Changes in environmental conditions can affect the survival of individual organisms and entire species. Natural selection provides the following mechanism for evolution: Some variation in heritable characteristics exists within every species, some of these characteristics give individuals an advantage over others in surviving and reproducing, and the advantaged offspring, in turn, are more likely than others to survive and reproduce. The proportion of individuals that have advantageous characteristics will increase.

Modern ideas about evolution (including natural selection and common descent) provide a scientific explanation for the history of life on earth depicted in the fossil record and in the similarities evident within the diversity of existing organisms.

The basic idea of biological evolution is that the earth's present-day species developed from earlier, distinctly different species. Molecular evidence substantiates the anatomical evidence for evolution and provides additional detail about the sequence in which various lines of descent branched off from one another.

Scientific evidence indicates that some rock near the earth's surface is several billion years old. Small differences between parents and offspring can accumulate (through selective breeding) in successive generations so that descendants are very different from their ancestors.

New heritable characteristics can result from new combinations of existing genes or from mutations of genes in reproductive cells. The expression \( \frac{a}{b} \) can mean... a compared to b. Individual organisms with certain traits are more likely than others to survive and have offspring. For sexually reproducing organisms, a species comprises all organisms that can mate with one another to produce fertile offspring.

Heritable characteristics ultimately produced in the development of an organism can be observed at molecular and whole-organism levels - in structure, chemistry, or behavior.

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Changes in environmental conditions can affect the survival of individual organisms and entire species. Organisms may compete with one another for resources...The growth and survival of organisms depend on physical conditions.

Natural selection leads to organisms well suited for survival in particular environments. Natural selection provides the following mechanism for evolution: Some variation in heritable characteristics exists within every species, some of these characteristics give individuals an advantage over others in surviving and reproducing. The proportion of individuals that have advantageous characteristics will increase. New heritable characteristics can result from new combinations of existing genes or from mutations of genes in reproductive cells. Molecular evidence substantiates the anatomical evidence for evolution and provides additional detail about the sequence in which various lines of descent branched off from one another. Many thousands of layers of sedimentary rock provide evidence for the long history of the earth and for the long history of changing life forms whose remains are found in the rocks. More recently deposited rock layers are more likely to contain fossils resembling existing species. The sorting and recombination of genes in sexual reproduction results in a great variety of possible gene combinations from the offspring of any two parents. Genes are segments of DNA molecules. Inserting, deleting, or substituting DNA segments can alter genes. An altered gene may be passed on to every cell that develops from it.

Inheritance of characteristics...influence how likely an organism is to survive and reproduce. The basic idea of biological evolution is that the earth's present-day species developed from earlier, distinctly different species. Natural selection leads to organisms well suited for survival in particular environments. The experiences an organism has during its lifetime can affect its offspring only if the genes in its own sex cells are changed by the experience. Individual organisms with certain traits are more likely than others to survive and have offspring. For sexually reproducing organisms, a species comprises all organisms that can mate with one another to produce fertile offspring. Heritable characteristics ultimately produced in the development of an organism can be observed at molecular and whole-organism levels - in structure, chemistry, or behavior.