

# B R E A T H T A K I N G

## How Do Animals Breathe?

All animals require oxygen to live, that is something we share, but they get it in several different ways.

**ALL VERTEBRATES** (animals with a spinal cord, including humans) on land breathe with **LUNGS**.

When you take a breath, a muscle below the rib cage called the **DIAPHRAGM** presses downward to allow air to fill the lungs, two hollow organs on either side of the heart. Nearby blood vessels pick up the oxygen from that air and distribute it throughout the body until the diaphragm moves upward again to release the air.



**BIRDS** also have lungs. They pump air into them using air sacs that inflate and deflate to create suction. Birds extract more oxygen per breath than most other animals to get lots of oxygen (energy) to the muscles in their wings to help them fly long distances.

**FROGS AND TOADS** have lungs, but they can also breathe through their skin, using a process called **DIFFUSION**. Some ocean animals that live underwater can also absorb oxygen from their environment through their skin with diffusion.



Unlike land animals, **FISH** do not have lungs and their breathing equipment is on the outside of their bodies instead of the inside. They breathe with **GILLS**, flaps of skin on both sides of their heads or in their mouths. When water flows into their mouths and out through their gills, their red blood cells absorb the oxygen. Yet oxygen in water is far scarcer than on land, so they have to swim around to get enough oxygen-rich water.

**INSECTS** don't have lungs, either. Their bodies have holes called **SPIRACLES** that function like valves, opening and closing to distribute oxygen directly into their cells through a series of tubes. Some insects pulse their bodies to inhale and exhale while others do it more passively by simply opening their valves.

