

Evolution by Natural Selection

Brief Description:

The theory of evolution by natural selection, first described in Darwin's book "On the Origin of Species" in 1859, describes the process in which organisms change over time as a result of natural variation and inherited traits. Changes that allow an organism to better adapt to its environment will help it survive and have more offspring. While scientists cannot travel back in time to witness these changes, important evidence is gathered from Earth's crustal layers, observations of traits, and DNA analysis.

Directions:

The following is a list of scientific discoveries. Some have been used by scientists to support this theory, while others have no relevance. Your job is to evaluate this list and determine the *four* most critical scientific discoveries to support your theory. You will have to justify your answer just as Charles Darwin had to do when he first introduced his theory.

Scientific Discovery
• Radioisotope dating indicates that the Earth is 4.5 billion years old
• The fundamental chemistry and processes that happen in cells is very similar, showing that all life on Earth share a common ancestry.
• Fossils of tropical organisms can be found in Antarctica
• Fossil evidence plainly shows that species have gone through changes over time
• The skeletal structure of different organisms such as whales, lions, bats, and humans are similar even though these organisms live in very different environments
• Fossils of cells that resemble bacterial cells, have been found in rocks that scientists estimate to be 3.5 billion years old.
• Species with similar structures seem to be clustered near one another on Earth's continents
• Earth is the only known planet in our solar system that can support life.
• Scientists have observed changes in the populations of organisms that are alive today such as antibiotic-resistant bacteria
• Earth has a powerful magnetic field