An underwater scene featuring several fish. The central focus is a large, brownish-orange fish with numerous small, bright yellow spots on its body, swimming towards the left. To its right, a smaller, lighter-colored fish with a reddish stripe is visible. In the background, another fish is partially seen. The seabed is covered in green algae and rocks, and the water is clear with some light filtering through.

How do fish survive under water? Discussion Questions:

- 1) How do fish move under the water?
- 2) How do fish breathe under the water?

How Do Fish Swim?

Fish use the muscles in the sides of their body to swim. They contract the muscles of the left side of their body in a wave that extends from head to tail while they relax the muscles on the right side. They then contract the muscles on the right side of their body while relaxing the muscles on the left. They are propelled forward through the water by alternating this action on the left and right sides.

Fish also use their tail fins and pectoral fins to help them swim. Some fish use them to help steer them in the right direction while others use rapid movements of the pectoral fins to help them swim.



Shark or a whale?

Tail movement is a good way to tell the difference between fish and whales. A shark will move its tail from side to side whilst a whale moves its tail up and down. The largest shark is called the whale shark, but do not be deceived by its name. This is a shark not a whale. It moves its tail from side to side!



Tail shape is also a good indication of whether the animal is a fish or a whale. Whale tails are horizontal and shark tails are vertical.

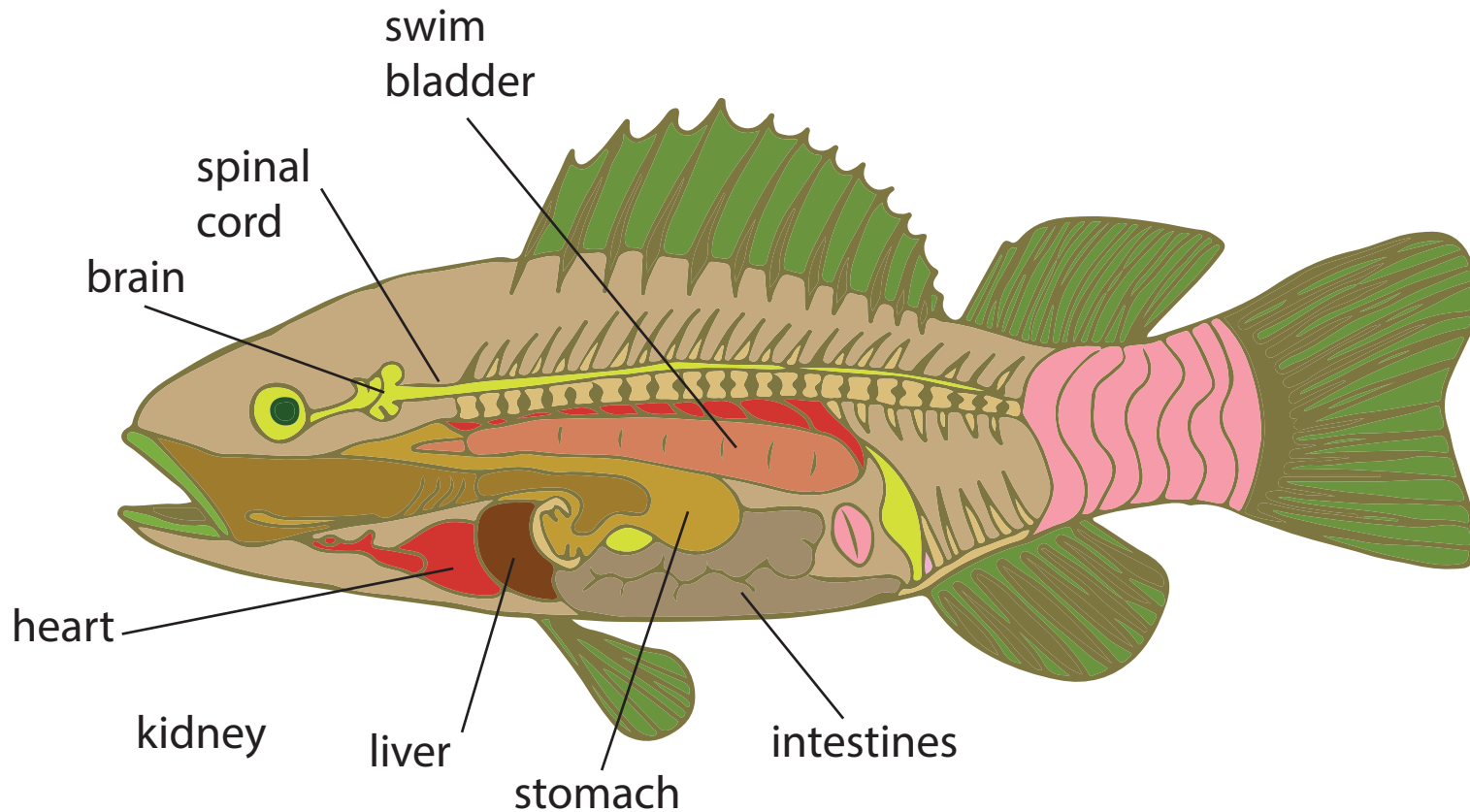
Left: tail of a humpback whale
Right : tail of a whale shark



Swim Bladder

Some fish use a 'swim bladder' to help them swim. This organ is located inside the body and regulates the depth at which a fish moves. The bladder can inflate with gas allowing the fish to ascend higher in the water. It can also deflate allowing the fish to descend.

Not all fish have a swim bladder. Cartilaginous fish like sharks and stingrays do not have a swim bladder. Deep sea fish and fish that spend a great deal of time near the sea floor do not have a swim bladder.



How do Fish Breathe Underwater?

Living things need oxygen. The air we breathe contains oxygen. When we breathe in air the oxygen is absorbed by our lungs. When we breathe out we expell unwanted carbon dioxide. Fish live underwater. So how do they breathe?

Fish do not breathe air. They get the oxygen they need from the water they live in. Fish have special filters in the sides of their body called 'gills' that act as their 'lungs'.

In bony fish the gills are located under a hard gill cover called the operculum. The gills look like rows of frills. The gills contain very small blood vessels that have very fine membranes. In sharks the gills are not covered. Sharks have 5-6 sets of gill slits in their skin.

The fish opens its mouth to let water flow through the gills and out of its body. As the water passes the gill membrane, oxygen is absorbed into the bloodstream. At the same time, carbon dioxide from the blood passes across the gill membrane and is carried away with the water.



Above: view of the gills of a bony fish, located under the operculum.



Far Left: The rows of gills under flaps in the skin of a shark.



Left: Close up view of the gills of a bony fish.