

EMBARGOED: Not for release until 12:00 Noon ET Thursday, 9 July, 2009

The following commentary was prepared by Dr. Alan I. Leshner, chief executive officer of the American Association for the Advancement of Science (AAAS) and executive publisher of the journal Science. This text is a response to a Pew Research Center survey that was conducted in partnership with AAAS.

The survey will be released during a teleconference at 12:00 Noon ET Thursday, 9 July, 2009. Reporters in the United States and Canada can dial into the teleconference toll-free at 866-518-1783. From other regions, reporters can dial 706-645-9667. The leader's name is Earl Lane. The password is "Pew Survey."

COMMENTARY

Americans by and large admire scientists — only slightly less than members of the military or teachers, in fact. The U.S. public recognizes research and development, perhaps especially to drive medical advances, as an investment in the future. Yet, researchers and the public too often are separated by a communications gap. This disconnection results partly from the increasing intersection of science with issues that involve personal values and beliefs such as human embryonic stem cell research and evolution.

At the same time, though, a new survey from the Pew Research Center, conducted in partnership with the American Association for the Advancement of Science (AAAS), shows that a large majority of scientists (85%) consider the public's lack of scientific knowledge to be a major problem. A similar percentage of scientists (83%) characterize television news coverage of science as "only fair" or "poor," with newspaper coverage receiving the same low ratings by a smaller majority of scientists (63%). Also, 21% of scientists identified public communication or education as a significant scientific failure of the past 20 years.

The good news is that opportunities abound for finding common ground on issues spanning science and society. Americans with a wide array of views, including scientists, clearly are united by the shared goal to improve human welfare by leveraging scientific advances. In the Pew Research survey of 2,533 AAAS members and 2,001 public respondents, a majority of both groups cited advances in medicine and life sciences as important achievements of science. Nearly three-fourths of public participants recognized that federal investment in basic scientific research as well as engineering and technology promises long-term societal benefits. That view persists across partisan lines, with a majority of Republicans (68%) and Democrats (80%) saying that support for basic science pays off in the long run, with comparable percentages saying the same about investments in engineering and technology.

In addition, public respondents who say that science sometimes conflicts with their own religious beliefs (36%) are about equally likely (67%) as those who see no conflict (72%)

to say that scientists contribute a great deal to society. Only 32% of the public said they think that humans and other living things have evolved over time due to natural processes such as natural selection. Public views about evolution have changed little over the past two decades.

Although the public scored reasonably well on basic science knowledge questions administered by the Pew Research Center, respondents did far worse on more complex science questions. Only slightly more than half of all public respondents (54%) knew that antibiotics do not kill viruses along with bacteria, and fewer (46%) understood that electrons are smaller than atoms. These findings are consistent with the results of previous surveys and education assessments. Improving U.S. science education is essential, but education alone will not address this problem.

As scientists we must resist the urge to wring our hands in defeat or recoil at evidence of the public's lack of understanding about science. Encouragingly, the vast majority of scientists (87%) reported that they discuss science or research findings with non-scientists "often" or "occasionally." The Pew Research survey suggests that scientists, while currently held in high esteem by most Americans, would be wise to extend a similar level of respect to the public.

Nearly half of all responding scientists (49%) said that U.S. scientific achievements rank first in the world. The scientist group may be failing to appreciate the full impact of the ethical, moral, political, and other perspectives with which the broader public filters scientific information. Just 17% of the public thinks that U.S. scientific achievements rate as the best in the world. Clearly, the public is somewhat less confident in America's scientific prowess than scientists. Fewer Americans today (27%) offer scientific achievements as one of the country's most important achievements than did so a decade ago (47%).

Now more than ever, as our society faces increasing challenges, from energy dependence to the threat of an influenza pandemic, the scientific community must contribute to respectful dialogue with the public. Engaging with the public on scientific issues, rather than lecturing to them, requires listening to their perspectives, encouraging mutual learning,¹ and finding new ways to leverage popular culture, new media, journalism, and civic channels to facilitate dialogue opportunities. One innovative example is the Science & Entertainment Exchange, a National Academy of Sciences program for matching technical experts and creative professionals. Training for scientists interested in improving their public communication skills is offered through organizations including Stanford University's Woods Institute for the Environment Aldo Leopold Leadership Program, Research!America's Paul G. Rogers Society for Global Health Research, and AAAS.

¹ "Many Experts, Many Audiences: Public Engagement with Science and Informal Science Education: A CAISE Inquiry Group Report," Center for Advancement of Informal Science Education (CAISE), Washington, D.C., March 2009.

In addition to being a good idea for promoting public engagement on science-based issues, these and other efforts to encourage interaction between scientists and society may increasingly be a requirement: On January 21, 2009, President Obama issued a Memorandum on Transparency and Open Government and called for recommendations for making the Federal government more transparent, participatory, and collaborative.² Now, new survey data suggest an urgent need to make science both more open and transparent.

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² White House Web site: http://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment.