



## PROFILE

### Holdren: Expand S&T Efforts to Meet Urgent Global Challenges

John P. Holdren is an expert on global environmental change, energy technology and policy, international science diplomacy, and nuclear arms control and nonproliferation. He has been a physicist, a professor, and a White House adviser, and he delivered the 1995 Nobel Peace Prize acceptance speech on behalf of the Pugwash Conferences on Science and World Affairs.

In February, when he assumes the presidency of AAAS, he hopes to bring his broad multidisciplinary vision and experience to bear on some of the most urgent problems facing humanity.

"I believe strongly in the power of partnerships, across institutions, sectors, and countries, for addressing the great challenges at the intersection of science and technology with the human condition—the challenges of poverty, disease, weapons of mass destruction, environmental impoverishment, climate change, terrorism, and more," Holdren said recently. "I also believe strongly in the power of education—of students, of professionals, of publics, of policy-makers—in increasing the capacity of society to meet and surmount these challenges."

Holdren, 61, is director of the Woods Hole Research Center, as well as Teresa and John Heinz Professor of Environmental Policy and director of the Science, Technology and Public Policy Program at Harvard University. He served as a member of President Bill Clinton's Committee of Advisors on Science and Technology from 1993 to 2001.

From an early age, Holdren remembers, he was equally fascinated with the natural world, with technology, and with people. As a high school student, he became persuaded "that many of the most interesting and important challenges facing the world—among them overpopulation, poverty, hunger, and weapons of mass destruction—could be solved only by combining insights from the natural sciences and technology with perspectives and approaches from the social sciences and the humanities."

This idea set him on a course to MIT, Stanford, Livermore, Caltech, the University

of California-Berkeley, and Harvard, and helped position him for a career of remarkable influence at the intersection of science, technology, and society.

Holdren's MIT and Stanford degrees were in aeronautics and astronautics and plasma physics. In 1973 he co-founded the interdisciplinary graduate program in Energy and Resources at Berkeley, which he co-led until 1996. Since moving to Harvard that year, his work has focused on the causes and consequences of global climate change, challenges, and opportunities with advanced energy technologies and international cooperation to address problems of environment, development, and security.



John P. Holdren

He is a member of the National Academy of Sciences, the National Academy of Engineering, the American Academy of Arts and Sciences, and the Council on Foreign Relations, and is co-chair of the bipartisan, foundation-funded National Commission on Energy Policy.

Holdren was first invited to the Pugwash Conference in 1973, joining some of the world's leading thinkers for discussions about nuclear arms reductions and cooperative solutions for global problems. He was chair of the Pugwash executive committee when the organization won its Nobel, and he was chosen by his colleagues to give the acceptance speech.

He used the occasion to explore the connections between poverty, energy, environment, and security: "Either we will achieve an environmentally sustainable prosperity for all, in a world where weapons of mass destruction have disappeared or become irrelevant, or we will all suffer from the chaos, conflict, and destruction resulting from the failure to achieve this."

Holdren will assume the presidency of AAAS at the close of the Annual Meeting in St. Louis, Missouri, on 20 February, replacing Gilbert S. Omenn, who will become chairman of the AAAS Board of Directors.

In his candidacy statement, Holdren praised AAAS's diverse and wide-ranging

programs at the intersection of science and technology with public policy. At the same time, he urged further strengthening of all of these efforts, arguing that as productive as the efforts of American science and engineering societies have been, they are still "not remotely commensurate with the challenges."

Above all, he said in the statement, "AAAS should continue and expand its efforts...to promote a more vigorous national discussion about the links between S&T and the human condition, and about the responsibilities of scientists and technologists and of government to work more thoughtfully and effectively to increase the societal benefits from S&T and to reduce the liabilities."

## 2006 ANNUAL MEETING

### Evolution Event Will Rally Support for U.S. Teachers

The campaign against the teaching of evolution has put many public school science teachers in a difficult position: They want to teach science and preserve the integrity of science, but they sometimes risk objections and protests from students, parents, or school board members.

In collaboration with the National Research Council and many other leading U.S. scientific associations, AAAS is organizing a half-day special event at its upcoming Annual Meeting in St. Louis to give science teachers a voice on the issue and to give them aid in their schools and communities.

"Evolution on the Front Line," set for Sunday afternoon 19 February, will feature talks by the Rev. George Coyne, a Jesuit priest and director of the Vatican Observatory; U.S. Rep. Russ Carnahan of Missouri; and Linda Froschauer, president-elect of the National Science Teachers Association (NSTA). Teachers have been invited to talk about the pressures they face and the support they would like to receive from the U.S. science and technology community.

"K-12 teachers are the front line of efforts to preserve the integrity of science and evidence-based understanding of the physical and biological world. They are its unsung heroes," said AAAS President Gilbert S. Omenn. "We and they recognize how important math and science at all levels are to preparing our students for a knowledge-based, globally competitive economic future. We also respect the importance of religion and spirituality—in the home and places of

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worship. Many teachers have told us that they would welcome help. We want to hear about their successes and stresses, share ideas, and offer them all the support we can."

The battle over evolution and the integrity of science has flared recently in at least 33 states, according to the National Center for Science Education, with Pennsylvania, Kansas, and Georgia most prominent among them. A 2005 NSTA survey indicated that nearly a third of teachers feel pressured to include creationism, intelligent design, or other nonscientific evolution alternatives in their science classrooms; a similar number reported pressure to de-emphasize or omit evolution.

Ray Cummings, who taught biology for 11 years in St. Louis public high schools before going on leave last year, said the pressure against evolution has become more acute in recent years, making teachers' jobs more difficult. Since students often come to class with a strong faith-based explanation for life's origins and development, the art of a teacher's work is in respecting students' beliefs while teaching them science and the scientific method.

"I'm a person of faith, but it doesn't mean that I've abandoned my faith because I can explain and accept the science of evolution," said Cummings, currently vice president for political education—St. Louis Teachers & School Related Personnel Union Local 420—American Federation of Teachers.

The AAAS Annual Meeting—the biggest general science meeting in the world—will bring thousands of scientists, educators, journalists, and others to St. Louis from 16 to 20 February. The Sunday evolution forum is considered especially important in light of events in neighboring Kansas and other heartland areas.

Carnahan is slated to give the keynote address. Froschauer, an eighth-grade teacher from Westport, Connecticut, will speak on the scope of the challenge facing public school teachers and administrators. *New York Times* science writer Cornelia Dean will moderate a panel of scientists who will explore teachers' questions on evolution facts and fiction. Omenn, professor of medicine, genetics, and public health at the University of Michigan, will moderate the event.

The evolution session will be tailored especially for St. Louis-area teachers, but is expected to attract educators from around the country. For example, the Geological Society of America (GSA) is underwriting travel expenses to St. Louis for science teachers from Dover, Pennsylvania; Cobb County, Georgia; and other hot spots.

"Members of the Geological Society of America understand very well the critical importance of teaching evolution and maintaining the integrity of the definition of sci-

ence," said GSA Executive Director John W. Hess. "As a scientific society that includes K-12 teacher members, we are committed to supporting efforts that encourage the very best in science education."

For more information, see [www.aaasmeeting.org/evolution](http://www.aaasmeeting.org/evolution).

## SCIENCE COMMUNICATION

### Study Probes "Open Access" and Scholarly Publishing

Open access journals are changing the landscape of scholarly publishing, but an ambitious new study suggests that with 40% of them operating in the red, the future of the no-subscription journals is uncertain.

"The Facts About Open Access," co-sponsored by the AAAS Project on Science and Intellectual Property in the Public Interest (SIPPI), is the most comprehensive study to date on the revolution that is unsettling the world of traditional, subscription-based journals while attracting interest from some scholars and government officials.

Backed by data from extensive surveys and interviews, the report concluded that more than 1000 journals now embrace the

philosophy that scientific and medical information should be provided freely to readers. Many, however, are struggling to attract authors and make ends meet. At the same time, open-access and online publishing generally are forcing traditional journals to address fundamental financial and philosophical challenges.

"Business models are changing," the report said. "Access models are changing. Experimentation is the order of the day."

Mark S. Frankel, co-director of AAAS's SIPPI Project, which helped fund and coordinate the study, acknowledged that it provides only a snapshot of a rapidly changing landscape.

Still, Frankel said, "Policy, whether made by government or the science journal community, should not rest merely on anecdotes, yet that has been the case. This study offers an initial foundation on which to make informed decisions about the future of journal publishing in science."

Other sponsors of the study were the Association of Learned and Professional Society Publishers and HighWire Press; the Association of American Medical Colleges also provided data. The full report is available at [www.alpsp.org](http://www.alpsp.org).

## SCIENCE JOURNALISM

### Winning Stories from the Universe of Science

Stories spanning the realm of nature—from cosmology and climate to extinct Siberian mammoths—were named winners in AAAS's prestigious Science Journalism Awards for 2005.

**Large Newspaper (Circulation >100,000):** Dennis Overbye, *The New York Times*, for "String Theory, at 20, Explains It All (or Not)," 7 December 2004; "Remembrance of Things Future: The Mystery of Time," 28 June 2005; and "The Next Einstein? Applicants Welcome," 1 March 2005.

**Small Newspaper (Circulation <100,000):** Richard Monastersky, *The Chronicle of Higher Education*, for "Women and Science: The Debate Goes On," 4 March 2005; "The Hidden Cost of Fish Farming," 22 April 2005; and "Come Over to the Dark Side," 3 June 2005.

**Magazine:** Elizabeth Kolbert, *The New Yorker*, for "The Climate of Man," 25 April 2005; 2 May 2005; 9 May 2005. And Atul Gawande, *The New Yorker*, for "The Bell Curve," 6 December 2004.

**Television:** Joseph McMaster, Martin Williams, Lara Acaster, and Alex Williams, NOVA-WGBH, for "The Wave that Shook the World," 29 March 2005.

**Radio:** John Nielsen, National Public Radio, for "Dolphin Necropsies," 21 March 2005.

**Online:** Daniel Grossman, [wbur.org](http://wbur.org), for "Fantastic Forests: The Balance Between Nature & People of Madagascar," 3 June 2005.

**Children's Science News:** Elizabeth Carney, Scholastic's *SuperScience*, for "Mammoth Hunters," March 2005.

The awards are sponsored by Johnson & Johnson Pharmaceutical Research & Development, L.L.C. The competition attracted 386 entries, including 69 in the new children's category—32 of them from international reporters.

EARL LANE CONTRIBUTED TO THIS REPORT.