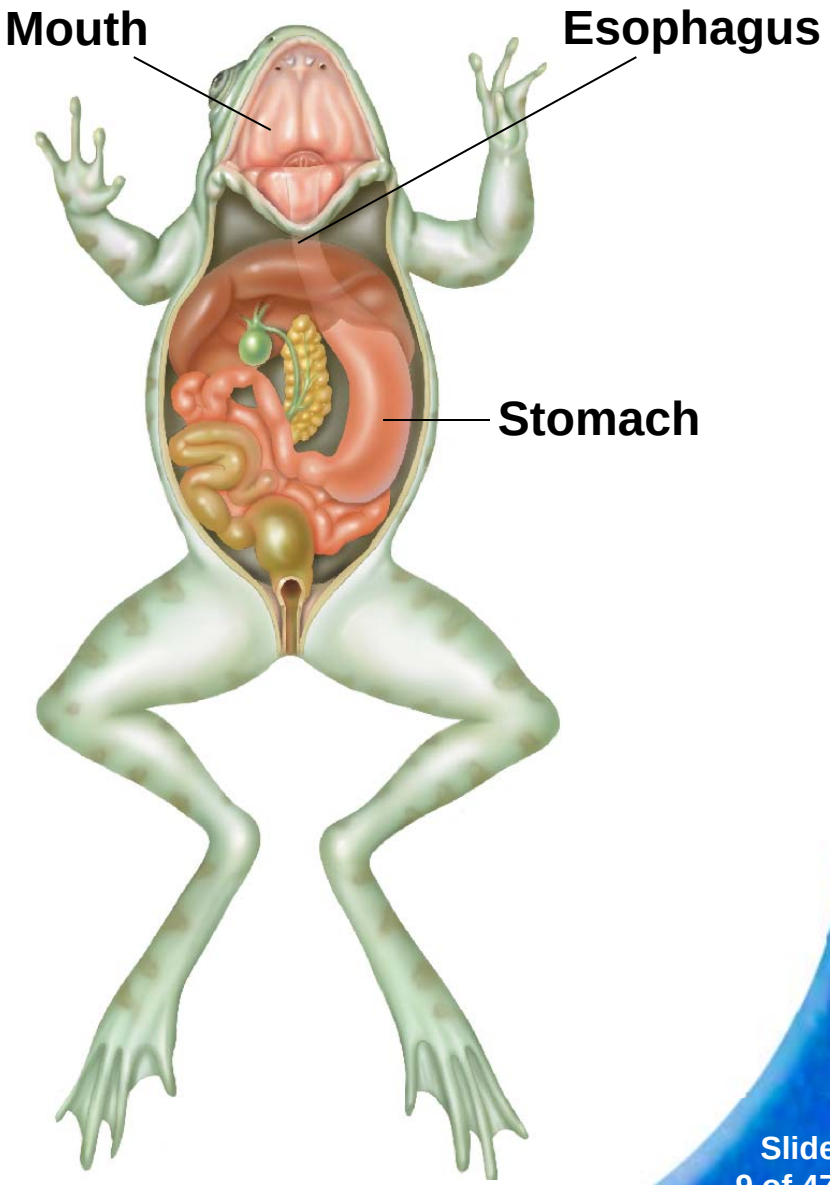
Frog adult – carnivores – much shorter intestine.

Adult amphibians tend to be carnivorous.

Copyright Pearson Prentice Hall

Frog digestive system

In a frog's digestive system, food slides down the **esophagus** into the **stomach**.

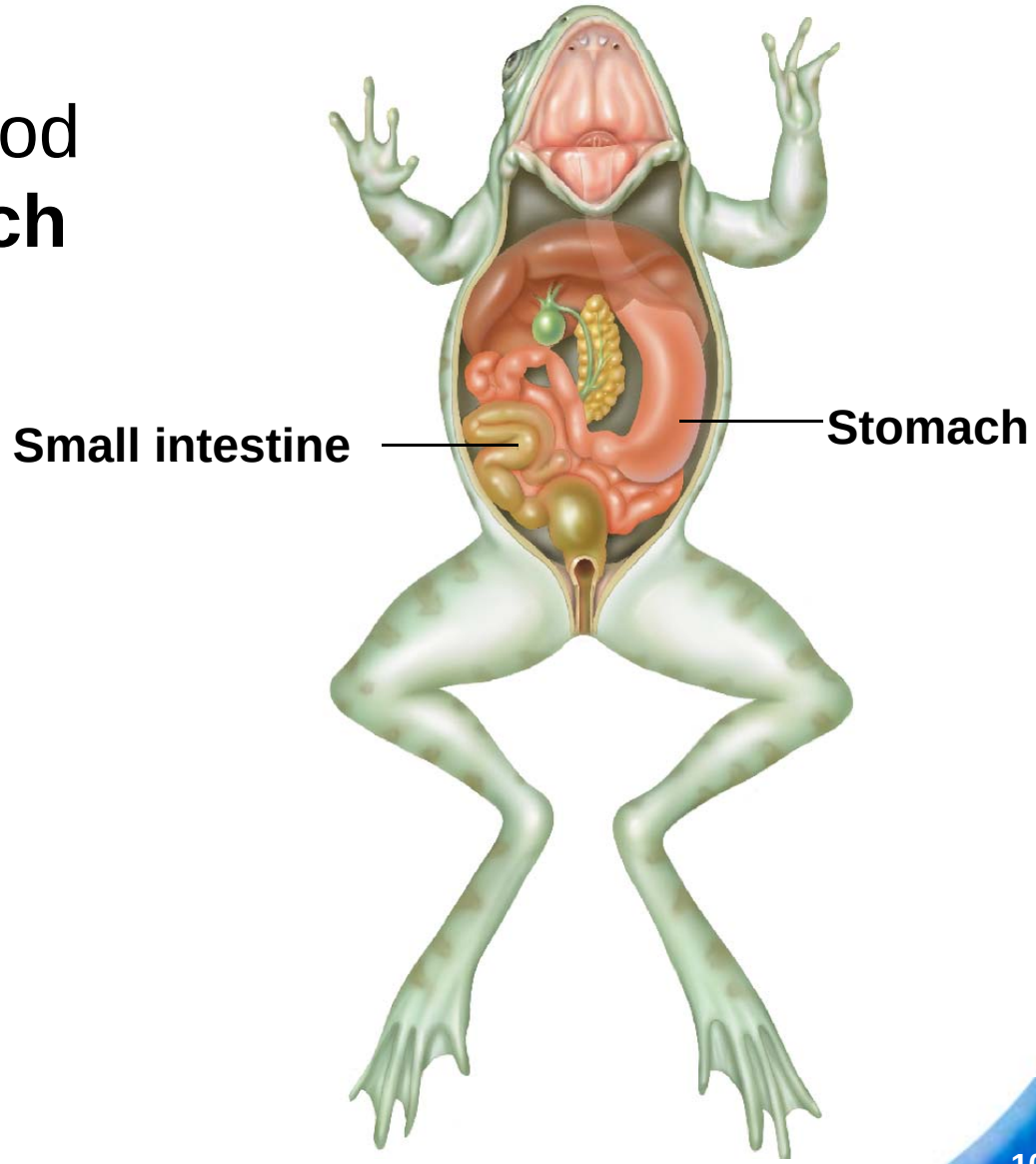


End Show

PEARSON Prentice Hall

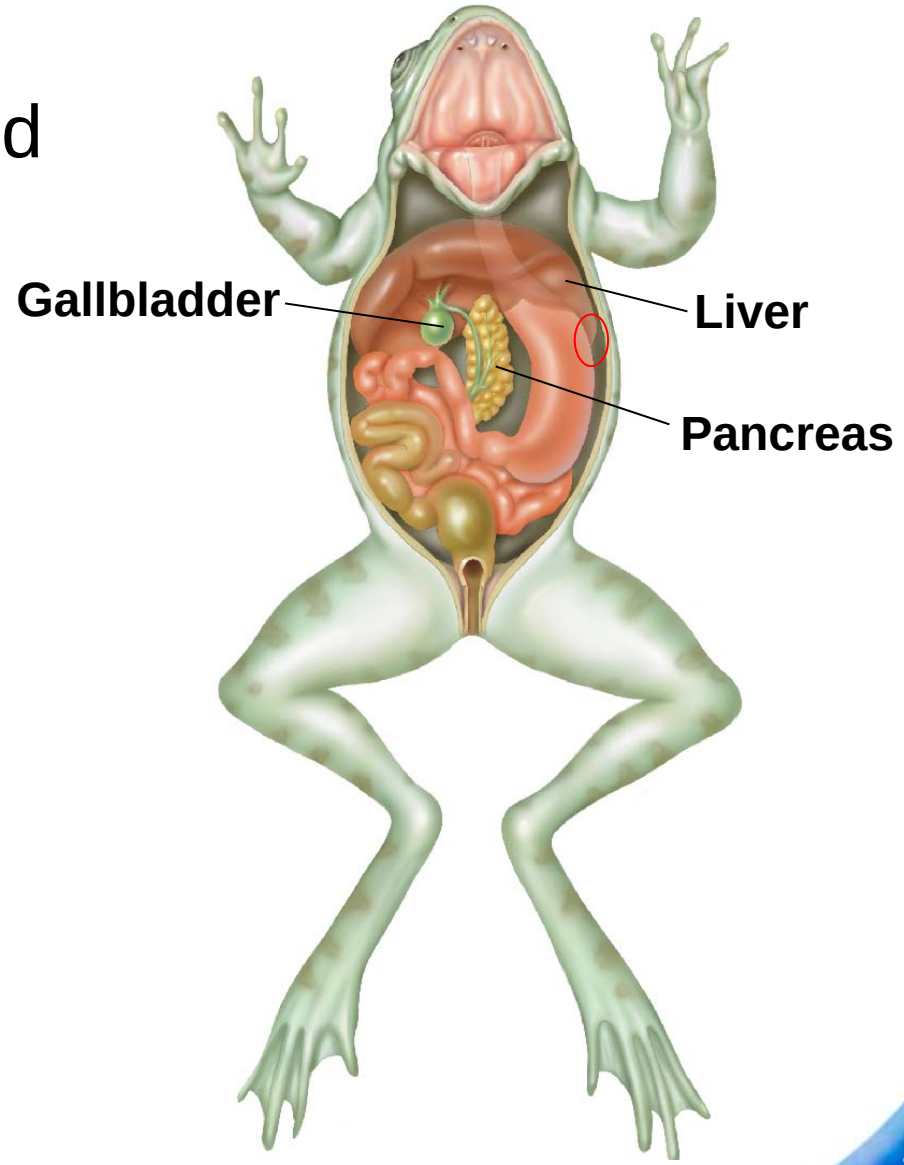
Copyright Pearson Prentice Hall

The breakdown of food begins in the **stomach** and continues in the **small intestine**.



PEARSON Prentice Hall
Copyright Pearson Prentice Hall

The **liver**, **pancreas**, and **gallbladder** secrete substances that aid in digestion.

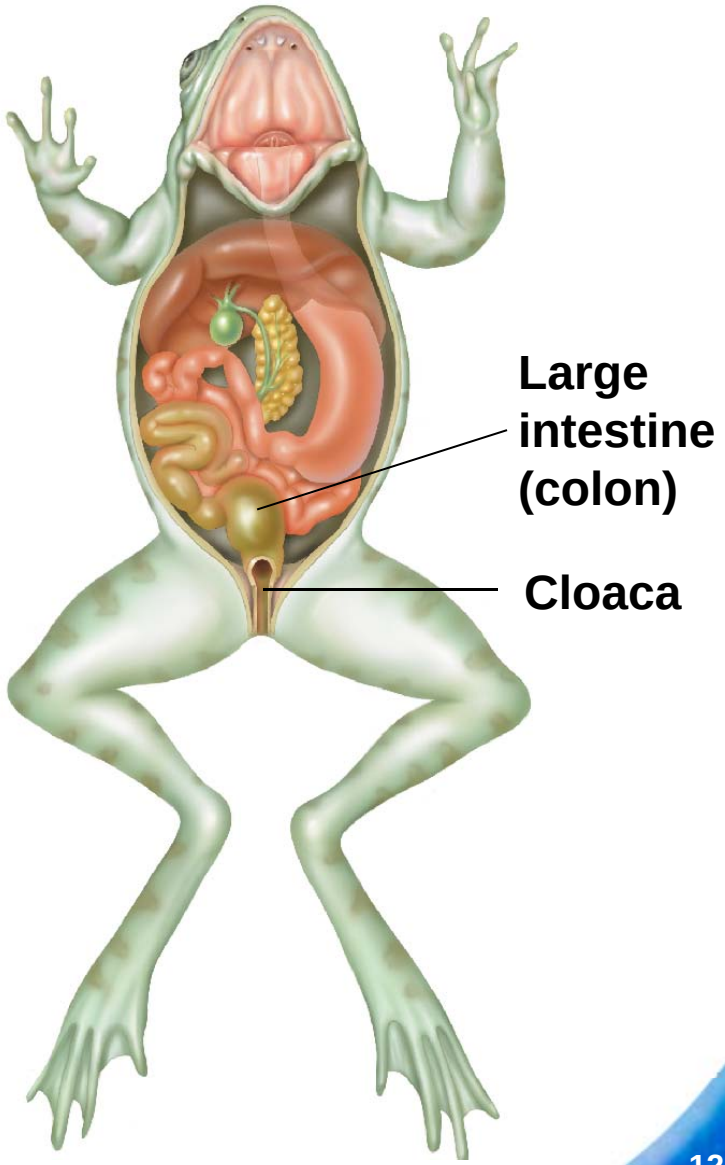


End Show

PEARSON Prentice Hall

Copyright Pearson Prentice Hall

At the end of the **large intestine** is a muscular cavity called the **cloaca**, through which digestive wastes, urine, and eggs or sperm leave the body.

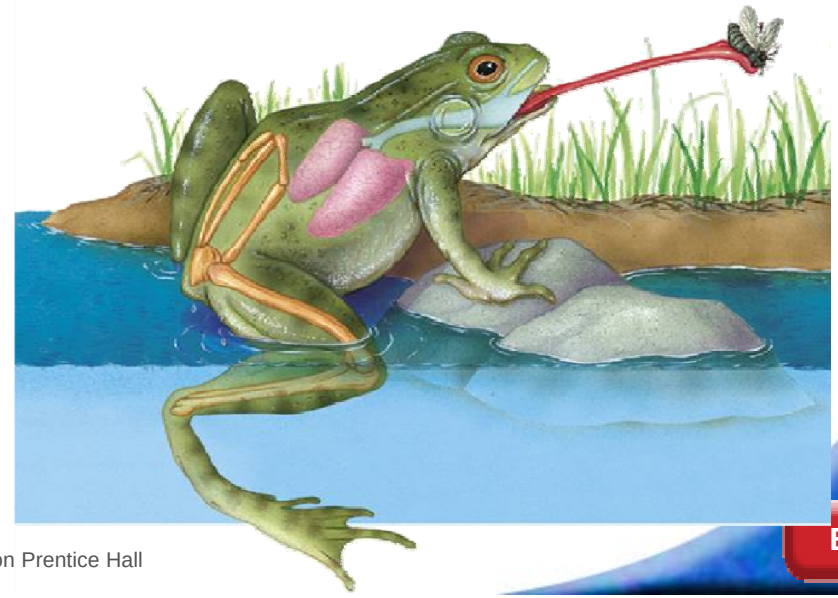


PEARSON Prentice Hall
Copyright Pearson Prentice Hall

Respiration
p784

• Larval stage - gas exchange occurs through the **skin** and the **gills**.

• Adult – gas exchange occurs through the **skin** and **lungs**. Not all salamanders have lungs – exchange gases through the lining of the mouth cavity and through the skin.



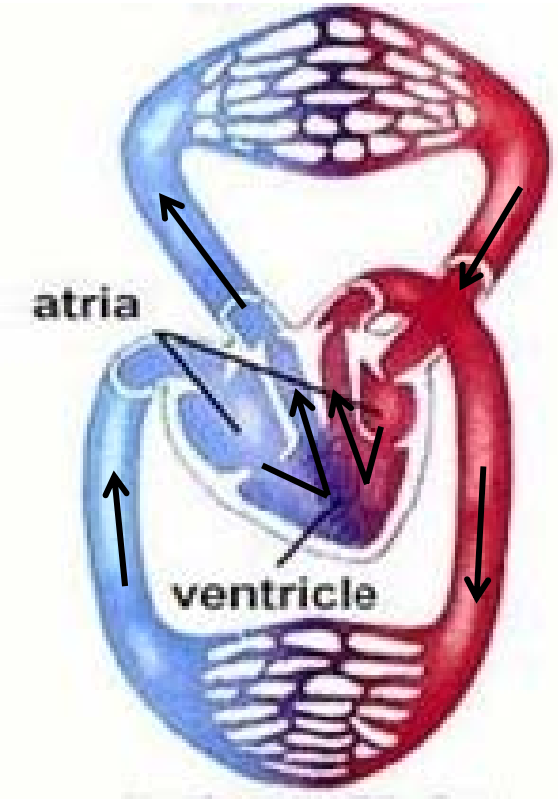
Copyright Pearson Prentice Hall

Circulation p785

Adult – **double loop**

- The 1st loop carries blood from the heart to the lungs and skin and takes oxygen rich blood from the lungs and skin, and back to the heart.
- The 2nd loop transports oxygenated blood from the heart to the rest of the body and then carries oxygen poor blood from the body to the heart.

capillaries of **lungs and skin**



loop 1

loop 2

capillaries of the **rest of the body**

End Show

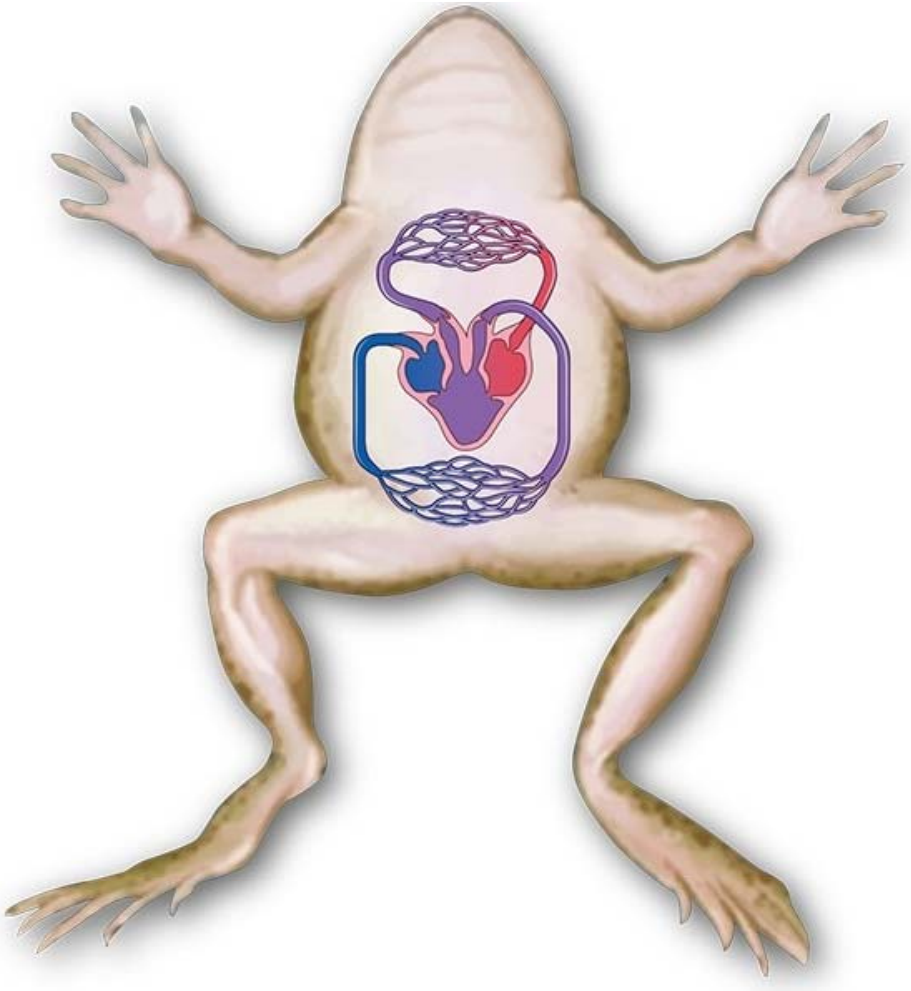
PEARSON Prentice Hall

Copyright Pearson Prentice Hall

Circulation

Amphibian Heart:

- 3 separate chambers:
  - Left atrium
  - Right atrium
  - ventricle



End Show

PEARSON Prentice Hall

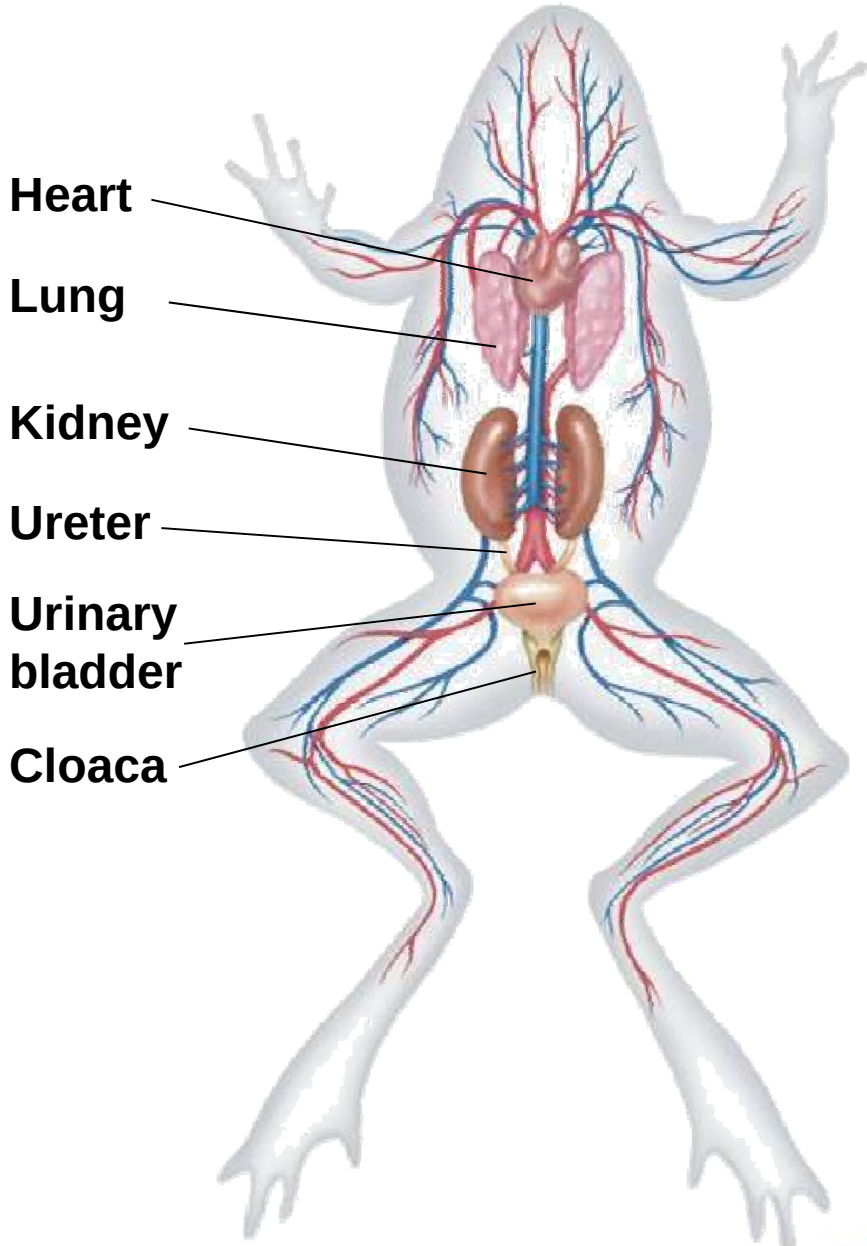
Copyright Pearson Prentice Hall

Excretion
p785

- Kidneys filter wastes from the blood.
- Excretory product = urine
- Urine travels from the **kidneys**, thru tubes called **ureters** into the **urinary bladder** then out through the **cloaca**

Copyright Pearson Prentice Hall

Amphibian **Circulation and Excretion**



PEARSON Prentice Hall
Copyright Pearson Prentice Hall

Reproduction
p786

- Amphibian eggs do not have shells and dry out if they are not kept moist, thus **the eggs are laid in water**, then the **male fertilizes them externally**. Salamanders eggs are fertilized internally.
- The **yolk of the egg nourishes the developing embryos** until they hatch into larvae that are commonly called **tadpoles**.

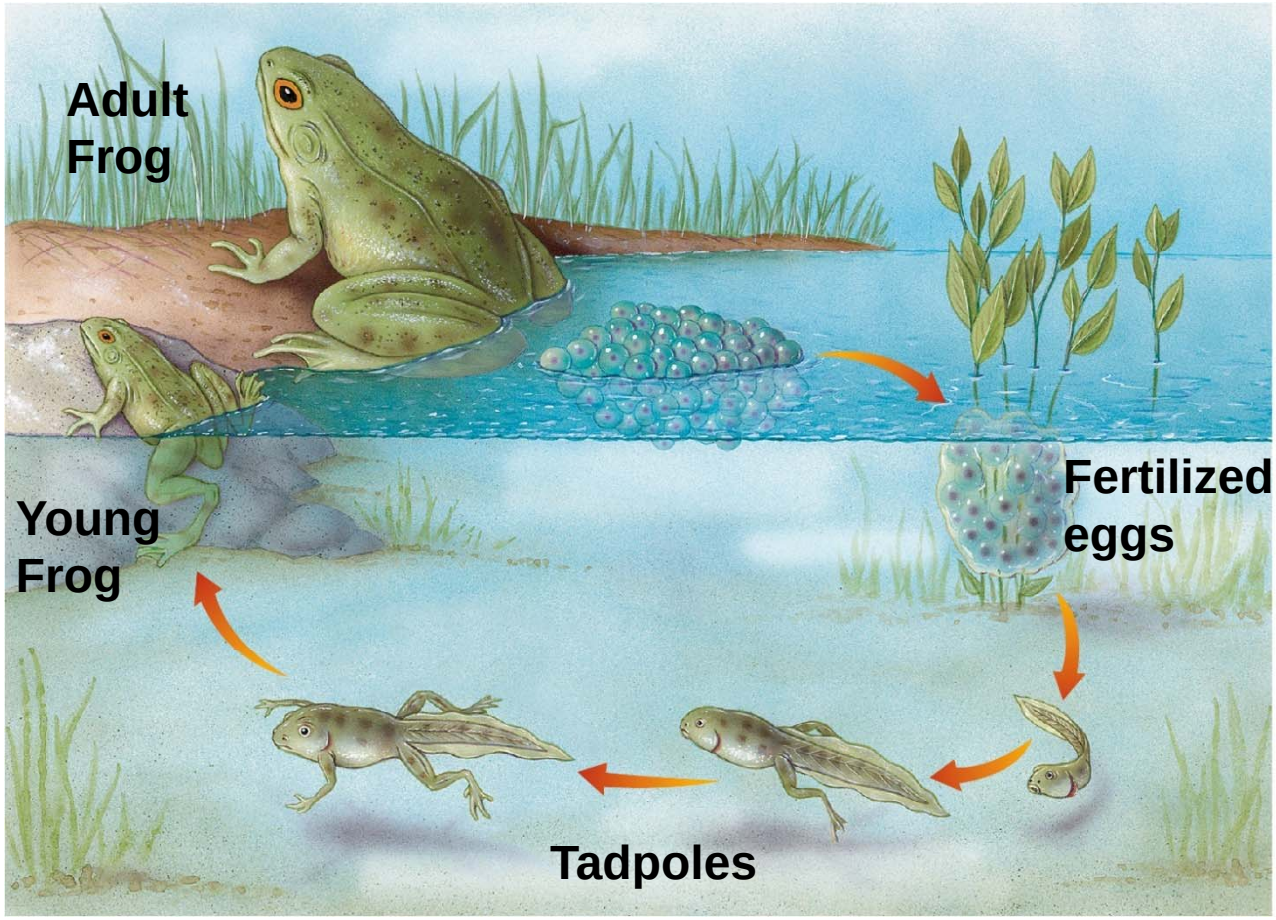
salamander egg mass

End Show

PEARSON Prentice Hall

Copyright Pearson Prentice Hall

Frog Metamorphosis (Figure 30-25)



End Show

PEARSON Prentice Hall

Copyright Pearson Prentice Hall

Movement
p787

- Tadpoles move like fishes by wiggling their bodies and using a flattened tail for propulsion.

- Adults use their front and back legs to move.

Copyright Pearson Prentice Hall

Response p787

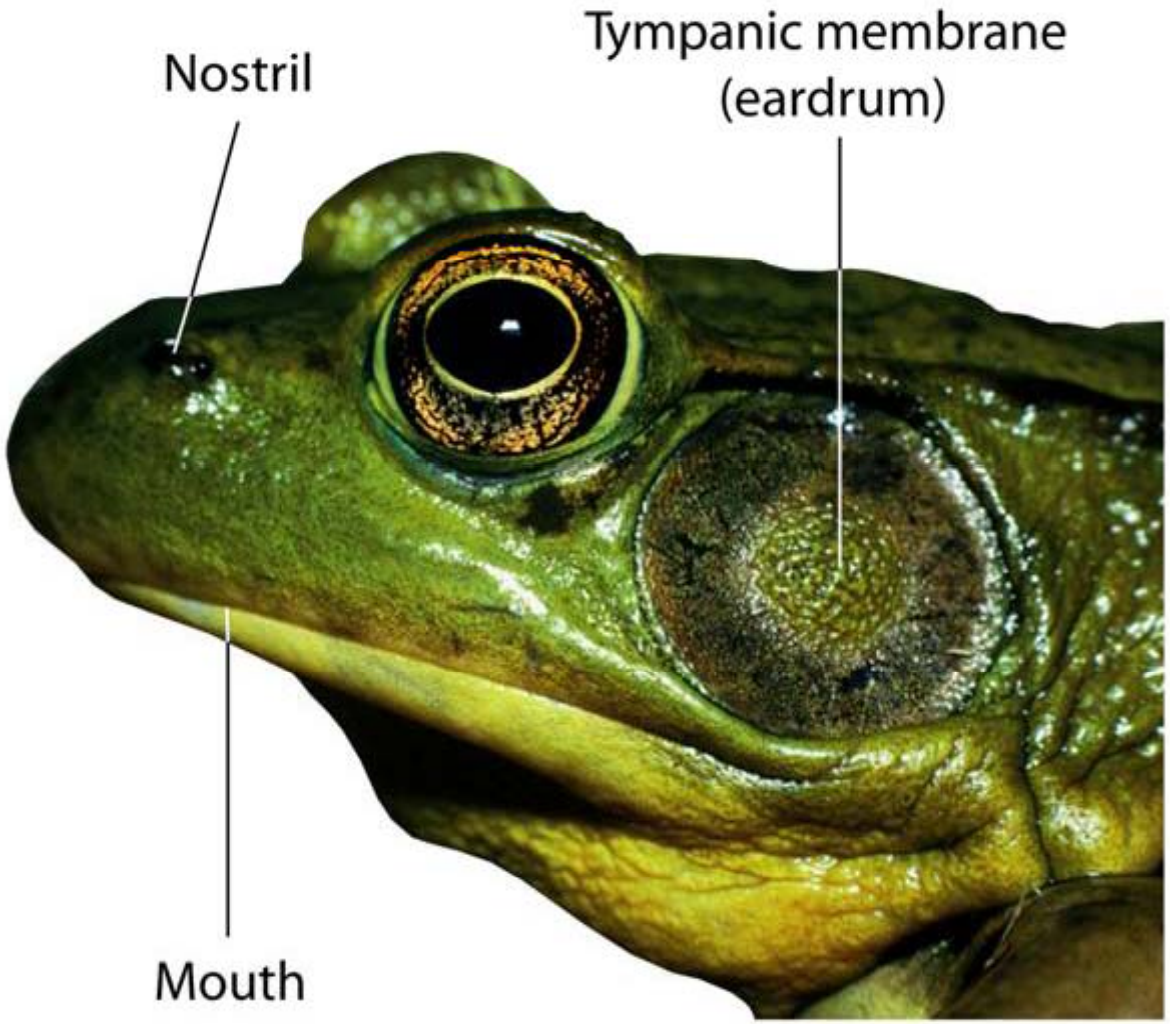
- The **brain** of an amphibian has the same basic parts as that of a fish. Like fish, amphibians have **well developed nervous and sensory systems**.
- A frog eyes can move about in their sockets.
- Eyes are protected by a transparent layer called a **nictitating membrane**.
- Amphibians hear through **tympanic membranes** or eardrums, located on the side of the head.
- Many amphibians also have a **lateral line system**, like those of fishes, that detect water movement.

End Show

PEARSON Prentice Hall

Copyright Pearson Prentice Hall

Frog's Sense Organs



PEARSON
Prentice Hall

Copyright Pearson Prentice Hall

Groups of Amphibians

The three groups of amphibians alive today are:

- **salamanders**
- **frogs and toads**
- **caecilians**

End Show

PEARSON Prentice Hall

Copyright Pearson Prentice Hall

Salamanders and newts

- long body and tail.
- 4 legs.
- carnivores.
- live in moist woods

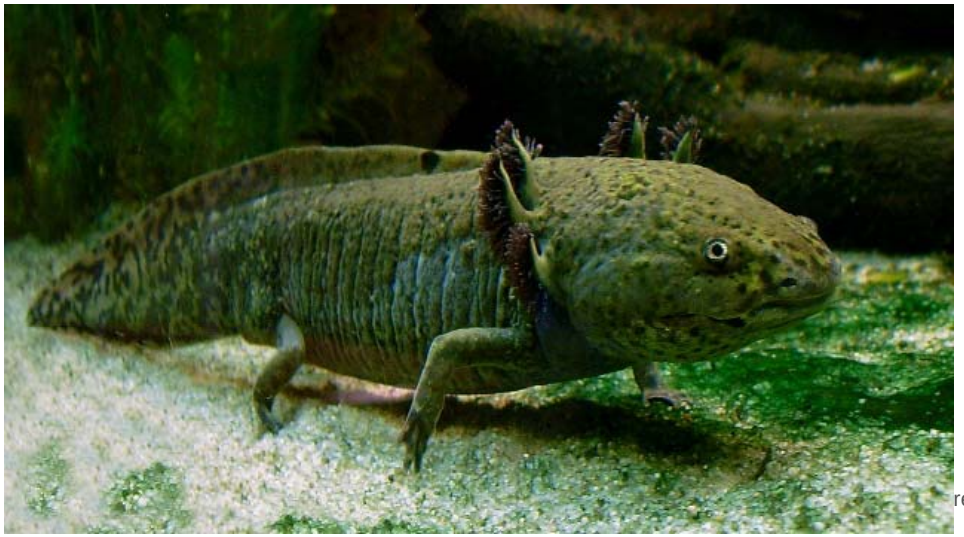
PEARSON Prentice Hall

Copyright Pearson Prentice Hall

Ex. of special salamander: Axolotl

(water monster: atl= water; xoltol= monster)

The axolotl, or Mexican salamander, never undergo metamorphosis into an adult form. Instead of developing lungs and taking to land, the adult keep the **larval form**, remain aquatic and gilled.



Video:

Giant salamander emerges from river in japan (1m30):

https://www.youtube.com/watch?v=KBh-E0iXjHU

Frogs and Toads

- have the ability to jump.
- Frogs have long legs and are closely tied to water
- Toads have relatively short legs and often live in moist woods and even deserts.
- Adult frogs and toads lack tails.

Caecilians

- legless animals that live in water or burrow in moist soil or sediment.
- feed on small invertebrates such as termites.

Ecology
p789

- Live in moist environments
- Make ideal meals for animals such as birds and mammals.
- Many amphibians blend into their environment or ooze an unpleasant-tasting and poisonous substance or toxin.
- Some amphibians use colors and patterns
  - as a warning to potential predators
  - as camouflage

Copyright Pearson Prentice Hall

Ecology
p789

- Global amphibian population is declining due to decreasing habitat and changes in the environment – depletion of ozone layer, acid rain, water pollution, fungal infections, etc.

Take Action: Protect wildlife from the disastrous effects of climate change.

PEARSON Prentice Hall

Copyright Pearson Prentice Hall

30-3 Section QUIZ

Continue to:

Section QUIZ

- or -

Click to Launch:

ExamView® QuickTake

End Show

Copyright Pearson Prentice Hall

30-3 Section QUIZ

1 The word *amphibian* refers to the ability to

a. live in hot climates.

b. live in wet places.

c. live both in water and on land.

d. live in cold and hot climates.

End Show

Copyright Pearson Prentice Hall

30-3 Section QUIZ

2 Fossil evidence indicates the first land amphibians appeared during the

a. Jurassic Period.

b. Devonian Period.

c. Cambrian Era.

d. Cretaceous Era.

End Show

PEARSON Prentice Hall

Copyright Pearson Prentice Hall

30-3 Section QUIZ

3 In a larval amphibian, gas exchange occurs through

a. the skin only.

b. both the skin and the gills.

c. the gills only.

d. in a lung.

End Show

PEARSON Prentice Hall

Copyright Pearson Prentice Hall

30-3 Section QUIZ

4 The tympanic membrane in a frog enables it to

a. hear.

b. see.

c. smell.

d. taste.

End Show

PEARSON Prentice Hall

Copyright Pearson Prentice Hall

30-3 Section QUIZ

5 Which of the following is a group of amphibians living on the Earth today?

a. crocodiles

b. snakes

c. salamanders

d. lizards

End Show

PEARSON Prentice Hall

Copyright Pearson Prentice Hall

END OF SECTION