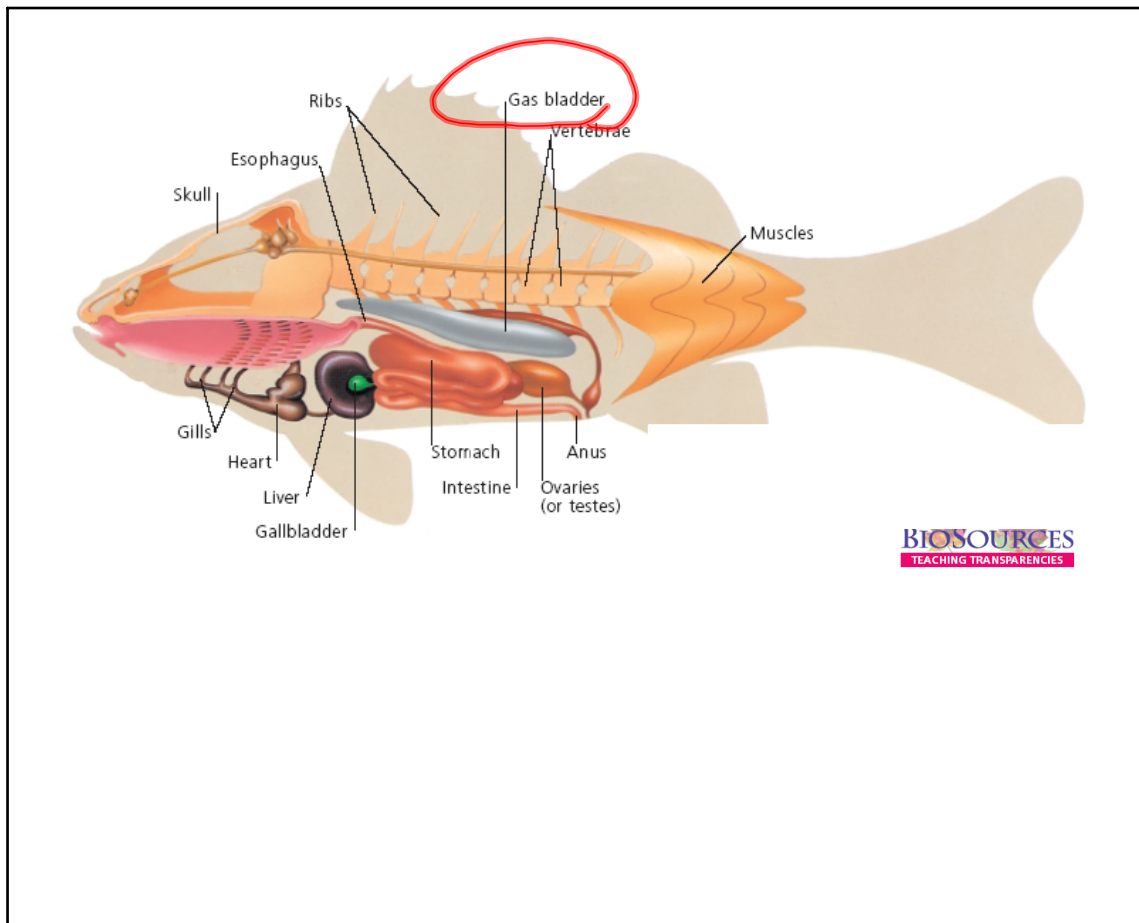


What characteristics make a fish recognizable?

fins  
gills  
scales,  
live in water

Dec 11 - 7:26 PM



Dec 11 - 7:32 PM







“Fish” refers to anything in the three categories


Agnatha (jawless fishes)

Chondrichthyes (cartilaginous fishes)

Osteichthyes (bony fishes)

Dec 11 - 7:27 PM

Major Groups of Fishes			
Class	Number of modern species	Description	Examples
Agnatha	81	No jaws; no paired appendages	Lampreys, hagfishes 
Acanthodii	Extinct	Jaws; spiny, paired fins	Acanthodians 
Placodermi	Extinct	Jaws; paired fins; bony armor	Placoderms 
Chondrichthyes	850	Jaws; paired fins; skeleton of cartilage; no swim bladder; spiracle; internal fertilization	Sharks, skates, rays 
Osteichthyes	21,000	Jaws; paired fins supported by bony rays; bony skeleton; most have swim bladder	Ray-finned fishes 
	7	Jaws; paired lobed fins; bony skeleton; extinct forms are ancestors of amphibians	Lobe-finned fishes 



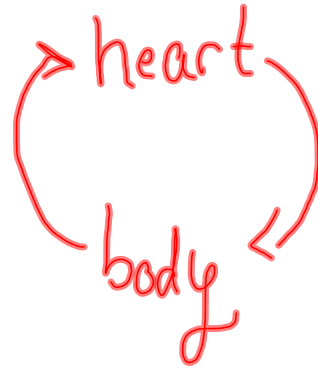
Dec 11 - 7:28 PM

# Key Characteristics

## Gills

Single-loop blood circulation

Vertebral Column

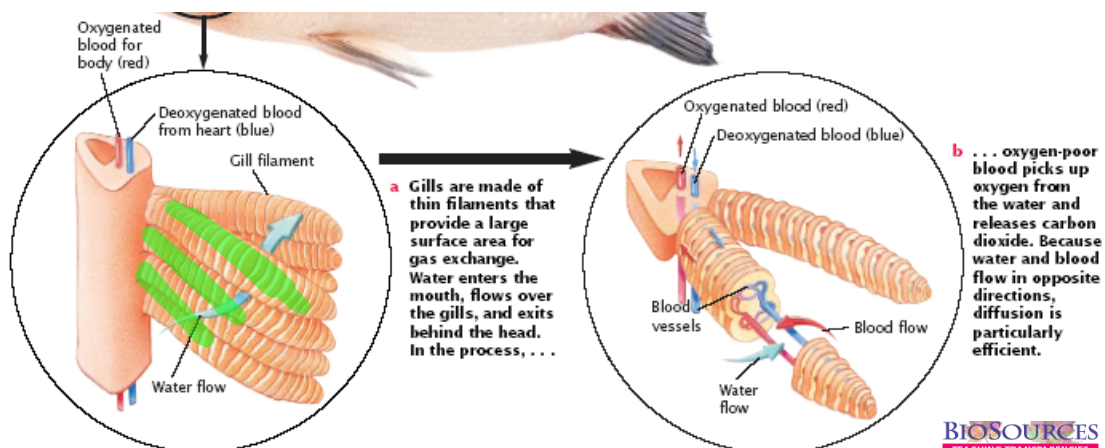


Dec 11 - 7:28 PM

Gills are made up of gill filaments (finger-like projections by which gas enters and leaves the blood)

Gill slits are where the water exits the

$O_2$   
 $CO_2$



Dec 11 - 7:29 PM

## Fish Heart

1. Sinus Venosus- the collection chamber that acts to reduce the resistance of blood flow into the heart

2. Atrium- Chamber is large and has thin, muscular walls

Dec 11 - 7:29 PM

3. Ventricle- thick walled pump with enough muscle to contract strongly

4. Conus arteriosus- a 2nd pump that smoothes the pulsation and adds more force

Dec 11 - 7:30 PM

The concentration of salt in the sea water is 3 times that of the tissues of the fish

The fish always then lose water through osmosis

They need to constantly drink water

Dec 11 - 7:31 PM

Freshwater fish tend to take in water by osmosis and this dilutes the ions so they need to take them from their environment

Kidneys are made of thousands of nephrons (tubelike units that regulate the body's salt and water)

Spawning- male and female gametes are released near one another in the water.

Dec 11 - 7:31 PM