

SCIENCE DISSECTED

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Celebrating Darwin Day

Darwin Day is an international celebration that occurs on or around February 12th each year to celebrate the life and scientific contributions of Charles Darwin. This year is the 200th anniversary of Charles Darwin's birthday and marks 150 years since the publication of *The Origin of Species*. This month, it seems fitting to highlight the contributions of Charles Darwin and to discuss the importance of teaching evolution in the classroom.

In order to appreciate Charles Darwin's accomplishments, it is important to recognize the time in which Darwin lived. He was born in 1809, on the same day as Abraham Lincoln. He began his travels aboard the H.M.S. Beale in 1831, the same year that the population in the United States reached 13 million. Darwin published *The Origin of Species* in 1859, which was shortly before the American Civil War. Remarkably, Charles Darwin developed his theory of evolution without knowing about DNA, genes, mutations, or the age of the Earth. As information and technology advanced, instead of contradicting Darwin, the new data from sources such as biochemical analysis and a more complete fossil record has provided additional support for the theory of evolution.

As Darwin circumnavigated the world aboard the H.M.S. Beagle, his exposure to other continents made him aware of various cultures and the similarities and differences of the plant and animal species that inhabited those lands. Darwin collected a vast amount of evidence in the form of fossils, specimens, and written observations which he used to develop his ideas of how species changed over time. Without Darwin's experience on the Beagle, it is unlikely that he would have developed his theory of descent with modification by natural selection.

Despite the amount of evidence that Darwin collected to support his claim of how organisms change over time, he was hesitant to publish his theory. Darwin feared the consequences of claiming that new species may arise or become extinct due to selective pressures in the environment rather than being selectively created or destroyed by God. Prompted by an essay written by Alfred Wallace who developed a theory very similar to his own, Darwin published *The Origin of Species* and sparked a controversy that continues today.

Darwin's revolutionary idea that all life forms have evolved from a common tree of life has unified many fields such as paleontology, heredity, taxonomy, comparative anatomy, embryology, and biochemistry. According to Theodosius Dobzhansky (*American Biology Teacher*, March 1973), "Nothing in biology makes sense except in the light of evolution." Dobzhansky continued his argument by stating without evolution, biology "becomes a pile of sundry facts some of them interesting or curious but making no meaningful picture as a whole." Due to its ability to link such big ideas in science and various fields of study, evolution science is a cornerstone concept in biology. Next month's edition of *Science Dissected* will focus on the struggles that biology teachers face when teaching evolution science.

Written by: *Elizabeth Marconi*

Darwin Resources and Related Links

Darwin Day Celebration: <http://darwinday.org/index.html>

The Origin of Species online at Literature.org: <http://www.literature.org/authors/darwin-charles/the-origin-of-species/index.html>

History of Darwin from the Pew Forum: <http://pewforum.org/docs/?DocID=397>



Charles Darwin's Natural Selection

"In the struggle for survival, the fittest win out at the expense of their rivals because they succeed in adapting themselves best to their environment."

Did you know?

The phrase "survival of the fittest" was first used by British philosopher, Herbert Spencer (1851), who used it to justify what later became known as Social Darwinism. It was not until the 5th edition of *The Origin of Species* (1869) that Darwin began using "survival of the fittest" as a synonym for natural selection.