

Evolutionary Biology Overview

1. Evolution is the unifying theory of the biological sciences. It aims to discover the history of life and the causes of the diversity and characteristics – all characteristics – of organisms.
2. Biological evolution is change, over the course of generations, in the properties of populations of organisms, or groups of populations. Thus it consists of descent with modification, and often includes diversification from common ancestors.
3. The causes of evolution include the origin of hereditary variation by mutation and recombination, and changes in the proportions of variants due to sorting processes such as random changes in proportions and nonrandom differences in survival and reproduction. The latter process, natural selection, is the cause of adaptations.
4. Descent with modification from common ancestors is a scientific fact, that is, a hypothesis so well supported by evidence that we take it to be true. The theory of evolution, on the other hand, is a complex body of statements, well supported but still incomplete, about the causes of evolution.