

Darwin's Theory of Evolution

Do you ever wonder why some birds are big like ostriches and some birds are small like robins? Or why a lion has a mane while a leopard has spots? In the 19th century, an English scientist named **Charles Darwin** was also fascinated by the diversity of life on earth.

He set out to answer the following questions:

- Why are organisms different?
- Why are organisms similar?
- Why are there so many different types of organisms?

To answer his questions, he developed what we now call "the theory of evolution by natural selection." This theory is one of the most important theories in the field of life science. In everyday English, "evolution" simply means "change." In biology, **evolution** is the process that explains why species change over time. Darwin spent over 20 years traveling around the world and making observations before he fully developed his theory.



Voyage of the *HMS Beagle*

In 1859, Charles Darwin published his theory of evolution in the book, *On the Origin of Species*. His book describes the observations and evidence that he collected over 20 years of research, beginning with a five-year voyage around the world on a British research ship, the *HMS Beagle*. During the voyage, Darwin made observations about plants and animals around the world.

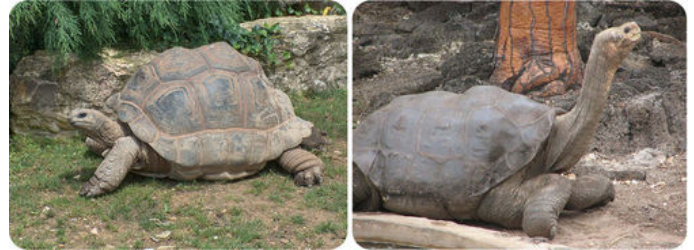
The Galápagos Islands

One of the stops of the HMS Beagle was to a group of islands called the Galápagos, located off the west coast of South America. On the Galápagos, Darwin observed that the same kind of animal differed from one island to another. For example, he saw iguanas (large lizards) on one island that spent most of their time in the ocean, swimming and diving underwater for seaweed, and iguanas on another island that only lived on land and ate cactus. Darwin



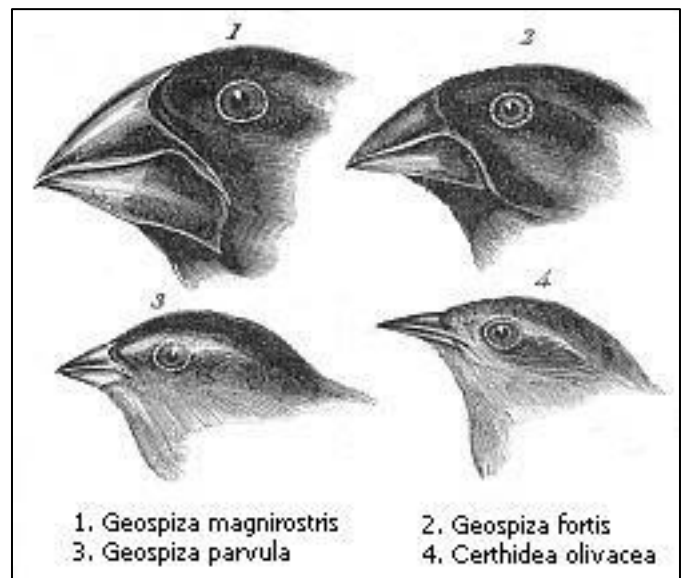
wondered why there were two species of iguanas on the same set of islands that were so different from one another.

He also observed giant tortoises on one island that ate plants near the ground and had rounded shells and shorter necks. On another island that had tall shrubs, the tortoises had longer necks and shells that bent upward, allowing them to stretch their necks. Darwin began to hypothesize that organisms developed traits over time because of differences in their environments.



Darwin's Finches

Darwin is most famous, though, for his study of the Galapagos finches—a type of bird. When Darwin first observed finches on the islands, he did not even realize they were all finches. But when he studied them further, he realized they were related to each other. Each island had its own distinct species of finch. The birds on different islands had many similarities, but their beaks differed in size and shape.



In his diary, Darwin pointed out how each animal is well-suited for its particular environment. The shapes of the finch beaks on each island were well-matched with the seeds available on that island, but not the seeds on other islands. For example, a larger and stronger beak was needed to break open large seeds on one island, and a small beak was needed to eat the small seeds on a different island.