AAAS Annual Report 2007



Science, Technology, and Sustainable Well-Being

AAAS

ADVANCING SCIENCE, SERVING SOCIETY

The American Association for the Advancement of Science (AAAS) is the world's largest general scientific society and publisher of the journal, *Science* (www.sciencemag.org). AAAS was founded in 1848, and serves 262 affiliated societies and academies of science, reaching 10 million individuals. *Science* has the largest paid circulation of any peer-reviewed general science journal in the world, with an estimated total readership of 1 million. The non-profit AAAS (www.aaas.org) is open to all and fulfills its mission to "advance science and serve society" through initiatives in science policy; international programs; science education; and more. For the latest research news, log onto EurekAlert!, www.eurekalert.org, the premier science-news Web site, a service of AAAS.

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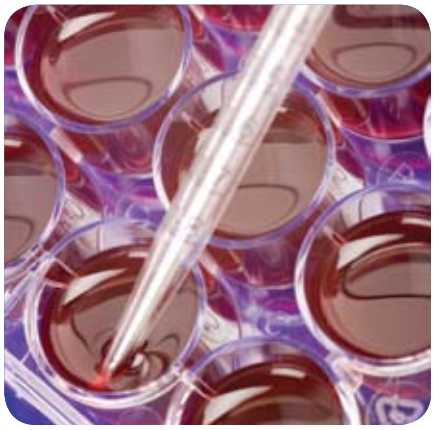



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Welcome from the AAAS Chair, John P. Holdren, and the CEO, Alan I. Leshner

AAAS continues to work intensively on a wide range of issues to both advance science and to help address global societal problems that have science and technology components at their core. Ongoing initiatives focus on securing adequate funding and infrastructure support to further the scientific enterprise, and providing policy guidance on topics ranging from global climate change and energy requirements, to embryonic stem cell research, to ensuring science literacy for children everywhere.

In April 2007, for example, the AAAS Board of Directors called for increased support of Earth observation satellites when U.S. federal funding cutbacks threatened research related to weather forecasting, hurricane warning, and global climate change. Belt-tightening within the National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA) could cause "major gaps in the continuity and quality of data gathered about the Earth from space," the AAAS Board warned. We were pleased when the House of Representatives subsequently outlined an initial plan to restore funding for a satellite network, and although most of the additional support had been red-lined by the year's end, AAAS is continuing to push for a balanced federal R&D portfolio.

Another AAAS Board statement generated significant visibility for the issue of global climate change in February, as part of a town hall-style event for some 1,200 participants in San Francisco, California. Global climate change is sure to take an increasing toll on vulnerable ecosystems and societies if greenhouse gas emissions and deforestation go unchecked, the Board cautioned. The AAAS statement — released shortly after the Intergovernmental Panel on Global Climate Change confirmed the connection between global climate change, fossil-fuel burning, and deforestation — was communicated through media outlets including the Associated Press, the *San Francisco Chronicle,* the *Kansas City Star,* and New Jersey's *Star-Ledger.* The goal of all such efforts was to strengthen the case and political momentum for cutting greenhouse gas emissions.

AAAS also contributed to public discourse as well as science-based policy through testimony, op-ed articles in regional newspapers, and nearly two-dozen Capitol Hill technical briefings by U.S. and international experts who shared objective, non-partisan expertise. James Acton of the Centre for Science and Security Studies at King's College London, for example, assessed Iran's potential to build a nuclear weapon,



JOHN P. HOLDREN



ALAN I. LESHNER

and with another expert, he described emerging technologies for on-the-ground detection of uranium-enrichment plants. The Association's growing alumni of Science and Technology Policy Fellows, meanwhile, increasingly made their mark, especially in December when three of the program's 35th class participated in the United Nations Climate Change Conference in Bali. AAAS worked to increase support for the Stem Cell Research Enhancement Act, too, by issuing a statement decrying the President's second veto of the initiative, which had twice passed in the House and Senate, with votes from Republicans and Democrats alike. Association staff later teamed up with stem-cell pioneer James Thomson to publish an op-ed that appeared in the *Washington Post* and at least nine other newspapers.

Additional 2007 activities focused on sustaining and diversifying the science and technology workforce. A conference organized by AAAS and related to the National Science Foundation's Historically Black Colleges and Universities Undergraduate Program (HBCU-UP) drew some 700 attendees, as described on page 8. An equally successful event on K-12 science curricula, hosted by Project 2061 at AAAS, prompted laudatory comments from U.S. Rep. Vernon J. Ehlers (R-Mich.), a member of the House Committee on Science and Technology (page 9).

The most urgent challenges of our age — improving the lives of the world's poor; competition for natural resources; imperiled oceans; the energy crisis; and alleviating the threat of nuclear weapons — all hinge upon science and technology. Through its many programs and communications efforts, AAAS is seizing opportunities to mobilize the power of science to help ensure sustainable human well-being.

John P. Holdren
AAAS Chair (2007–2008)
Director, The Woods Hole Research Center, and Teresa and John Heinz Professor of Environmental Policy, Harvard University

Alan I. Leshner
AAAS CEO and Executive Publisher, *Science*

Public Statements

Stimulating public dialogue and raising awareness of issues affecting the scientific enterprise are key goals for AAAS. Board statements, opinion essays in newspapers, letters to policy-makers, and major events all helped in 2007 to promote public engagement with science and technology.

GLOBAL CLIMATE CHANGE

- 18 February. In a consensus statement approved 9 December 2006 and released at a town hall event 18 February 2007, the AAAS Board of Directors noted that "global climate change caused by human activities is occurring now," and called for "stronger leadership at all levels" to curb greenhouse gas emissions.
- 28 April. The AAAS Board issued a statement calling for adequate funding of Earth observation satellites when budget cuts threatened the network critical to weather forecasting, hurricane warning, global climate change studies, and more. AAAS senior staff also testified on Capitol Hill.

EVOLUTION IN THE NEWS

- 26 May. "Museum of Confusion,"op-ed, *Lexington Herald-Leader*. Exhibits depicting dinosaurs co-existing with humans could confuse people, especially children, about the nature of science, wrote AAAS CEO Alan I. Leshner, executive publisher of *Science*.
- 1 June. "Faith, Reason and a G.O.P. Hopeful," letter to the editors, *New York Times*. "Religion should not be substituted for science, nore the reverse," the AAAS CEO wrote, in response to an op-ed by Sen. Sam Brownback (R-Kansas).

HUMAN EMBRYONIC STEM CELL RESEARCH

- 20 June. AAAS again decried the U.S. President's veto of the Stem Cell Research Enhancement Act, which would expand federal support for human embryonic research.
- 3 December. "Standing in the Way of Stem Cell Research," op-ed, *Washington Post*, by Leshner and stem-cell researcher James Thomson. This piece, republished in at least nine newspapers, cautioned that "further delays in pursuing the clearly viable option of embryonic stem cells will result in an irretrievable loss of time."

SCIENCE BEYOND BORDERS

- 8 January. "Building Science, Building Trust," op-ed, *The Kuwait Times,* by the AAAS CEO and Farkhonda Hassan, a professor of geology at the American University in Cairo, a member of the Egyptian Parliament, and then-secretary-general for the National Council for Women in Egypt.
- 6 June. AAAS issued a statement declaring its opposition to a U.K. University and College Union motion to boycott research collaborations with Israeli academic institutions.
- 16 July. "Use Science for Diplomacy, Not Division," op-ed, *The Baltimore Sun,* by the AAAS CEO.

SCIENCE EDUCATION

- 15 August. "National Standards: The Time Is Now for Washington to Heed the Call," op-ed, *The Washington Times,* by the AAAS CEO.
- 11 December. "Don't Mess with Science Standards," op-ed, *The Star-Telegram* of Texas, by the AAAS CEO. This op-ed also appeared in *The Waco Tribune Herald* on 13 December.

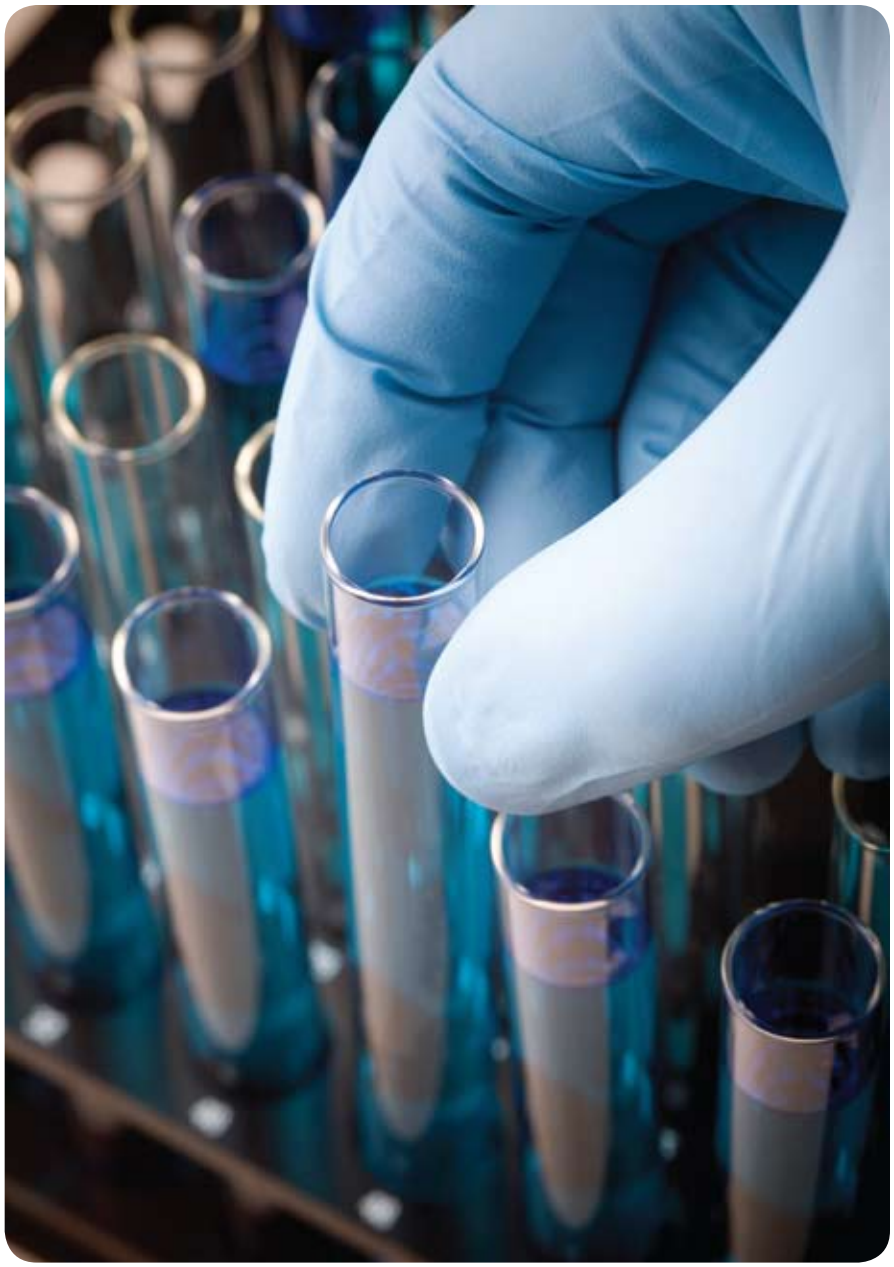
SCIENCE AND PUBLIC ENGAGEMENT

- 26 October. "Celebremos las Historias de la Ciencia," op-ed, *El Pais* of Spain, by *Science* Executive Editor Monica Bradford. This op-ed on science communications helped to celebrate an honor bestowed upon the journal *Science* by the Prince of Asturias Foundation.
- 19 September. "Beyond the Teachable Moment,"op-ed, *Journal of the American Medical Association,* by the AAAS CEO.

SUPPORT FOR THE SCIENTIFIC ENTERPRISE

- 20 December. "While we recognize that both the Congress and the White House face many competing priorities … we see a missed opportunity to honor the commitment made by both branches of government to support basic research," AAAS announced at the end of 2007, following up on many previous efforts throughout the year to speak up for adequate R&D funding across all disciplines.

"Every scientist and technologist should tithe 10 percent of his or her professional time and effort to working to increase benefits of science and technology for the human condition and to decrease the liabilities. The challenges demand no less." JOHN P. HOLDREN, AAAS CHAIR (2007-2008), THE WOODS HOLE RESEARCH CENTER AND HARVARD UNIVERSITY



- 28 February. In an ever-more technology-based economy, the AAAS CEO testified before a House appropriations subcommittee, "the federal government needs a sustained commitment to a robust research portfolio."
- 7 March. Maintaining U.S. competitiveness "relies on a strong foundation of federal investment in research and education across a broad spectrum of disciplines," the AAAS CEO testified before a Senate commission.

ANIMAL RIGHTS EXTREMISM

- 28 November. The AAAS Board issued a statement decrying extremist attacks against researchers involved in animal studies. While recognizing the right of all citizens to protest and dissent from policies with which they disagree, the Board emphasized that "unlawful and dangerous actions should not be tolerated," and noted that intimidation tactics can derail biomedical advances.

AAAS in 2007 continued its 30-year tradition of providing objective, non-partisan analysis to guide federal investments in basic and applied research. The Association also expanded efforts to inform policy-makers on science and technology issues — from stem cell research to climate change — through Capitol Hill briefings and other events. Since 1973, meanwhile, more than 2,000 alumni of the AAAS Science and Technology Policy Fellowships program have played increasingly significant roles in shaping science policy.





Science Policy and Society

▸ RALLYING FOR R&D FUNDING

Analysis by the AAAS R&D Budget and Policy Program, a leading non-partisan authority on U.S. research and development (R&D) funding trends, again in 2007 warned of mixed prospects for government support of science and technology. Program Director Kei Koizumi said that proposed increases to the federal R&D portfolio for FY 2008 would be consumed by the development of weapons systems and space vehicles. Further, he predicted in February that overall federal investment in basic and applied research would fall, although research funding linked to the American Competitiveness Initiative (ACI) would increase at the National Science Foundation, the U.S. Department of Energy's Office of Science, and the National Institute of Standards and Technology laboratories in the U.S. Department of Commerce.

AAAS continued all year to push for a balanced R&D portfolio, through letters to lawmakers, testimony, and events. But by the year's end, Koizumi noted, the adjusted proposal for 2008 federal R&D funding called for just $57.5 billion in support — an increase of only 1.1 percent — less than inflation, and substantially less than earlier congressional proposals. Federal research investment has declined, in real terms, since 2005, he said. AAAS responded by ramping up efforts to raise awareness of the need for robust R&D funding. Log onto www.aaas.org/spp/rd.

▸ INCREASING EFFORTS ON CAPITOL HILL

The AAAS CEO testified twice on U.S. R&D funding needs in 2007, and AAAS sent dozens of letters to policy-makers — from calling for increased federal funding for embryonic stem cell research, to supporting national standards for science and mathematics education. The Association's Board of Directors also issued statements of caution related to global climate change as well as the need for Earth observation satellites.

Two AAAS advisory units — the Center for Science, Technology, and Congress (CSTC), directed by Joanne Padrón Carney, and the Center for Science, Technology, and Security Policy (CSTSP), headed by Public Welfare Medalist Norman P. Neureiter — conducted nearly two-dozen technical briefings on Capitol Hill, on topics ranging from climate change and academic diversity, to food safety and nuclear disarmament. Carney and staff meanwhile also launched an online legislative tracker, and unveiled a comprehensive chart of eight different proposed climate-change bills. "Throughout much of its nearly 160-year history, AAAS has worked with Congress," said Albert H. Teich, director of AAAS Science and Policy Programs, "but it's never before had the kind of influence it does today." See www.aaas.org/spp.cstc.

▸ SCIENCE, SATELLITES, AND HUMAN RIGHTS

AAAS analysis of high-resolution satellite images pinpointed evidence consistent with village destruction, forced relocations, and a growing military presence across Burma, also known as Myanmar, where eyewitnesses reported human rights violations. AAAS had previously used the same technology to assess destruction in Darfur and Zimbabwe. The 2007 Burma project was supported by

The Open Society Institute and the John D. and Catherine T. MacArthur Foundation. Working with three human rights groups in Burma, researcher Lars Bromley mapped the location of 25 reported human rights violations. Increased engagement of scientists "is essential to securing human rights," said Mona Younis, director of the AAAS Science and Human Rights Program, which dates to 1976. "We can't allow another century to pass without seeing that promise realized." Go to http://shr.aaas.org/.

SCIENCE SUPPORT FOR SCHOOL BOARDS

AAAS and the National School Boards Association (NSBA), a federation of state associations of school boards representing 95,000 U.S. school board members, are working to help close the "urgency gap" — the disconnection between education and business leaders who see a critical need for improved science, mathematics, and technology education, and students and parents who may be unaware of the concerns. A three-year initiative, supported by a $739,000 grant from the Ewing Marion Kauffman Foundation, the program debuted in April 2007 during the NSBA annual conference in San Francisco. Some 200 participants in a joint workshop discussed educators' day-to-day needs for science-education support. In response, AAAS and the NSBA agreed to develop new training resources that can be tailored to reflect the specific needs of educators in different regions, said Peyton West, senior program associate with AAAS's Dialogue on Science, Ethics, and Religion (DoSER) program.

AAAS "brings real clarity and a scientific approach to how science should be taught in public schools — and it's not based on politics or ideology," said Robin Krause, president of the Missouri School Boards Association. See www.smartschoolboards.org.

THE IMPACT OF POLICY FELLOWS

Climate change, energy, and the environment were key concerns among the 161 AAAS Science and Technology Policy Fellows selected to work in U.S. executive branch agencies and congressional offices as part of the program's 35th class in 2007 and 2008. Three Fellows — Jeremy Richardson, Holmes Hummel, and Alexander Barron — even headed to the United Nations Climate Change Conference in Bali, 3-14 December. Their participation in the historic climate-change summit reflected the growing influence of AAAS S&T Policy Fellows on science policy. Established in 1973, the AAAS S&T Fellows program has placed thousands of scientists and engineers in key fields, from agriculture and atomic physics, to science education and defense technology, and many participants are now helping to drive science policy, academic research, and public discourse. Mark D. Drapeau, for instance, a Fellow at the National Defense University, published an op-ed in the *New York Times* in 2007, noting that "war and sickness are inextricably intertwined," and calling for efforts to stop the flow of cholera and other microbial threats in regions such as Iraq. Other Fellows have assumed scientific leadership roles in the United States and abroad, Program Director Cynthia Robinson reported. See www.fellowships.aaas.org.

> "If intimidation drives scientists from their valuable efforts and discourages young scientists from pursuing fields of inquiry that require the use of animals, medical progress will be seriously impeded. AAAS encourages scientists and the public to join in defending our colleagues whose freedom to conduct research is under attack."
> AAAS BOARD OF DIRECTORS STATEMENT, 28 NOVEMBER 2007

BIOETHICS AND GENE DOPING

Athletes might someday try to alter their genes to increase muscle mass, rapidly recover from a sprint, or more efficiently use oxygen, speakers warned during a Capitol Hill briefing co-sponsored by AAAS and the Hastings Center. Such "gene doping" currently remains in the realm of science fiction. But "there will soon be companies peddling products for genetic doping, and people will buy them," said Hastings Center President Tom Murray. Scientists, policy-makers, and the public thus need to openly discuss gene doping now — including its risks, and its implications for sports and society. Mark S. Frankel, director of the AAAS Program on Scientific Freedom, Responsibility, and Law, established in 1975, described the 22 October briefing as the first in a series of joint efforts to reach out to legislators, the media, and the public on an array of science and bioethics issues.

Strengthening and expanding the science and technology workforce is emphasized by an array of AAAS initiatives — the Education and Human Resources program; two career-focused centers; the Association's respected science-education reform initiative, Project 2061; and comprehensive resources online at *Science* Careers (www.sciencecareers.org). From kindergarten to high-school classes, and from academic to corporate laboratories, AAAS promotes diversity and the best possible science education for *all* students. The Association works to provide networking opportunities, practical career advice, and insights to guide curriculum and textbook development.



Science Careers and Education

SUCCESS FOR AFRICAN-AMERICAN UNDERGRADUATES

Among the 700 participants at a 2007 National Science Foundation (NSF) event, organized by AAAS, African-American undergraduate students took part in rigorous grilling regarding their research methods, networking exercises, and other activities intended to help them think outside the box. "[Research] is not about staying within your own comfort zone, but rather stepping outside," said Camille McKayle, who directs the NSF's Historically Black Colleges and Universities Undergraduate Program (HBCU-UP). Traditionally underrepresented students often find a nurturing environment at HBCUs, but they need to make other connections to succeed as researchers and educators, McKayle noted.

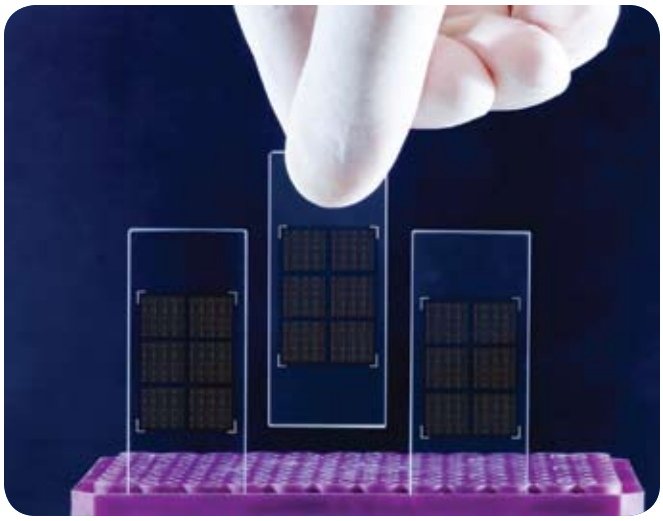
The AAAS-NSF event, supported by a three-year, $975,000 NSF grant, recognized the role of HBCUs in allowing students of color to gain skills and confidence, said Yolanda George, deputy director of Education and Human Resources at AAAS. In 2000, HBCUs graduated 40 percent or more of all African-Americans who received degrees in physics, chemistry, astronomy, environmental science, mathematics, and biology, noted Shirley M. Malcom, director of Education and Human Resources at AAAS, a Public Welfare Medal winner.

NEW "ROADMAP" TO SCIENCE LITERACY

As legislators and policy-makers put forward proposals for voluntary national science learning standards, Project 2061 at AAAS released a new collection of "roadmaps" to help teachers guide K-12 students toward science literacy. Maps in the new *Atlas of Science Literacy 2,* together with *Atlas 1,* connect the science-learning goals recommended in two previous Project 2061 resources, *Science for All Americans* and *Benchmarks for Science Literacy.* Now, *Atlas 2* maps 44 new science-literacy topics, including weather and climate, computation and estimation, and health and technology. The *Atlas* is "an enormously powerful tool to help teachers choose the most important science concepts at each stage," said Elizabeth Petersen, a middle-school teacher in Ladue, Missouri, past president of the Science Teachers of Missouri. Log onto www.project2061.org.

BRINGING UNIVERSITIES AND K-12 TOGETHER

How can graduate students leverage science, technology, engineering, and mathematics (STEM) research methods to spark interest in science and engineering among K-12 students and teachers? Colby Kearns, a conservation and environmental science graduate student at the University of Hawaii at Hilo, helped to develop lessons focusing on Hawaii's sandy shoreline habitats. "You don't teach about squirrels if there aren't any around," Kearns joked during a poster session at a joint AAAS-NSF event that focused on bringing universities and K-12 schools together. "You need to make sure your lesson is relevant, interesting, and accessible." Kearns was among more than 500 participants in the conference, based on the NSF's Graduate Teaching Fellows in K-12 Education Program (GK-12). By 2007, the NSF program, assisted by AAAS, had funded 6,335 fellows, worked with 8,845 teachers, and engaged 550,533 K-12 students.



"Whether they're rich, poor, white, black, Hispanic, male, female, or in any other category, all children deserve our very best efforts to teach them science and mathematics … [but] U.S. standards and learning goals vary from place to place, whereas most other industrialized countries do have nationwide educational standards."

OP-ED, *WASHINGTON TIMES,* 15 AUGUST 2007, BY THE AAAS CEO

IMPROVING SCIENCE CURRICULA

U.S. Rep. Vernon J. Ehlers (R-Mich.), a member of the House Committee on Science and Technology, commended Project 2061's efforts to seed the next-generation of science teachers and curriculum developers, through the AAAS Center for Curriculum Materials in Science (CCMS), a collaboration led by Project 2061 and involving several partner universities. Ehlers spoke at a 2007 Capitol Hill reception, part of a Knowledge Sharing Institute at AAAS for more than 100 researchers and educators who compared notes on how best to help U.S. students achieve science literacy. The mission of the CCMS "is to improve the design, selection, and use of science curriculum materials through research, through leadership development, and through the education of teachers," explained Project 2061 Director Jo Ellen Roseman. See www.aaas.org/programs/centers/curriculum.

AN ENTRY POINT! FOR INTERNS

Texas A&M University student Jeremy Northum developed procedures for removing radioactive materials from a laboratory at the National Institute of Science and Technology (NIST), as part of his 10-week placement through the Association's ENTRY POINT! program. Each summer, ENTRY POINT! provides highly competitive internships for science and engineering students with disabilities, thanks to collaborations with a long list of corporations and federal agencies. Northum toured the Library of Congress and the Supreme Court during a special Capitol Hill Day in 2007, along with other Washington, D.C.-area ENTRY POINT! interns. By the year's end, ENTRY POINT! had made more than 600 internship placements since the program's inception in 1996. Program Director Virginia Stern estimates that 92 percent of the ENTRY POINT! alumni are now working in science and technology jobs, or pursuing related graduate degrees. Log onto www.entrypoint.org.

ALCOHOL, MIDDLE-SCHOOL, AND SCIENCE

Efforts to halt underage drinking often focus on peer pressure and the prevention of risky behaviors, but AAAS in 2007 launched a new federally funded project to give middle-school children a science-based understanding of what can happen to them if they use alcohol. The three-year project, called "The Science Inside Alcohol," incorporates recent advances in neuroscience that have been shedding new light on how alcohol affects the body. The National Institute on Alcohol Abuse and Alcoholism funds the effort.

OBESITY BOOK EARNS ACCOLADES

AAAS's new plain-language book, *Obesity: The Science Inside,"* earned a bronze award in the patient-education information category of the 2007 National Health Information Awards — a competition among some 1,000 entries. The *Obesity* volume is part of a seven-book series organized by the Healthy People Library Project at AAAS, funded by the National Institutes of Health's National Center for Research Resources. Other titles in the series focus on HIV and AIDS, asthma and allergies, and having healthy babies. Go to www.healthlit.org.

The AAAS International Office serves as a catalyst for global cooperation. Chief International Officer Vaughan Turekian and his staff help to coordinate Association-wide efforts to promote multi-national research and sustainable solutions to social, economic, and environmental problems. International activities help to advance the global science and technology workforce, and focus on applying science in service of human rights, while building bridges among scientific communities. See www.aaas.org/programs/international.





AAAS Worldwide

LANDMARK AGREEMENTS WITH CHINA

Capping a six-day visit to Beijing, Shanghai, and Hangzhou, AAAS inked agreements with two of China's leading research organizations, outlining plans for collaboration related to publishing, science education, sustainability, and opportunities for women scientists and engineers. AAAS, the Chinese Association for Science and Technology (CAST), and the Chinese Academy of Sciences (CAS) agreed to work together to translate and disseminate educational materials and high-impact *Science* papers. AAAS also is providing CAST with translated science-literacy materials from Project 2061, and *Science's* News Department has opened a Beijing office. Also in 2007, the AAAS Web site called EurekAlert! launched a Chinese-language version of its popular science-news service for reporters. As a first step toward increased collaboration, a conference organized by CAST and AAAS brought together dozens of scholars from both nations to discuss scientific integrity and social responsibility.

ARAB, U.S. WOMEN BUILD BRIDGES

Too often, Saudi Arabian pharmacologist Samira Islam said, the West sees the Arab world — and Arab women — in simplistic terms. With 321 million people in 22 countries, she told U.S. and Arab scholars at the International Conference on Women Leaders in Science, Technology, and Engineering, the region is diverse. Women make up surprisingly large percentages of all science graduates in many Arab regions, she said, although jobs in science and technology still go disproportionately to men. The conference at the Arab Organizations building drew more than 200 scientists and engineers from 18 nations in the Middle East and Northern Africa. It was held under the patronage of the Kuwaiti Prime Minister and organized by AAAS in cooperation with the Kuwaiti Institute for Scientific Research; the Kuwait Foundation for the Advancement of Science; the Arab Fund for Economic and Social Development; and the U.S. State Department.

RWANDAN SCIENCE SUPPORTS GROWTH

With Rwanda working to address chronic poverty and the legacy of its 1994 genocide, AAAS President and Nobel laureate David Baltimore (2007-2008) met with Rwanda President Paul Kagame to discuss how science-related development and education could contribute to peace and prosperity. Baltimore visited Rwanda in October, joined by Tom Wang, AAAS director for international cooperation, to better understand the nation's science and technology capacity and needs. Lacking natural resources such as oil or minerals, the African nation has an ambitious development plan that aims instead to build a knowledge-based economy, in part by doubling research spending.

ENGAGEMENT WITH IRAN

A delegation of U.S. science and engineering leaders that visited Iran on a mission of science diplomacy included Norman P. Neureiter, director of the AAAS Center for Science, Technology, and Security Policy. The October visit, culminating in a two-day symposium, revealed that the science communities of the two countries

share common goals on topics ranging from water resources and earthquake research, to science policy. Sharif University and the Iranian Academy of Sciences hosted the visit, which was organized by the U.S. National Academies, led by William A. Wulf, recently retired president of the National Academy of Engineering, and also included Princeton Nobelist in physics Joseph Taylor. The visit "confirmed again the value of scientific interactions as a means of useful communication with countries where political relations may be very strained," Neureiter said.

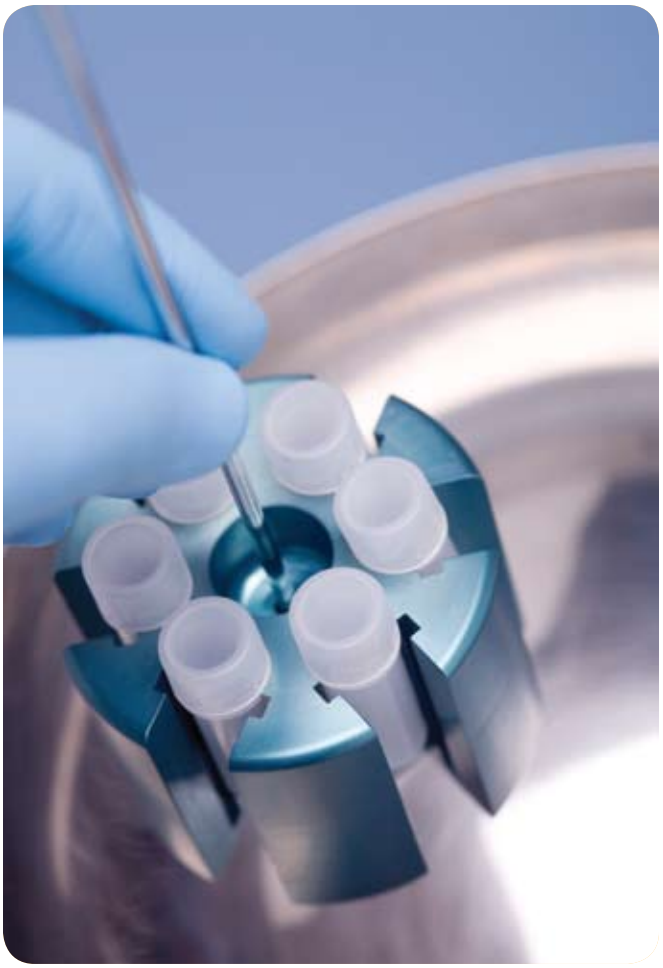
Other AAAS international cooperation efforts in 2007 included a new agreement to provide advice to the Government of Kazakhstan, through the International Experts Council, related to their plans for scientific development.

▸ BUILDING CAPACITY IN LATIN AMERICA

A review organized by AAAS and released in 2007 concluded that the Inter-American Institute for Global Change (IAI) could amplify its impacts — which currently include producing high-quality science and building research capacity in Latin America — by improving communication with policymakers. Founded in 1992, the Inter-American Institute (IAI) focuses on the Americas and the Caribbean, a region of extraordinary biological diversity and climate variations that is beset by growing population and serious environmental problems. The review, commissioned by the U.S. National Science Foundation, was delivered in Manaus, Brazil, in June to IAI officials representing the 19 member nations.

▸ GLOBAL PERSPECTIVES AT AAAS

Wealthy and developing nations should agree to a global pact to sharply reduce greenhouse gas emissions, Sir David King, former U.K. chief scientific advisor, said at AAAS in July. Another international visitor to AAAS, Brazilian physicist José Goldemberg, said ethanol could replace much of the world's fossil fuels, but expanding ethanol production poses major challenges. Yet another international speaker, German Minister for Education and Research Annette Schavan, said Germany's prosperity will be driven by innovation, spurred by collaboration between researchers and industry and a strong investment in education. International perspectives help to enrich public discourse and scholarly exchange on a range of topics.



"In a world growing ever-smaller, no single nation, no region or culture, owns science. While researchers may speak many languages, they share a common dedication to science … for the advancement of all humanity." OP-ED, *KUWAIT TIMES,* 8 JANUARY 2007, BY THE AAAS CEO AND FARKHONDA HASSAN, PROFESSOR OF GEOLOGY AT THE AMERICAN UNIVERSITY IN CAIRO

Science Breakthroughs

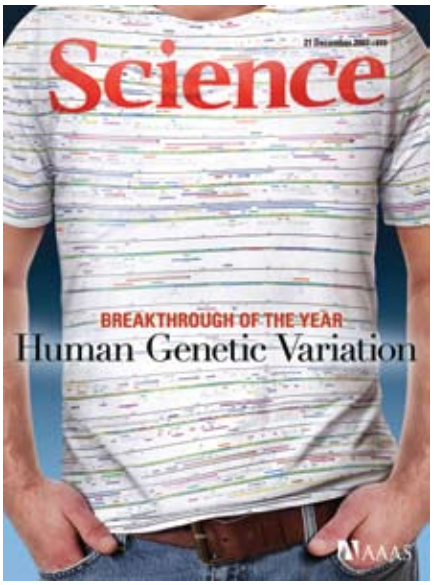
History-making research on stem cells, genomics, cosmic rays, and other topics appeared on the pages of *Science*.

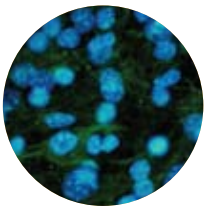
These discoveries pushed forward our knowledge about the universe, the human body, and the health of our environment.

See www.sciencemag.org. In 2007, *Science* highlights included these and other breakthroughs:

Research Highlights

BREAKTHROUGH OF THE YEAR: DAZZLING VARIATIONS
In 2007, researchers were dazzled by the degree to which genomes vary from one human to another, leading *Science* to recognize "Human Genetic Variation" as the Breakthrough of the Year. (21 December)





HUMAN SKIN CELLS MADE TO MIMIC EMBRYONIC STEM CELLS
Scientists reprogrammed human skin cells by introducing just four genes, which seemed in preliminary studies to give the cells many of the characteristics of embryonic stem cells. (20 November, *Science* Express)



CLOSING IN ON COSMIC RAY SOURCE
Many of the mysterious, high-energy cosmic rays that crash into the atmosphere seem to come from galaxy centers called Active Galactic Nuclei, an international research team discovered. Scientists had been trying for decades to determine the source of these particles, some of which have tremendous energy when they first enter the atmosphere; roughly comparable to that of a fast-moving baseball. (9 November)



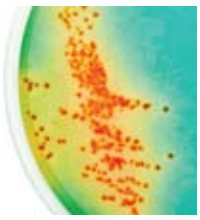
WHITEFLY SECRETS TO SUCCESS
A population of the whitefly *Bemisia tabaci* has become one of the world's worst invasive pests through mating behaviors that help it invade the territory of native whitefly populations, according research conducted in China and Australia. (8 November, *Science* Express)



OUT OF BODY EXPERIENCES
Using virtual reality goggles to mix up the sensory signals reaching the brain, scientists induced out-of-body-like experiences in healthy people, suggesting a scientific explanation for a phenomenon often thought to be a figment of the imagination. (24 August)



PERFECT CHECKERS GAME
After nearly two decades of playing, computers solved the game of checkers once and for all. (19 July, *Science* Express)



STEP TOWARD SYNTHETIC GENOMES
Researchers replaced the whole genome of a bacterial cell with one from a closely related species, a key step toward constructing a simple genome from scratch. Creating a synthetic genome could allow researchers to develop microorganisms

that could be used for producing biofuels, cleaning up toxic waste, sequestering carbon, or other applications. (28 June, *Science* Express)



DISEASE RISK AND THE GENOME
A trio of research teams reported three new genomic regions that are linked to type 2 diabetes. A week later, a pair of independent teams described a stretch of DNA in the genome that increases the risk of coronary heart disease in Caucasian populations. (26 April and 3 May, *Science* Express)



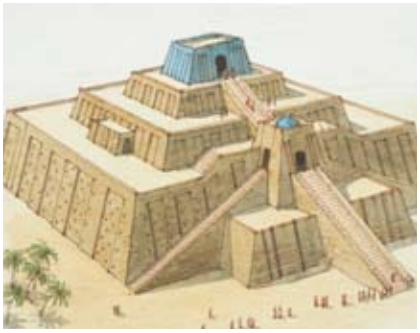
DAMAGE TO BRAIN REGION EASES URGE TO SMOKE
A silver-dollar-sized region in the brain called the insula is intimately involved in smoking addiction, and damage to this structure can completely erase the body's urge to smoke, researchers discovered. (26 January)



LOGGING HARMS AMAZON BIRDS
Chopping down the Amazon forest into small, isolated habitat patches has a consistently strong negative effect on many native species of forest birds, a 13-year-long study showed. (12 January)

Science News Highlights

MIDDLE ASIA TAKES CENTER STAGE
Long dismissed as a backwater, the vast area between Mesopotamia and the Indus Valley is now revealing a tapestry of wealthy urban centers that shaped humanity's first concerted attempt at city life. This news report by Andrew Lawler described a significant shift in perspective among archaeologists about the importance of this region to the development of urban societies. (3 August)





A WORLD WITHOUT CORALS?
Besieged by pathogens, predators, and people, the "rainforests of the sea" may soon face their ultimate foe: rising ocean acidity driven by carbon dioxide emissions, Richard Kerr reported. (4 May)



ANIMAL EXTREMISTS GET PERSONAL
Greg Miller took an in-depth look at attacks and threats by animal rights extremists on individual researchers in the United States. (21 December)

Other *Science* Developments

BRUCE ALBERTS NAMED NEW EDITOR-IN-CHIEF
The AAAS Board of Directors announced that Bruce Alberts, president emeritus of the U.S. National Academy of Sciences and chair of the National Research Council (1993-2005), would serve as *Science's* next editor-in-chief.

***SCIENCE* CAREERS WORKSHOPS**
London, Cambridge, Manchester, and other U.K. cities provided a backdrop for career-development workshops organized in 2007 by *Science* Careers. The free, online resource now includes thousands of career-related articles, graduate program information, grant information, meetings and event notices, and a job listings page that is updated daily. See www.sciencecareers.org.

PRINCE OF ASTURIAS AWARD
Science received Spain's Prince of Asturias Foundation 2007 Communications and Humanities Award at a ceremony in Oviedo, Spain on 26 October. The prestigious prize recognizes *Science's* excellence in science communications and its pivotal role in delivering groundbreaking research to the public.

In 2007, the AAAS Center for Science, Technology, and Security Policy (CSTSP) — supported by the John D. and Catherine T. MacArthur Foundation and directed by Public Welfare Medalist Norman P. Neureiter — conducted 17 technical briefings on Capitol Hill, eight public events, and five sessions for the national security media. On science and technology issues ranging from nuclear non-proliferation, to countering biological threats to the United States, the Center serves as a credible, non-partisan source of authoritative information, drawn from the academic research community. See http://cstsp.aaas.org.



Science, Technology, and Security

RELIABLE REPLACEMENT WARHEAD REPORT

Amid debate over a multi-million dollar effort to shore up the aging U.S. nuclear stockpile with alternate weapons such as "bunker buster bombs," an independent study group convened by the CSTSP in 2007 offered a detailed assessment of the proposed U.S. Reliable Replacement Warhead (RRW) program. The panel concluded that key potential benefits of the program — more easily maintained nuclear weapons with enhanced performance margins, improved safety and security properties, and easier manufacturing — could occur in the long term, following modernization of the weapons production complex. Further, the next one to two decades would be a very challenging period for the nuclear weapons program as it simultaneously undertakes construction at many sites, in addition to the maintenance and refurbishment of existing weapons, and potentially the construction of RRWs, said Bruce Tarter, director emeritus of the Lawrence Livermore National Laboratory and head of the study group assigned to assess the RRW. The study group also noted that there have been no presidential or cabinet-level statements from this administration that clearly lay out the role of nuclear weapons in the post-Cold War, post-9/11 world; any plan for the nuclear weapons enterprise must have a clearly articulated rationale and bipartisan basis if it is to be sustained over the 25 years required to make these substantial changes.

NON-PARTISAN POLICY BRIEFINGS

Would the frequency of roadside bombings along two key Iraqi trade routes increase or decrease, given alternate U.S. responses to the problem — clamping down on illegal smuggling, or turning enforcement over to Iraqi troops? A computer model developed by Alexander Levis of George Mason University and colleagues suggested that giving Iraq more control over two old silk roads would help reduce improvised explosive devices (IEDs). Levis, V.S. Subrahmanian of the University of Maryland, and other researchers are modeling insurgent behaviors in an effort to help military and political leaders make more informed decisions. "We're not predicting outcomes," Levis emphasized. "We do comparisons of the effectiveness of alternatives." Levis and Subrahmanian took part in one of 17 Capitol Hill seminars organized by the CSTSP in 2007.

Another CSTSP policy briefing, featuring Francis F. Busta of the National Center for Food Protection and Defense at the University of Minnesota, warned that the U.S. food supply could be vulnerable to terrorist contamination, and he described the promise of new sensor technologies for detecting poisons like the bacterium *C. botulinum*. "One of the challenges," Busta noted, "is to educate consumers without scaring them," since citizens and experts alike can play a role in reporting unusual events. Yet another speaker, Jeffrey Lewis of the New America Foundation cautioned that better on-the-ground monitoring is needed to track potential Iranian efforts to assemble a military nuclear explosive. At another event, Harvard University's Matthew Bunn outlined specific steps for reducing the risk of crudely built "dirty bombs" based on smuggled nuclear weapons components.



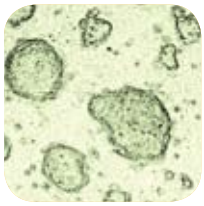
▸ PRESS AND PUBLIC EVENTS

AAAS Chair John P. Holdren (2007-2008) and ExxonMobil Manager of Government Relations Lori Ryerkerk broadly urged policy-makers and industry to increase efforts to develop affordable, reliable energy while reducing environmental impacts. "If you want a different energy system by 2050," Holdren said, "you'd better start to change it now because the turnover time of energy facilities is typically 30 to 50 years." Ryerkerk agreed that intensive efforts are needed. The challenge, she said, is to design an energy management system that addresses the climate challenge, without reducing quality-of-life for people in developing regions. This unique public exchange, moderated by Richard Harris of National Public Radio, was part of a four-part "Science and Society: Grand Challenges" series organized by AAAS and Georgetown University's Program on Science in the Public Interest.

During another public event in 2007, Jacqueline Fletcher of Oklahoma State University said 550 exotic pathogens and pests pose a risk to U.S. crops, and she urged the United States to boost border inspections of imported food items. The intent of "agroterrorism" is economic damage, according to David Franz, then at the National Agricultural Biosecurity Center at Kansas State University. "It's more an economic assault on our national security and infrastructure," he explained.

Kavita Berger, project director within the CSTSP, stressed the importance of agricultural products to the U.S. economy, and to its food supply, international trade, and energy. Non-partisan, science-focused briefings and public discussions are a vital part of the U.S. policy process, added Benn Tannenbaum, an associate program director within the AAAS center.

At the intersection of personal values, science, and society, the AAAS Center for Public Engagement with Science and Technology promotes dialogue on global climate change, human embryonic stem cell research, evolution, and a host of other issues. AAAS informs public discourse through service to science journalists worldwide, and as part of long-standing public understanding initiatives. Outreach in 2007 included activities and resources for teachers, reporters, families, and others. See www.aaas.org/programs/centers/pe.





Media and Public Engagement

CONFRONTING CLIMATE CHANGE

High-school freshman Frieda Grierson was among a group of Shishmaref, Alaska, residents who explained how global climate change is already affecting their fishing village, during a town hall-style event for some 1,200 attendees at the 2007 AAAS Annual Meeting. The experiences of Grierson and her neighbors — living witnesses to climate change — were confirmed at the AAAS event by leading scientists such as climate expert Lonnie G. Thompson of Ohio State University. During a creative exercise developed by Robert Socolow and Stephen Pacala of Princeton University, audience members also were invited to vote on how best to reduce greenhouse gases.

Climate change represents "an immense teaching opportunity," said AAAS Chair John P. Holdren (2007-2008) — a chance to explore physics, geometry, chemistry, biochemistry, meteorology, geography, and more. An estimated 250 K-12 teachers at the AAAS event received a new *Abbreviated Guide for Teaching Climate Change*, prepared by Project 2061, the science-education reform initiative of AAAS. The event was organized by AAAS in collaboration with the California Science Teachers Association, the National Science Teachers Association, and the United Educators of San Francisco (representing the National Education Association and the American Federation of Teachers). See www.aaas.org/climate.

POLAR HORIZONS AT ABELSON SEMINAR

Strange whales with long, sword-like tusks, dwindling Adélie penguin populations, microorganisms entombed in ice, and the cosmic origins of the universe were among the mysteries explored by speakers at the annual Philip Hauge Abelson Advancing Science Seminar at AAAS. Native people and their cultures are increasingly vulnerable, as global climate change affects Earth's poles the hardest, leading researchers warned during the daylong symposium, moderated by James J. McCarthy of Harvard University, then AAAS president-elect. "It has been said that polar regions are like the canary in the coal mine, and when the canary drops, it's time to leave the mine," said McCarthy, who co-chaired the Intergovernmental Panel on Global Climate Change (IPCC), Working Group II (2001). "But we have no exit path." The 30 October symposium, "New Horizons in Polar Science," was planned in recognition of the International Polar Year and in honor of Philip Abelson, who served as editor of the journal *Science* for 22 years, and then as senior adviser to AAAS until shortly before his death at the age of 91. Abelson "had almost no interest in the past," the AAAS CEO remarked. "He was a man who was only interested in where science was going."

COMMUNICATING HEALTH AND SCIENCE NEWS

"Think of what we'll need in terms of presenting the story to the reader, viewer, and listener," veteran newsman Ed Tobias of Associated Press Broadcast said during a professional-development seminar for public information officers (PIOs). The event, organized by EurekAlert!, the AAAS science-news service, and Spectrum Science Communications, underscored the importance of photos, video, graphics, and animation for communicating with reporters and the public. The multimedia

tips from Tobias were echoed by other EurekAlert! panelists, including Glenn O'Neal of *USA Today;* Sally Squires of the *Washington Post's* Lean Plate Club; Michael Waldholz of Bloomberg News; and Adam Voiland of *U.S. News & World Report.* Journalists said that they usually prefer to receive story ideas via e-mail. Voiland also urged attendees to avoid hype when communicating science, technology, and health news. The National Press Club event was EurekAlert!'s third professional-development seminar for PIOs. Go to www.eurekalert.org/seminar.

EUREKALERT! IN CHINESE AND SPANISH

Developed by AAAS in 1996, the popular English-language Web service for reporters, EurekAlert! (www.eurekalert.org) now serves some 6,000 registered reporters in 60 countries, plus about 1 million public visitors per month. Nearly 1,000 research organizations have so far posted more than 100,000 news releases to EurekAlert!. In 2007, AAAS took steps to better serve journalists worldwide, by launching EurekAlert! Chinese (http://chinese.eurekalert.org), and by providing embargoed news for Spanish-speaking reporters, too. EurekAlert! Chinese — commended in an article in the China-based *World Journal of Gastroenterology* as a way to "bridge the communication among researchers, the public and media, and publishers" — was made possible by a startup grant from the William T. Golden Endowment Fund for Program Innovation. EurekAlert!'s multi-language portal also offers news in Japanese, French, and German.

AAAS DIVISIONS ENGAGE THE GRASS-ROOTS

Hundreds of scientists from Alaska, Canada, and other polar regions took part in the 58th AAAS Arctic Division Science Conference in Anchorage. Three other regional AAAS divisions — the Pacific, Caribbean, and the Southwestern and Rocky Mountain (SWARM) divisions — also engaged scientists, policy-makers, and the public regarding climate, sustainability, and other scientific priorities. During the Pacific division's annual conference, for example, attendees heard presentations on "green cities" and wilderness protection. The SWARM meeting encompassed energy research, evolution, and stem cell research, and environmental education was a key focus of Caribbean division activities



in 2007. Through regional conferences, awards, educational initiatives, and more, the AAAS divisions are playing an increasing role in advancing science and technology at the grass-roots level. Log onto www.aaas.org/go/divisions.

SUPPORTING AFRICAN JOURNALISTS

Nigerian health journalists contend with taboo topics, equipment shortages, "brown envelopes" of bribe money, and treacherous travel conditions. Yet, they seem "fearless, feisty, and brave," said Bob Hirshon, a senior project director within the Education and Human Resources unit of AAAS. Hirshon took part in health-reporting workshops in Lagos and Abuja, Nigeria. Sponsored by the U.S. Embassy and Ruyi Communications, the events attracted nearly 200 reporters who discussed challenges with U.S. colleagues, including how best to stay current on scholarly literature, cover multiple news beats, and convince editors to run stories.

2007 Annual Meeting news from San Francisco is online at www.aaas.org/go/news2007.

AAAS Awards

The AAAS Awards celebrate the achievements of extraordinary scientists, engineers, and journalists. We congratulate each of our distinguished award winners.

AAAS Award Highlights



BURTON RICHTER
PHILIP HAUGE ABELSON PRIZE
The coveted Abelson Prize honors a public servant for exceptional contributions to advancing science, or a scientist or engineer for a distinguished career of scientific achievement and service to the community.

Burton Richter was recognized for his world-class contributions to research, successful management of a leading scientific laboratory, and unrelenting efforts to advance science and to promote its responsible use in shaping public policy.



NEIL DEGRASSE TYSON
AWARD FOR PUBLIC UNDERSTANDING OF SCIENCE AND TECHNOLOGY
The award recognizes working scientists and engineers who make outstanding contributions to the "popularization of science."

Neil deGrasse Tyson was honored for his passionate commitment, sustained excellence, and dynamic leadership in engaging the public in the frontiers of science.



ROBERT WATSON
AWARD FOR INTERNATIONAL SCIENTIFIC COOPERATION
The award recognizes extraordinary contributions to furthering international cooperation in science and engineering.

Robert Watson was honored for his extraordinary contributions to promoting international scientific cooperation in scientific research, communication, and training, and for working to increase the understanding of climate change and sustainable development.



JAMES HANSEN
AWARD FOR SCIENTIFIC FREEDOM AND RESPONSIBILITY
The award honors scientists, engineers, and their organizations whose exemplary actions, sometimes taken at significant personal cost, have served to foster scientific freedom and responsibility.

James Hansen is honored for his courageous and steadfast advocacy in support of scientists' responsibilities to communicate their scientific opinions and findings openly and honestly on matters of public importance.



CARLOS CASTILLO-CHAVEZ
MENTOR AWARD
The award honors early- or mid-career members who have mentored and guided significant numbers of underrepresented students toward a Ph.D. degree in the sciences, as well as scholarship, activism, and community-building for underrepresented groups.

Carlos Castillo-Chavez is recognized for demonstrating extraordinary leadership in mentoring and securing funding to foster Ph.D. careers for underrepresented students in mathematics and biological sciences.

Co-Sponsored AAAS Prizes

NEWCOMB CLEVELAND PRIZE
SUPPORTED BY AFFYMETRIX
The prize acknowledges an outstanding paper published in the Research Articles or Reports sections of *Science*.

Hani M. El-Kaderi, Joseph R. Hunt, José L. Mendoza-Cortés, Adrien P. Côté, Robert E. Taylor, Michael O'Keeffe, and Omar M. Yaghi were honored for the report "Designed Synthesis of 3D Covalent Organic Frameworks," published in *Science* on 13 April 2007, pp. 268-272.

Science Journalism Awards



The awards recognize outstanding reporting for a general audience and honor individual reporters for their coverage of the sciences, engineering, and mathematics. The independently judged competition is sponsored by Johnson & Johnson Pharmaceutical Research & Development, L.L.C.

LARGE NEWSPAPERS – Kenneth Weiss and Usha Lee McFarling, *Los Angeles Times*

SMALL NEWSPAPERS – Jennifer Frazer, *Wyoming Tribune-Eagle*

MAGAZINE – Po Bronson and Ashley Merryman, *New York*

TELEVISION – Llewellyn Smith and Stephen Lyons, WGBH/NOVA

RADIO – Keith Seinfeld, KPLU-FM, Seattle/Tacoma

ONLINE – Katie Alvord, KeweenawNow.com

CHILDREN'S SCIENCE NEWS – Mona Chiang, Scholastic *Science World*

CERTIFICATE OF MERIT – Sina Löschke, *GEOlino*

AAAS/Subaru *SB&F* Prize for Excellence in Science Books



The prizes, sponsored by Subaru of America Inc., celebrate outstanding science writing and illustration for children and young adults.

CHILDREN'S SCIENCE PICTURE BOOK
David Schwartz and Yael Schy, Authors; Dwight Kuhn, Illustrator
Where in the Wild? Camouflaged Creatures Concealed and Revealed
(Tricycle Press)

MIDDLE GRADES SCIENCE BOOK
Lowell Dingus, Luis M. Chaippe, and Rodolfo Coria, Authors
Dinosaur Eggs Discovered: Unscrambling the Clues!
(Twenty-First Century Books)



YOUNG ADULT SCIENCE BOOK
Richard Preston, Author
The Wild Trees: A Story of Passion and Daring
(Random House)

HANDS-ON SCIENCE/ACTIVITY BOOK
Pat Murphy, Author
Exploratopia
(Little Brown & Company)

Golden Fund Update

An extremely generous, historic gift from the late William T. Golden, AAAS's treasurer emeritus, stimulates programmatic innovation by funding activities not normally supported by the general budget. AAAS has continued to celebrate Mr. Golden's extraordinary legacy, following his death on 7 October 2007, at the age of 97, through initiatives made possible by the William T. Golden Endowment Fund for Program Innovation. The following summaries offer highlights of the Association's 2007 Golden Fund activities.

AAAS BOOK TALKS



The world of science books is the focus of a recurring podcast and accompanying blog supported by the 2007 Golden Fund. The series will include four podcasts focusing on science books for children's and young adult books, plus another four podcasts commenting on science books for adults. A collaboration between the staff with the journal, *Science Books & Films (SB&F),* and review editors for the journal *Science,* the new AAAS Book Talks podcast and blog will provide an entertaining and up-to-date look at the world of science book publishing. The series is intended to help improve science literacy by encouraging young people and adults to read more science books. Programs also will bring science directly into homes, classrooms, and libraries, providing a virtual connection between authors, illustrators, and readers. See www.sbfonline.com.

COMMUNICATING SCIENCE AND TECHNOLOGY



A new Web site, launched by the AAAS Center for Public Engagement with Science and Technology, provides interactive resources and training to help scientists and engineers communicate more effectively. The multimedia Web site addresses how to communicate science broadly through media outreach, public interaction, and multimedia tools. Online resources include Web-based seminars and how-to tips on developing messages, handling media interviews, giving public presentations, and finding public outreach opportunities, plus sample AAAS questions and answers on key topics. As a follow-up to the Web site launch, the Golden Fund and the National Science Foundation plan a series of regional professional-development workshops for scientists and engineers, too. See www.aaas.org/communicatingscience.

SCIENCE, POLICY, AND LAW FOR UNDERGRADS



Two AAAS units — the Center for Science, Technology, and Congress (CSTC) and the Center for Science, Technology, and Security Policy (CSTSP) — used their 2007 Golden Fund award to organize an Undergraduate Science, Policy, and Law Poster Session for the AAAS Annual Meeting. The session was organized in partnership with Triple Helix, a campus-based international student group that gives undergraduates a forum for presenting research on the relationship between science, society, business, ethics, and law. The purpose of this Golden Fund project is to educate and engage undergraduates, while exposing them to a broad spectrum of scientific disciplines and policy activities, and creating a cohort of science and policy leaders for the future.

PLAIN LANGUAGE TOOLKIT



Helping scientists develop the skills and resources to communicate science more understandably is the goal of the Plain Language Toolkit project. Based on a model for written communications that emerged from previous AAAS projects, staff are now developing a brief online tutorial focusing on "science in plain language." The tutorial uses a Wikipedia-style technology that will allow participating scientists to create a body of accessible science writing on a wide range of topics.

PROMOTING DIVERSITY ON *SCIENCE* CAREERS



A Web-based networking platform on the comprehensive AAAS site, *Science* Careers, will help to further promote information-sharing among individuals and underrepresented communities of scientists and engineers. Building on the existing Minority Scientists Network, the new AAAS-*Science* Careers Diversity Portal will facilitate new personal and organizational connections, by letting participants develop and sustain professional networks as they navigate the many pathways to a successful career in science. The enhanced Diversity Portal is being developed to promote new communities of underrepresented students who aspire to become scientists as well as those who mentor, teach, and advise them. The site also will provide potential employers and sponsors with an effective way to recruit scientists and aspiring scientists from underrepresented communities. See www.sciencecareers.org/miscinet.

MAXIMIZING COMMUNICATION AND DISCOVERY



Enhancements to *Science* Signaling, *Science's* online journal of signal transduction, or how cells talk to each other, are the focus of two new Golden Fund projects. One project made it possible to create a funding sources section of *Science* Signaling. The editors create an RSS feed at least once a month with funding information from GrantsNet, so that the information can be retrieved by HighWire Press and made available online (see http://stke.sciencemag.org/resources/funding). Now, this process is being automated and integrated with search and personalization features on the *Science* Signaling site. A second effort involved improving the communication of signal-transduction research using the JMOL graphics tool to create user-interactive 3-D molecular structures.

AAAS Fellows

AAAS Fellows are elected annually by the AAAS Council for meritorious efforts to advance science or its applications. Fellows have made significant contributions in areas such as research, teaching, technology, services to professional societies, and the communication of science to the public. The following members were elected Fellows in 2007. AAAS congratulates them and thanks them for their service to science and technology.

AGRICULTURE, FOOD, AND RENEWABLE RESOURCES

Lajpat R. Ahuja
J. Ole Becker
Henry Daniell
Mark B. David
Peter J. Hansen
Andrew Hiatt
Zhanjiang Liu
Steven A. Lommel
Joyce Loper
John M. Norman
Jeffrey F. Pedersen
Robert E. Sharp
David R. Shaw
Richard Stouthamer
Jeremy F. Taylor
Barbara Valent
Robert Zeigler

ANTHROPOLOGY

Alan H. Bittles
Peter T. Ellison
Yohannes Haile-Selassie
Richard F. Kay
Timothy Kohler
Carl A. Maida
Sally McBrearty
Stephen T. McGarvey
Dennis H. O'Rourke
Peter J. Richerson
Robert V. Riordan
Lawrence M. Schell
Sara Stinson
Linda D. Wolfe

ASTRONOMY

Paul D. Feldman
John T. Gosling
Ronald Greeley
Carle M. Pieters
S. Alan Stern
John H. Thomas
Joel E. Tohline

ATMOSPHERIC AND HYDROSPHERIC SCIENCES

Donald R. Blake
Judith A. Curry
Russell R. Dickerson
Seyed M. Hassanizadeh
Philip K. Hopke
Conway B. Leovy
Dennis P. Lettenmaier
W. Timothy Liu
Paul A. Mayewski
Donald J. Wuebbles

BIOLOGICAL SCIENCES

Farid E. Ahmed
John F. Alderete
J. David Archibald
Steven E. Artandi
Karen Artzt
Laura D. Attardi
Aimée H. Bakken
Bonnie Bartel
Mark A. Batzer
Philip W. Becraft
Marlene Belfort
Judith Berman
Stephen M. Beverley
Debashish Bhattacharya
Morris J. Birnbaum
Pamela J. Bjorkman
Jef D. Boeke
Kathleen Boris-Lawrie
Toby Bradshaw, Jr.
Steven P. Briggs
Douglas G. Capone
Martin Chalfie
Perng-Kuang Chang
Robert W. Chapman
Ambrose L. Cheung
Sarah F. Covert
Elizabeth A. Craig
Larry B. Crowder
Michael R. Culbertson
Jim E. Cutler
Salil K. Das
R. Kelly Dawe
Titia de Lange
Raymond J. Deshaies
Ann E. Desjardins
Claude Desplan
John F. X. Diffley
Machi F. Dilworth
Walter H. Doerfler
William L. Duax
Anindya Dutta
William C. Earnshaw
Walter Eckhart
Howard J. Edenberg
David R. Engelke
Ellen H. Fanning
Robert L. Fischer
Errol C. Friedberg
Elaine Fuchs
Philip Furmanski
George M. Garrity
Sankar Ghosh
Stephen P. Goff
Yale E. Goldman
J. Eric Gouaux, Jr.
Barbara J. Graves
Nigel D. F. Grindley
Mary Lou Guerinot
Thomas J. Guilfoyle
James F. Gusella
Gerald L. Hazelbauer
Michael O. Hengartner
Robert K. Herman
Craig S. Hood
Steven C. Huber
Dan E. Hultmark
Laurinda A. Jaffe
Anthony C. Janetos
Lee F. Johnson
Samuel Kaplan
Thomas C. Kaufman
Ann P. Kinzig
Ivor T. Knight
Mimi A. R. Koehl
Leonid Kruglyak
Robb Krumlauf
Ira Michael Leffak
Greg E. Lemke
Maxine L. Linial
Carol D. Litchfield
Stephen P. Long
Michael Mallin
Douglas A. Marchuk
Robert P. Mecham
John M. Melack
Jan A. Miernyk
Nancy A. Moran
Subbaratnam Muthukrishnan
William C. Nierman
Marit Nilsen-Hamilton
Kevin Padian
David C. Page
Ken N. Paige
Leslie V. Parise
William R. Pearson
John R. Perfect
Naomi E. Pierce
Helen M. Piwnica-Worms
Stephen Polasky
Thomas M. Powell
Jack Preiss
Daniel Promislow
Thomas C. Quinn
Tom A. Ranker
Guritno Roesijadi
Peter P. Rogers
Michael Rosbash
Amy C. Rosenzweig
Jack A. Roth
James E. Rothman
Leona D. Samson
Suzanne B. Sandmeyer
Gottfried Schatz
Randy W. Schekman
Gertrud M. Schüpbach
Thomas W. Scott
Ganes C. Sen
John Shanklin
Janet L. Smith
George F. Sprague, Jr.
Peter J. Stambrook
Thomas A. Steitz
Ursula B. Storb
F. William Studier
Jay A. Tischfield
Paula Traktman
Michael J. Wade
Kirk O. Winemiller
Jianguo Wu
Ying Xu
Kenneth S. Zaret
Barbara A. Zilinskas
Miriam E. Zolan

CHEMISTRY

Paul T. Anastas
Anthony J. Arduengo III
Guillermo C. Bazan
Jeremy M. Berg
Hendrik Bluhm
Christopher E. D. Chidsey
Steven G. Clarke
Wilfredo Colón
Vicki L. Colvin
Robert M. Corn
Benjamin F. Cravatt III
Hugh C. De Long
Ulrike Diebold
D. Jamie Donaldson
Galen B. Fisher
Miguel A. Garcia-Garibay
John A. Gerlt
Gregory S. Girolami
Gary D. Glick
J. Devens Gust, Jr.
Linda C. Hsieh-Wilson
Klavs F. Jensen
Zakya H. Kafafi
Sabre Kais
T. Ross Kelly
Robert T. Kennedy
Judith Klinman
David W. Koppenaal
John D. Lipscomb
Gang-yu Liu
Jun Liu
John A. Lowe III
Yi Lu
David W. Lynch
Richard L. Martin
Joe V. Michael
Gordon J. Miller
Andrew D. Miranker
Shahriar Mobashery
Tom W. Muir
Fred R. Naider
Daniel G. Nocera
Albert Padwa
Jacob W. Petrich
Anna M. Pyle
Jeffrey T. Roberts
Scott D. Rychnovsky
Lanny D. Schmidt
Steven D. Schwartz
Athan J. Shaka
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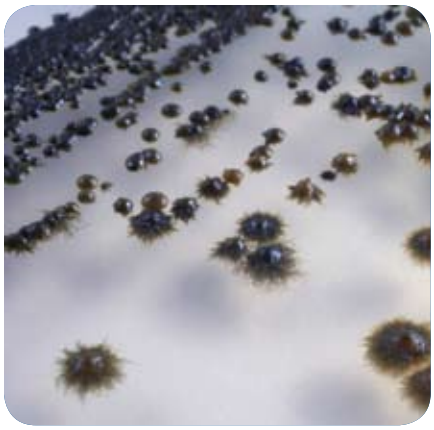
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In bestowing its prestigious Public Welfare Medal, the U.S. National Academy of Sciences recognized Norman P. Neureiter for "spurring international cooperation" and "integrating science and technology into foreign policy" while serving as the first S&T adviser to a U.S. secretary of state. His three-year term began in 2000 under Madeleine Albright and continued under Colin Powell.

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