

## Science's Greatest Challenge

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# BioScience

**Organisms from Molecules to the Environment**

American Institute of Biological Sciences

## Science's Greatest Challenge

The pace of progress in biological science, as in science generally, is staggering. As a young faculty member in the 1970s, I could not have conceived that we would soon have in hand the complete sequence of even a viral genome, much less a human's. The same holds for science's applications. We have seen the emergence of a deadly plague caused by a class of viruses that was unknown when I was a student, yet we have been able to describe the agent and develop effective therapies within little more than a decade. Progress has been so great that it is taken for granted, and even breeds a widespread complacency: Don't worry about the future, technology will solve our problems.

So it is that science is welcome, under the guise of technology. We are a pragmatic people, and we appreciate what works to our benefit, as long as it is fairly immediate (and preferably economic). Many will learn enough technology to wire their stereo system, but few will learn how scientists discovered the principles that make the system possible. And how many people realize that the technology they depend on exists by virtue of scientific theories—real, trustworthy knowledge of fundamental regularities in physics, chemistry, biology, and other sciences?

For even as people appreciate technology, they widely distrust science, as is clear when scientists challenge beliefs or speak "an inconvenient truth" (as Al Gore puts it). Among contemporary issues, evolution, global climate change, and the disastrous effects of unchecked population growth are the most conspicuous examples. More than half of Americans do not accept the most important unifying principle in the life sciences; politicians disparage a virtually unanimous scientific consensus on climate change; and the religious right ensures that even contraception is a politically risky topic. Some scientific conclusions are discomfiting, but can a pragmatic people not see that a scientific consensus is more trustworthy than the pronouncements of an industry-sponsored naysayer or a president untrained in biology or physics?

The biggest challenge to biology and to science is not to achieve deeper understanding of genomes or ecosystems or black holes—that understanding is coming along just fine. The challenge that matters now is to make sure that science is taken seriously. Scientists need to convince people that we have developed honest procedures for understanding how the world works, that we can put confidence limits around most of our conclusions, and that our track record shows we have achieved reliable, if still incomplete, knowledge.

In this connection, as AIBS past-president Kent Holsinger described in his December 2006 editorial, AIBS will work with the National Academy of Sciences to make 2009 the "Year of Public Understanding of Science." Meanwhile, many of us can make our own contributions, by teaching students how science works. It is only through education that we can hope for a scientifically literate population. Is it too much to say that the future of the world depends on it?

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