

May 12, 2005

Dr. Steve E. Abrams, Chair  
Kansas State Board of Education  
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Dear Dr. Abrams:

I have been following the controversy over the adoption of new science standards in your state with interest. I am writing—as a member of the National Academy of Sciences—to voice my strong support for the idea that students should be able to study scientific criticisms of the evidence for modern evolutionary theory along with the evidence favoring the theory.

All too often, the issue of how to teach evolutionary theory has been dominated by voices at the extremes. On one extreme, many religious activists have advocated for Bible-based ideas about creation to be taught and for evolution to be eliminated from the science curriculum entirely. On the other hand, many committed Darwinian biologists present students with an idealized version of the theory that glosses over real problems and prevents students from learning about genuine scientific criticisms of it.

Both these extremes are mistaken. Evolution is an important theory and students need to know about it. But scientific journals now document many scientific problems and criticisms of evolutionary theory and students need to know about these as well.

Many of the scientific criticisms of which I speak are well known by scientists in various disciplines, including the disciplines of chemistry and biochemistry, in which I have done my work. I have found that some of my scientific colleagues are very reluctant to acknowledge the existence of problems with evolutionary theory to the general public. They display an almost religious zeal for a strictly Darwinian view of biological origins.

Darwinian evolution is an interesting theory about the remote history of life. Nonetheless, it has little practical impact on those branches of science that do not address questions of biological history (largely based on stones, the fossil evidence). Modern biology is engaged in the examination of tissues from living organisms with new methods and instruments. None of the great discoveries in biology and medicine over the past century depended on guidance from Darwinian evolution---it provided no support.

As an aside, one might ask what Darwin would have written today if he was aware of the present state of knowledge of cell biology, rather than that of the mid 19<sup>th</sup> century when it was

generally believed the cell was an enclosed blob of gelatin? As an exemplar, I draw your attention to what Prof. James A. Shapiro, bacteriologist, U. of Chicago, wrote (<http://www.bostonreview.net/br22.1/shapiro.html>).

For those scientists who take it seriously, Darwinian evolution has functioned more as a philosophical belief system than as a testable scientific hypothesis. This quasi-religious function of the theory is, I think, what lies behind many of the extreme statements that you have doubtless encountered from some scientists opposing any criticism of neo-Darwinism in the classroom. It is also why many scientists make public statements about the theory that they would not defend privately to other scientists like me.

In my judgment, this state of affairs has persisted mainly because too many scientists were afraid to challenge what had become a philosophical orthodoxy among their colleagues. Fortunately, that is changing as many scientists are now beginning to examine the evidence for neo-Darwinism more openly and critically in scientific journals.

Intellectual freedom is fundamental to the scientific method. Learning to think creatively, logically and critically is the most important training that young scientists can receive. Encouraging students to carefully examine the evidence for and against neo-Darwinism, therefore, will help prepare students not only to understand current scientific arguments, but also to do good scientific research.

I commend you for your efforts to ensure that students are more fully informed about current debates over neo-Darwinism in the scientific community.

Yours sincerely,

Professor Philip S. Skell  
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