



**AMERICAN
SOCIETY FOR
MICROBIOLOGY**

Education Board

November 15, 2013

Dr. Josh Rosenau
Programs and Policy Director
National Center for Science Education, Inc.
420 40th Street, Suite 2
Oakland, CA 94609-2509

Dear Dr. Rosenau:

As chairs of the American Society for Microbiology (ASM) Education Board and Committee on K-12 Outreach, we would like to offer our support for the National Center for Science and Education's (NCSE) message to the Texas State Board of Education regarding the selection of science textbooks. As you mention in your statement, "evolution is the foundation of modern biology" and this is certainly true for microbiology. The fundamental principles of evolution are critical to our understanding of microbial processes in agriculture, chemistry, ecology, geology, health and medicine, and industry. Microbiologists have been leaders in gathering data in support of these principles. In 2006, ASM issued the attached policy statement regarding the scientific basis for evolution. Thank you for the chance to comment on this important topic.

Sincerely,

Neil R. Baker
Chairperson, ASM Education Board

David J. Westenberg
Chairperson, ASM Committee on K-12 Outreach



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ASM Statement on the Scientific Basis for Evolution

Revised after Council input on May 24, 2006, and subsequent review by the committee

Knowledge of the microbial world is essential to understanding the evolution of life on Earth. The characteristics of microorganisms—small size, rapid reproduction, mobility, and facility in exchanging genetic information—allow them to adapt rapidly to environmental influences. In microbiology, the validity of evolutionary principles is supported by [1] readily demonstrated mutation, recombination and selection, which are the fundamental mechanisms of evolution; [2] comparisons based on genomic data that support a common ancestry of life; and [3] observable rates of genetic change and the extent of genomic diversity which indicate that divergence has occurred over a very long scale of geologic time, and testify to the great antiquity of life on Earth. Thus, microorganisms illustrate evolution in action, and microbiologists have been able to make use of the microbes' evolutionary capacity in the development of life-improving and life-saving innovations in medicine, agriculture, and for the environment. By contrast, proposed alternatives to evolution, such as intelligent design and other forms of creationism, are not scientific, in part because they fail to provide a framework for useful, testable predictions. The use of the supposed "irreducible complexity" of the bacterial flagellum as an argument to endow nonscientific concepts with what appears to be legitimacy, is spurious and not based on fact. Evolution is not mere conjecture, but a conclusive discovery supported by a coherent body of integrated evidence. Overwhelmingly, the scientific community, regardless of religious belief, accepts evolution as central to an understanding of life and the life sciences. A fundamental aspect of the practice of science is to separate one's personal beliefs from the pursuit of understanding of the natural world. It is important that society and future generations recognize the legitimacy of testable, verified, fact-based learning about the origins and diversity of life.

The American Society for Microbiology is the largest single life science society, composed of over 39,000 scientists and health professionals. ASM's mission is to advance the microbiological sciences as a vehicle for understanding life processes and to apply and communicate this knowledge for the improvement of health and environmental and economic well-being worldwide.