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Authors:	Georges, Jason; Irons-Georges, Tracy
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Abstract:	The slow change in species over time and between generations is called evolution. Animals evolve or change in nature. This change can be studied by looking at old bones called fossils. Animals may evolve between generations because of mutation. Mutations are changes in DNA. Some mutations help an animal to adapt to its world. Adaptation is important to the survival of a species. (Copyright applies to all Abstracts)
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Evolution

There are so many different plants and animals in the world that people have often wondered where they all came from. Some animals seem more alike than others. Others look very different but may be related. The period of time between parents and their children, or offspring, is called a generation (jeh-nuh-RAY-shun). The slow change in species over time and between generations is called evolution (eh-vuh-LOO-shun).



Sparrow



GETTING TO KNOW...

Charles Darwin

Charles Darwin was born in England in 1809. He was a **naturalist**, a scientist who studies plants and animals. Darwin began to study evolution after a trip on a ship called the HMS *Beagle* in 1832.

The *Beagle* went to the **Galápagos** (guh-LAH-puh-gus) **Islands**, near the west coast of South America. Darwin studied the birds that lived on the island. He found that the 13 different species of finches there had descended from one species from the mainland of South America. The finches had evolved different beaks to eat the different types of foods available to them. Darwin published his book *On the Origin of Species* in 1859. The book described the theory of natural selection.

GETTING TO KNOW: Charles Darwin

Animals evolve, or change, in nature. All plants and animals have evolved from a common ancestor over billions of years. Changes in different animals can be seen over time by looking at old bones called fossils. Fossils from millions of years ago show animals very different from those that are around today.

Animals species may evolve between generations because of a mutation (myoo-TAY-shun). Mutations are changes in DNA. They can be caused by radiation from the sun, chemicals in the environment, or cosmic rays from outer space. Some mutations help an animal adapt to its world. Adaptation (ah-dap-TAY-shun) is important to the survival of a species. Animals that can adjust to changes have a better chance of surviving and producing offspring. This is called natural selection.



Fossil bones of a dinosaur.



DID YOU KNOW...

Natural Selection Can Occur Overnight

In 19th century England, the white trunks of many trees turned black from pollution. Suddenly, people noticed there were more black moths than white moths. It was easier for birds to see the white moths on the trees and eat them! The black moths were safe.

DID YOU KNOW: Natural Selection Can Occur Overnight

Sometimes, an entire species is unable to survive. This is called extinction (ik. STING-shun). Most of the fossil record shows animals that are extinct. Many more species have become extinct in the history of the planet than exist today.

Many of the changes in animals have taken place over a very long period of time. It is easier to see evolution happen by looking at how humans have changed other species. Humans can affect how animals evolve using artificial selection. Animal breeding is a common form of artificial selection. Sheep have been bred over thousands of years to produce wool for clothing. Those sheep with nice wool were allowed to reproduce. Those with bad wool were not allowed to have offspring.

Pets evolved from wild animals through a long process of artificial selection. The wide variety of dogs found today all came from a wild wolf ancestor. This sort of artificial selection is known as domestication (duh-meh-stih-KAY-shun). Domestication has taken place with dogs, cats, and all the animals that live on a farm.

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By Jason Georges and Tracy Irons-Georges

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