

## **The Scientific Theories of Biological Evolution and History of the Earth Should be Central Elements of Science Education**

*Scientific theories of Earth history and biological evolution are fundamental to understanding the natural world, are supported by extensive evidence, and are non-controversial within the scientific community. These principles of scientific understanding must be central elements of science education.*

AGU affirms the central importance of including scientific theories of Earth history and biological evolution in science education. Within the scientific community, the theory of biological evolution is not controversial, nor have “alternative explanations” been found. This is why no competing theories are required by the U.S. National Science Education Standards. Explanations of natural phenomena that appeal to the supernatural or are based on religious doctrine—and therefore cannot be tested through scientific inquiry—are not scientific, and have no place in the science classroom.

Evolution through natural selection is one of the great unifying theories of biology. It explains the myriad forms of life—including human—that have originated from simple beginnings early in Earth's four and a half billion year history, and it emphasizes the interrelatedness of all living things. It is a theory in the scientific sense—a body of knowledge that has accumulated through testing of hypotheses, by observation and by experiment over a long period, so as to become accepted by the scientific community as an explanation of natural phenomena. Although there is broad agreement within the scientific community, the theory of evolution, like any scientific theory, is subject to revision as our understanding improves. Indeed, science seeks to unravel innumerable unsolved problems in the natural world, including the evolution of the universe itself.

An increasingly complex and competitive international economy calls for a scientifically literate public. The theory of biological evolution is one of the most important foundations of the science enterprise, and therefore education of the future workforce in evolution and other pillars of science is essential.

In addition to the practical benefits of understanding evolution, there is an aesthetic one: the gaining of a sense of awe and wonder at the beautiful complexity of our dynamic planet and the integral role of its evolving biological component throughout much of its history. To deny students a full understanding of the theory of evolution in the context of Earth history is to deprive them of an important part of their intellectual heritage.



AGU urges its members to help the public better understand the scientific process, including biological evolution and the history of the Earth, as foundations of science.

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