

# **Phylum Chordata**

Fish, Amphibians, Reptiles

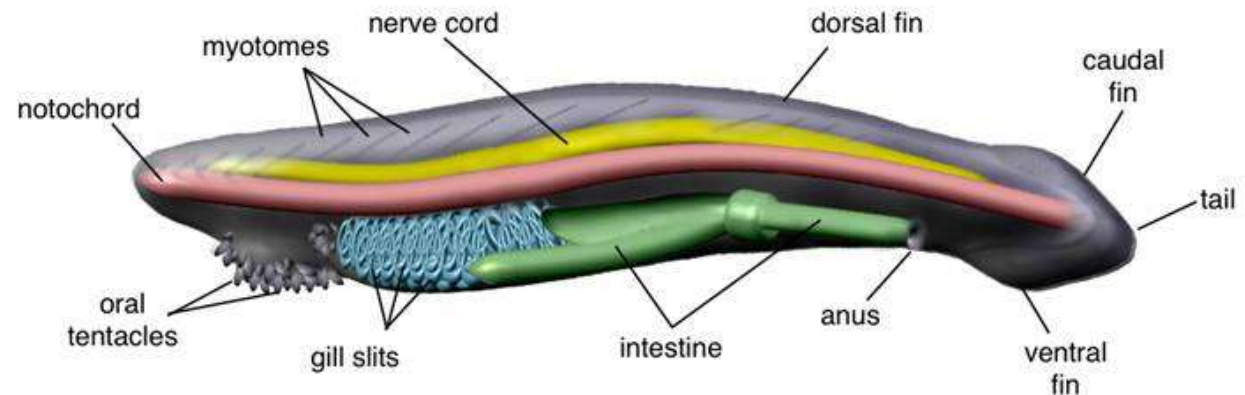
# Chordates

Three different groups

- Vertebrates
- Lancelets
- Tunicates

At some point in their lives, they all have four special body parts

- Notochord
- Hollow nerve cord
- Pharyngeal pouches
- Tail



A stiff but flexible rod called a **notochord** gives the body support. In most vertebrates, the embryo's notochord disappears and a backbone grows in its place.

A **hollow nerve cord** runs along the back and is full of fluid. In vertebrates, this nerve cord is called the *spinal cord*, and it is filled with *spinal fluid*.



Chordates have a **tail** that begins behind the anus. Some chordates have a tail in only the embryo stage.

**Pharyngeal pouches** are found in all chordate embryos. These develop into gills or other body parts as the embryo matures.

# Body Thermostats

## Endotherms

- Warmblooded
- Capture heat released by chemical reactions in cells
- Body temp stays constant
- Mammals



## Ectotherms

- Coldblooded
- Do NOT control their temperature through chemical reactions in cells
- Temp fluctuates with temp of environment
- Fish, amphibians, reptiles

The largest vertebrate category...

**FISH**

# Shared Characteristics

- Many are predators (can be herbivores)
- Born to swim
  - Fins, scales
- Lateral line system
  - Rows of tiny sense organs
  - Detect water vibrations
- Gills
  - remove oxygen from water
- Reproduce

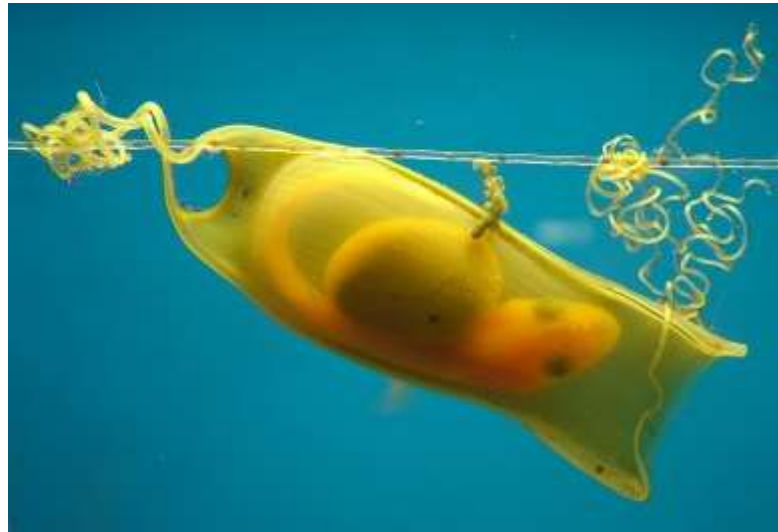




# Reproduction

## Internal fertilization

- Sperm deposited in female
- Most times, mother lays eggs and babies hatch outside body
- Sometimes embryos develop inside mother- babies born live



## External fertilization

- Female lays eggs
- Male drops sperm on them



# Jawless Fish\*



\*60 species, no jaws, cartilage skeleton, no backbone





# Cartilaginous Fish\*



## Stingrays

- kite-shaped
- streamlined tails
- 1+ venomous barbs



## Skates

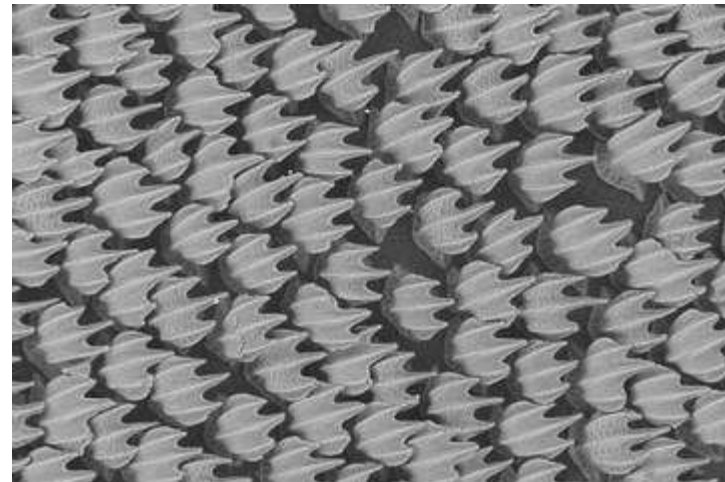
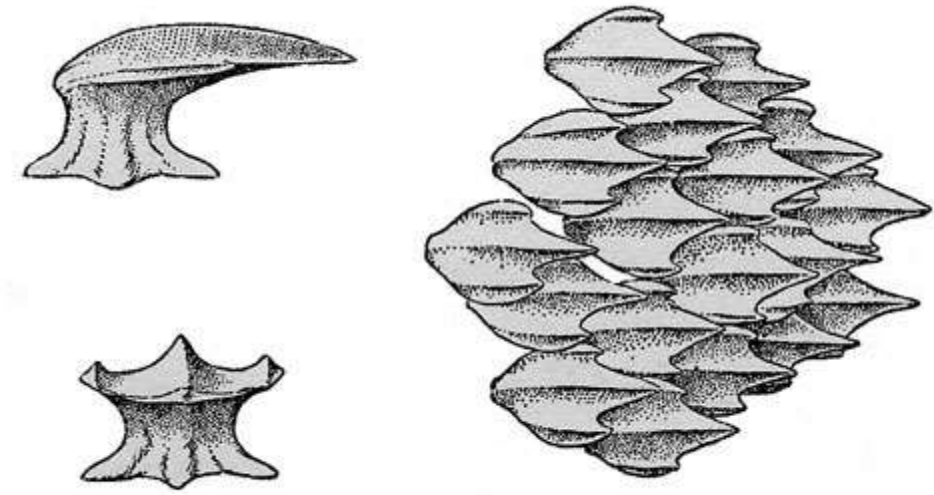
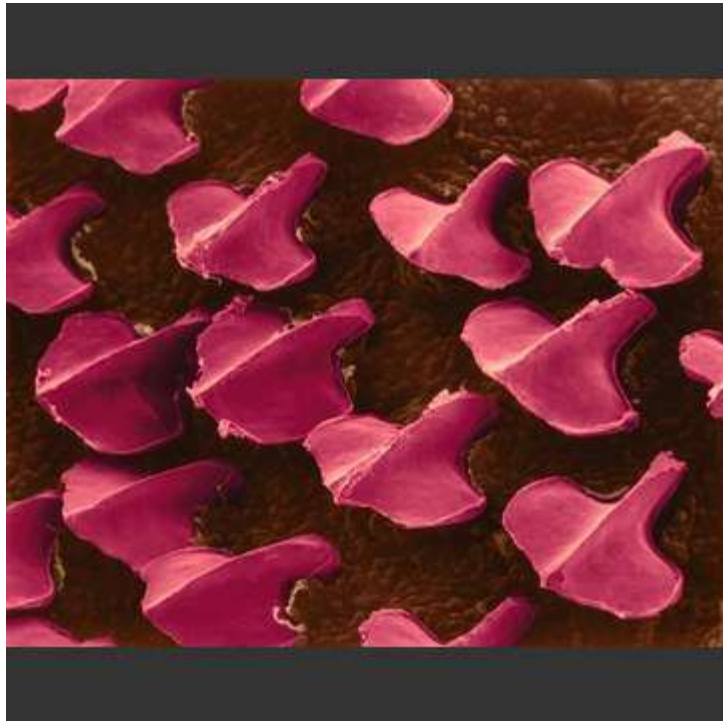
- roundish or triangular
- heavier, fleshier tails
- small fins toward the end



\*no bones, only cartilage

# Denticles

Oily livers  
Constant motion





# Bony Fish\*



Ray-finned fish

\*95% of all fish fit in this class



Don't have to  
swim all the time-  
**swim bladder**

# Living Fossils



**Coelacanth**

Lobe-finned fish



Lungfish



Benjamin  
Dunn

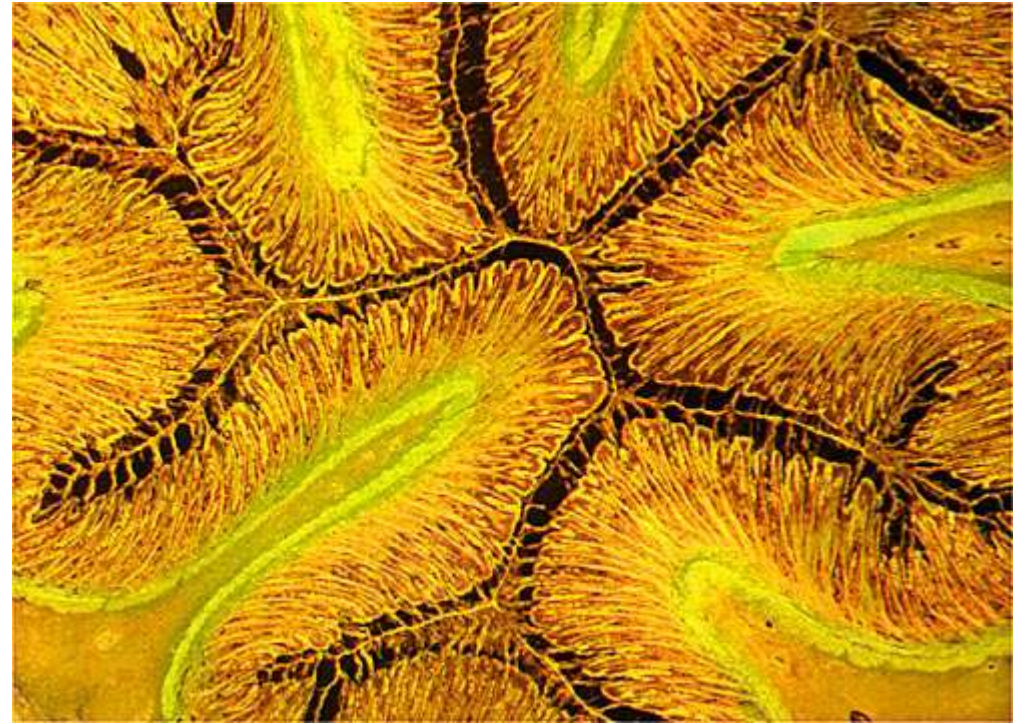


Land or water? Land or water?

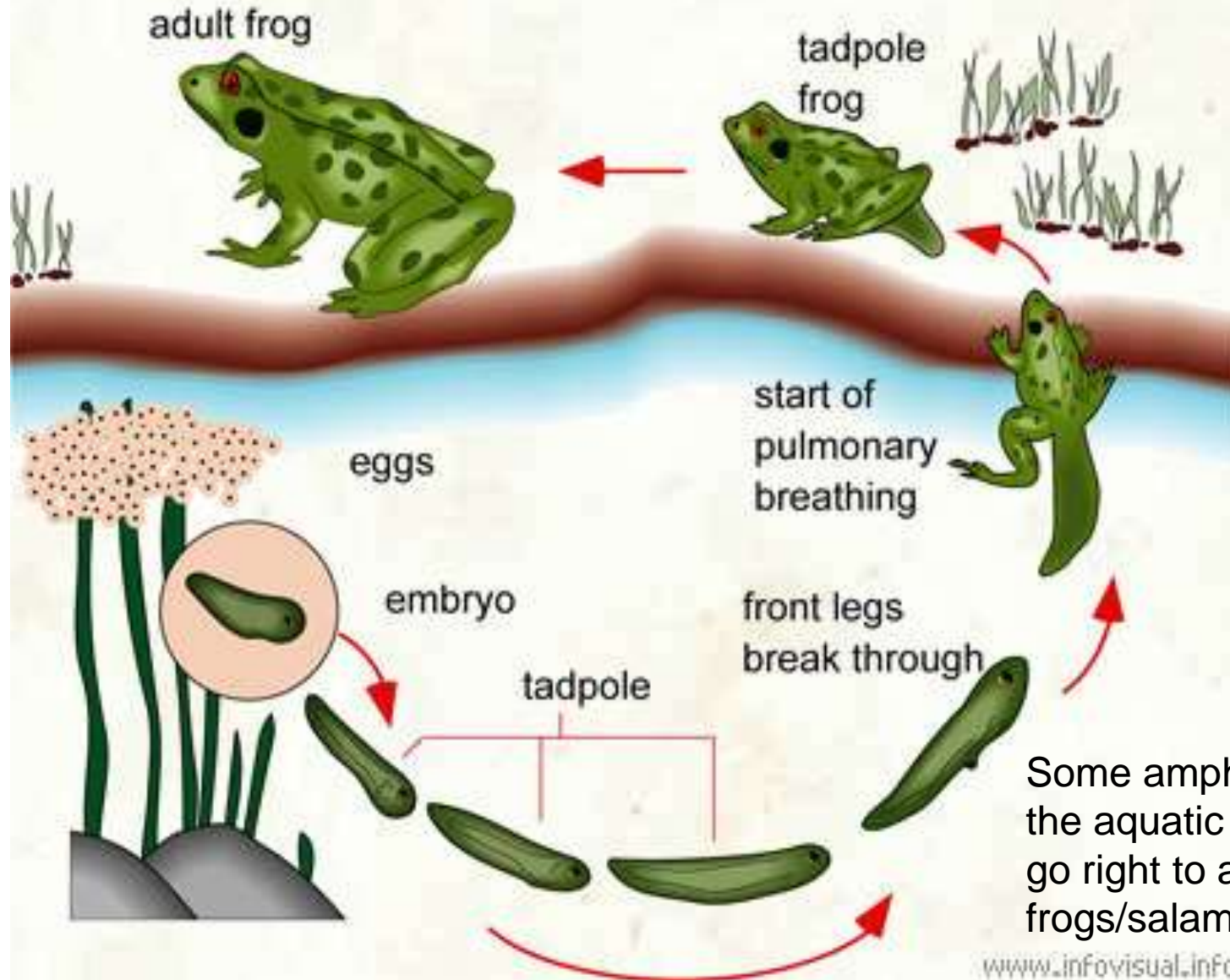
# **AMPHIBIANS**

# Amphibians

- Means “double life”
- Eggs= no shell, special membrane to prevent water loss
- Later develop to live on land, but always need to live near water.
- Thin skin
  - Don’t drink water, absorb through skin
  - Absorb oxygen through skin
  - Easily become dehydrated



# LIFE CYCLE OF A FROG





# Caecilians



- No legs, shaped like worms/snakes
- Some have bony scales
- Most are blind
- Live in Asia, Africa, South America





# Salamanders



Live under stones/logs in forests of North America

## Axolotl

- stay in larvae stage
- always live in water
- native to Mexico



# Frogs and Toads



- Smooth, moist skin

Both have

- strong legs for jumping
- good ears
- vocal cords
- extendable sticky tongues

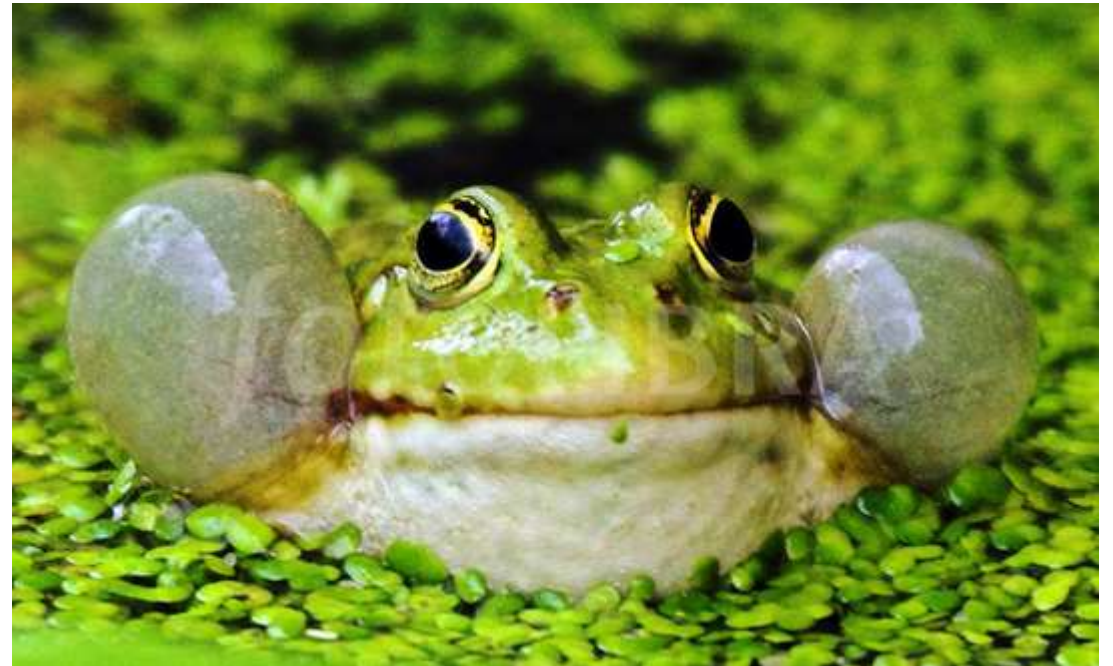


- Drier, bumpier skin





**\*vocal sac-**  
increases vibrations  
across vocal cords  
and increases sound



Dried out amphibians...

**REPTILES**



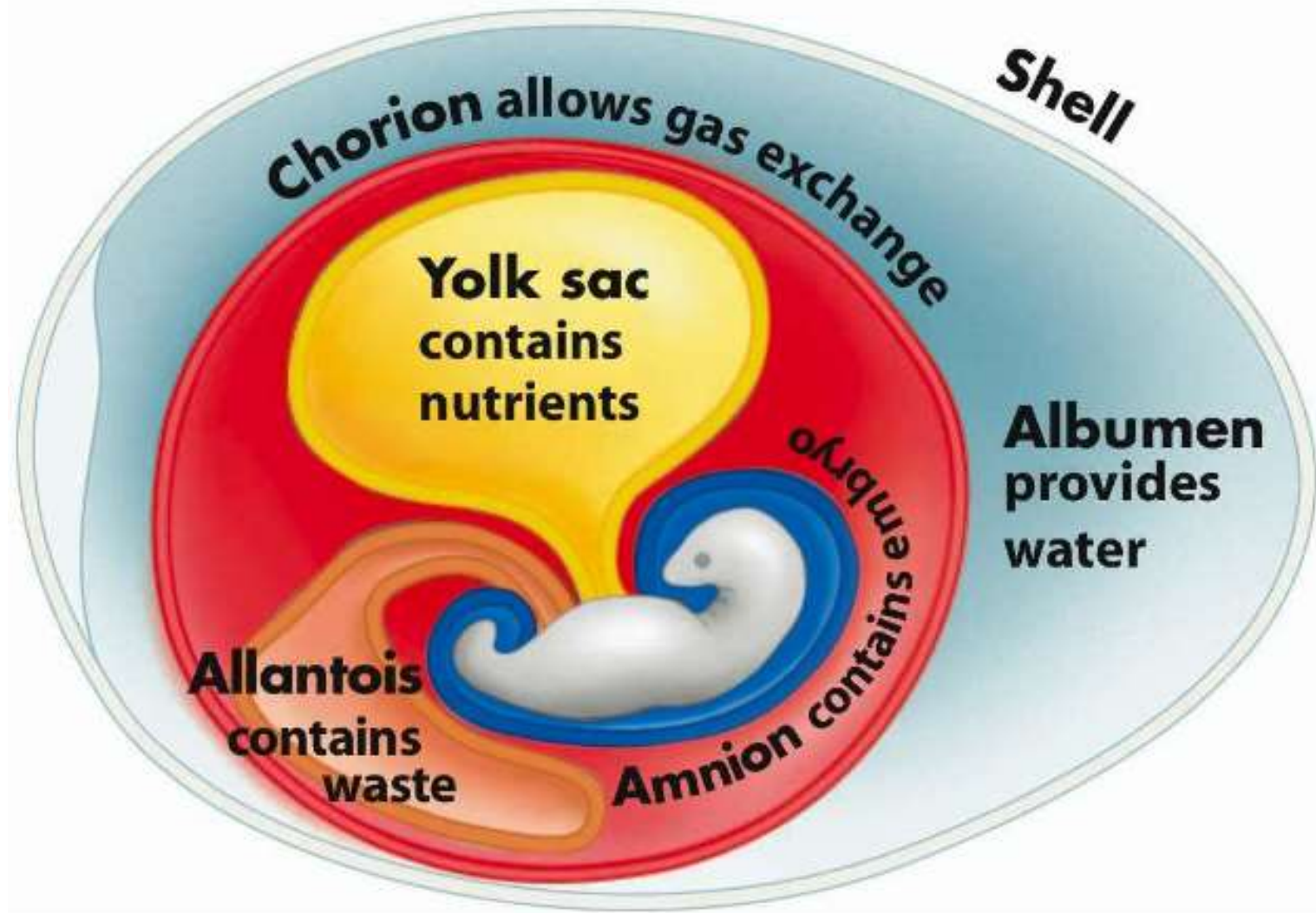
- Thick-skinned
  - Water-tight
  - Need lungs



# Reptiles



# Amniotic Egg





# Turtles and Tortoises



- Omnivorous
- Eats insects, plants, fish
- Lives in or near water



- Herbivorous
- Eats fruits and vegetables
- Lives in deserts, can't swim



# Crocodiles and Alligators

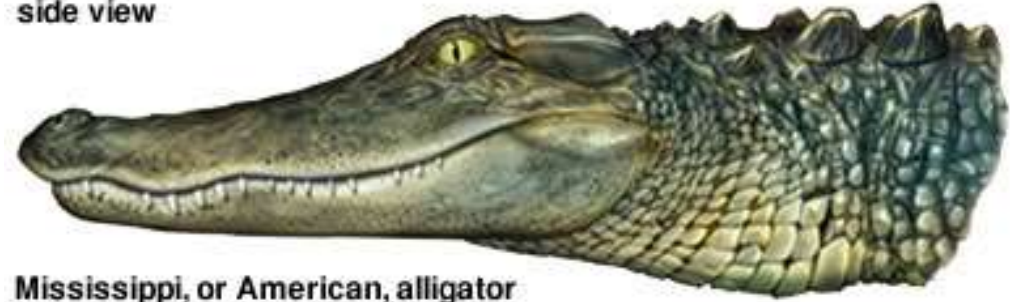




You can't see an **alligator's** teeth when it's mouth is closed; its lower teeth fit snugly into pits in the upper jaw.

A **crocodile's** lower teeth are always visible.

side view



Mississippi, or American, alligator  
(*Alligator mississippiensis*)



estuarine, or saltwater, crocodile  
(*Crocodilus porosus*)

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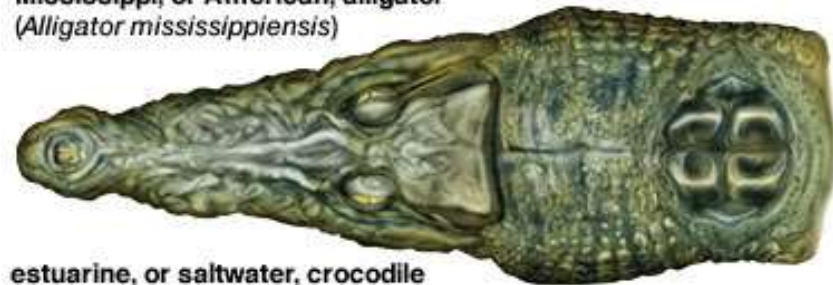
**Alligators** can only be found in the southeastern United States and in some parts of China.

**Crocodiles** can be found all over the world.

top view



Mississippi, or American, alligator  
(*Alligator mississippiensis*)



estuarine, or saltwater, crocodile  
(*Crocodilus porosus*)

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# Boy or Girl?

For some animals (like turtles and alligators), temperature determines if eggs will be boys or girls.



## Turtles:

- Embryo kept warm= female
- Nests are cool= male
- Nest usually has warm and cool areas, so each nest can produce males and females.



## Alligators:

- 90 to 93 degrees hatch as males (hot)
- 82 to 86 degrees hatch as females (cold)
- Temps in the middle= both male & female





# Lizards

- Carnivorous
- Eat small invertebrates
- Can be herbivores



# Snakes



- Lack legs
- Move by contracting muscular body
- All carnivores
- Swallow prey whole
- Five joints in jaws
- Squeeze, poison
- Can't see well, but smell really well (use tongue)