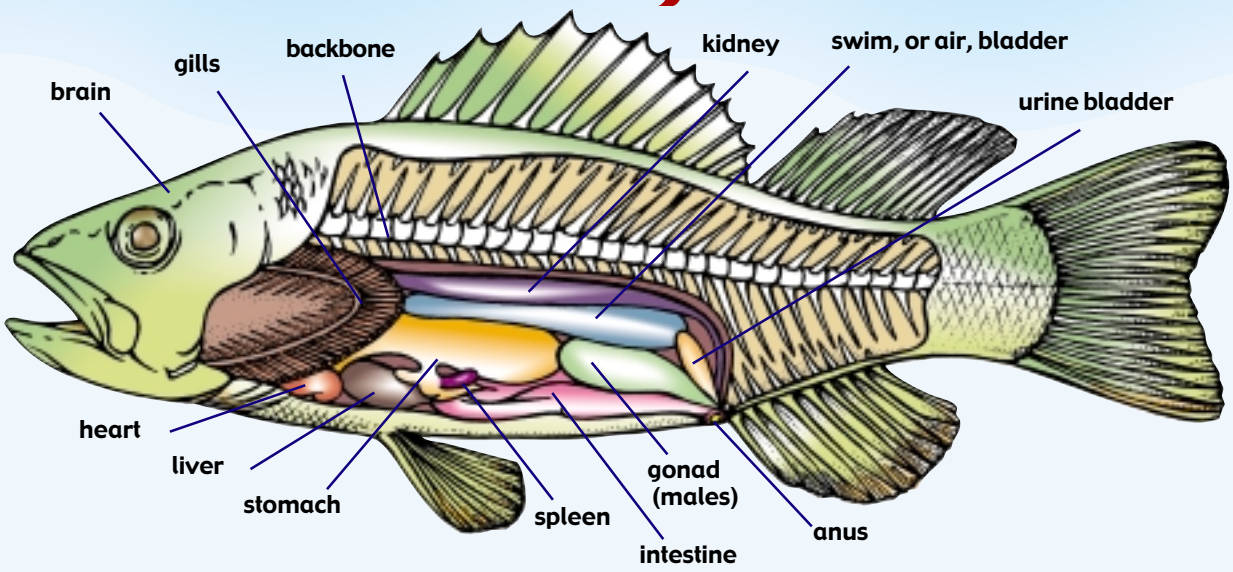
Internal Anatomy



Head: Fish have a bony skull that protects the brain and gills.

Backbone: Fish have backbones. The backbone goes from the skull through the body to the tail. Since fish live in water, bones don't have to support the entire body weight. Bones support muscles and give the fish its shape.

Brain: Fish brains are small, compared to their body shape. The brain of a trout you catch is about the size of a large pea. The brain of a fish is very different from a human brain. Fish brains have large lobes for smell, and, depending on the species, sight. Human brains have lobes for those things, but other parts, like where we think and reason, are much larger.

Spinal cord: The spinal cord is inside the backbone and connects the brain to the organs, muscles and other nerves.

Ribs: Attached to the backbone are rows of thin ribs. These ribs protect the fish's internal organs.

Heart: Fish have a two-chambered heart. Human hearts are four-chambered. Blood is pumped by the heart into the gills. Blood returns to the heart after going through the organs and muscles.

Gills: Fish have gills instead of lungs. A fish takes in water by opening its mouth. Fish "pump" water across their gills by moving the gill covers (operculum). Along the way, the blood takes in oxygen and gives off carbon dioxide through the gills. Bones called gill arches support the gills. Gill arches are the curved, white bony structures you see when you look at the gills.

Give Me Some Air!

Some fish require more oxygen than others. Trout need lots of oxygen. Trout live in colder water because more oxygen is found there. Other fish, like carp and largemouth bass, don't need as much oxygen. They can live in warmer water.

Stomach and intestines: As in humans and other animals, these organs help digest food. Nutrients are removed and wastes are passed "down the line" to the fish's anus.

Liver: Fish livers are large. The liver filters blood, removing toxins taken in from the environment.

Kidney and urine bladder: As in other animals, these organs collect salts and eliminate waste from the fish.

Air bladder: Why don't fish sink to the bottom? It's because they have an air bladder. This air bladder helps the fish float upright, in one place, without sinking. The air bladder also magnifies sounds and helps them hear. Some fish species use the air bladder in the same way that we use our lungs: They can gulp air when they stick their heads out of the water.