

TEACHING OF EVOLUTION: FACT AND THEORY

The American Chemical Society (ACS) strongly supports the inclusion of evolution in K–12 science curricula at an age-appropriate level because this theory is central to our modern understanding of science. The theory of evolution is not a hypothesis, but the scientifically accepted explanation of the incontrovertible fact that life and its many forms has changed over the years. Built upon hundreds of years of scientific observation and experimentation and tens of thousands of peer-reviewed scientific publications, evolution provides scientists and students with a unifying concept that explains the incredibly rich diversity of living things and their capacity to change and evolve over time. Evolution is an active field of research in which new discoveries continue to increase our knowledge and understanding of the specific processes and paths that biological organisms have followed over the billions of years that life has existed on earth. A central component of biology and biotechnology, modern evolutionary theory is also based on evidence derived from chemistry, physics, geology, and other disciplines. Because of the overwhelming evidence supporting evolution, it is recognized and endorsed as a key principle of science, on par with the atomic theory of matter, and as a central theme of science education by all major scientific societies.

Science and religion are two different human activities that seek to understand our world. Science rigorously applies the observation of natural phenomena and systems plus studies of modifications to these natural systems, to develop models that explain the order and function of the universe. As a key principle of science, evolutionary theory cannot be dismissed or diminished by characterizing it as mere conjecture or speculation. Furthermore, because it has developed out of scientific investigations, evolution cannot be equated with socially or religiously derived beliefs. Evolutionary theory, like all scientific descriptions of the workings of nature, is subject to continuing modification to reflect new knowledge gained through observation and experimentation.

The U.S. education system has witnessed repeated efforts to incorporate religious beliefs into scientific curricula as a counterpoint to evolutionary theory. Most recently these efforts have focused on intelligent design, which has been mischaracterized as a scientific theory by its principal proponents. Because intelligent design is not built upon a scientifically testable hypothesis, is not derived from a base of valid experimental studies, cannot point to any scientifically validated body of literature, and makes no testable predictions, it cannot be described as a scientific theory. The inclusion of non-scientific explanations in science curricula misrepresents the nature and processes of science. It also compromises a central purpose of public education—the preparation of a scientifically literate citizenry and workforce. Portraying non-scientific content as science in curriculum at any educational level poses a threat to the future scientific, technological, and economic competitiveness of the nation.

The American Chemical Society recognizes the critical importance of the scientific principles embodied in evolutionary theory and urges

- ACS members to educate themselves about challenges to the validity of scientific knowledge and actively join in efforts to expose misrepresentations of scientific fact, including efforts aimed at equating non-scientific creation beliefs with scientific knowledge.
- State and local education authorities to support high-quality science standards and curricula that affirm evolution as the only scientifically accepted explanation for the origin and diversity of species.
- School administrators and curriculum supervisors to ensure that evolution is taught in their classrooms, accurately represented in science textbooks, and appropriately assessed through local and state science tests.

The American Chemical Society (ACS) Board of Directors Committee on Public Affairs and Public Relations adopted this statement on behalf of the Society at the recommendation of the Society Committee on Education. ACS is a non-profit scientific and educational organization, chartered by Congress, with nearly 157,000 chemical scientists and engineers as members. The world's largest scientific society, ACS advances the chemical enterprise, increases public awareness of chemistry, and brings its expertise to state and national matters.

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