Founded in 1848, the American Association for the Advancement of Science is an international, nonprofit organization dedicated to advancing science, engineering and innovation for the benefit of all people. With more than 120,000 individual members in more than 91 countries, AAAS is the world’s largest multidisciplinary scientific society and a leading publisher of cutting-edge research through the Science family of journals. As one of the top voices for science worldwide, we spearhead initiatives in policy, international cooperation and diplomacy, STEM education, public engagement, and more. We strive to promote and defend the integrity of science and its use, provide a voice for science on societal issues, and strengthen and diversify the science and technology workforce. More information is available at www.aaas.org.

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Table of Contents

Introduction by Board Chair and CEO ................................................................. 2
Science Policy ....................................................................................................... 4
Science Education and Diversity ...................................................................... 7
Science Communication and Public Engagement ............................................ 10
Fellowships and Career Pathways .................................................................... 13
Science Diplomacy and International Relations ............................................ 16
Science Journals and News .............................................................................. 20
Thank You to Our Donors ................................................................................ 23
2018 Financial Statements .............................................................................. 27
AAAS Board of Directors and Management .................................................... 28
As communities face increasing challenges in need of societal decision-making informed by scientific evidence, AAAS and the Science family of journals communicate high-quality research and advocate for the use of science with diverse scientific and public audiences.

The AAAS mission focuses our work to “advance science, engineering, and innovation throughout the world for the benefit of all people.” AAAS makes significant impacts by leading initiatives in science communication, education, policy, public engagement, and international programs and partnering with affiliated organizations, members and supporters.

In the last year, we shared information on important research advances with the scientific community, policymakers, reporters and the public; strongly advocated for the conditions that the research enterprise needs to thrive; provided valuable training and resources for students, scientists and engineers; and promoted research collaboration across disciplines and borders.

We thank AAAS members and donors for their service and support on behalf of our organization.
AAAS makes significant impacts by leading initiatives in science communication, education, policy, public engagement, and international programs and partnering with affiliated organizations, members and supporters.”
AAAS provides training, tools, and opportunities for scientists and engineers to advocate for science and participate in policymaking; organizes policy briefings and meetings; communicates with members of Congress and their staff; and produces evidence-based science and technology updates, including analyses of federal investments in research and development.

**Equipping scientists as state and local advocates**

In October, AAAS launched an initiative to engage its members as effective advocates for the inclusion of scientific evidence in public policy discussions at state and local levels. The new effort is initially focused on developing and amplifying opportunities for scientists to participate in public discussion and decision-making in their communities about local responses to climate change impacts, which differ across the United States. This work is funded by philanthropic support from the Grantham Foundation for the Protection of the Environment, Reinier and Nancy Beeuwkes, Ben and Ruth Hammett, Gary and Denise David, and Rush Holt and Margaret Lancefield.

**Attention to diversity, societal implications encouraged at AAAS Science and Technology Policy Forum**

Scientific institutions need to increase diversity by placing more professors from underrepresented backgrounds on the faculty or in leadership roles, a change that can positively impact the quality and scope of scientific research, said Kenneth Gibbs during the 2018 Gilbert Omenn Grand Challenges Address at the AAAS Science and Technology Policy Forum in June. Gibbs is director of the Postdoctoral Research Associate Training Program at the National Institute of General Medical Sciences.

Accelerating research and development was at the heart of Arati Prabhakar’s William D. Carey Lecture at the forum. “We need new kinds of advances and new ways of working if we are to contribute to our nation for the next handful of decades as we have for the decades just passed,” said Prabhakar, who is a fellow at the Center for Advanced Study in the Behavioral Sciences at Stanford University and former director of both the Defense Advanced Research Projects Agency (DARPA) and the National Institute of Standards and Technology. “That’s what it will take if we are to renew and fulfill R&D’s promise of a better future for our country.”

Bottom Left Photo Credit > Lauren A. Seligman/AAAS
The Grantham Foundation for the Protection of the Environment, which supports communication and collaboration in environmental protection with an emphasis on climate change, is a funder of climate communication initiatives at AAAS and other organizations around the world.

In 2014, the foundation’s support was key to the development of What We Know, an AAAS climate report and communications initiative underscoring the scientific consensus of human-caused climate change and emphasizing the critical role that science plays in understanding the realities and risks of climate change and the response to its impacts.

In 2018, support from the foundation helped launch a new AAAS initiative in local and state advocacy, with its initial focus on building networks of climate science expertise and community-based solutions to climate change impacts across the United States.
Prabhakar also reminded forum attendees that ethical and societal implications of new technologies are not to be overlooked. “We need to play our part in helping our society make wise choices about the fruits of our labor,” she said.

Center for Scientific Evidence in Public Issues launched

The AAAS Center for Scientific Evidence in Public Issues launched in September to share scientific and technical evidence with policymakers working at all levels of government. Instead of lobbying for a particular law or offering a years-long exhaustive study of an issue, the center intends to create timely, well-communicated evidence narratives — what scientists know about a topic, how they know it, what the evidence means, and how it relates to other public policy issues.

“We want to have an impact on policy and policymaking, not by advocating for certain policies but ensuring that when decisions are being made, the evidence is being appropriately considered and evaluated,” said Michael Fernandez, center director.

The center is funded by the Gordon and Betty Moore, Rockefeller, Alfred P. Sloan, David and Lucile Packard, and Rita Allen Foundations; the Hellman family; the Carnegie Corporation of New York; and the Chan Zuckerberg Initiative.

Advocating for science in U.S. policymaking

AAAS and its members pursued many opportunities to advocate for science with members of Congress, federal agencies and other audiences.

Throughout the year, CEO Rush Holt made 24 public statements on issues of concern to the scientific community, including the importance of diversity in education and science, proposed changes to visa and international travel policies, the use of scientific evidence by government agencies, forensic science guidelines at the Department of Justice, sustained investments in U.S. research and development, and more.

AAAS led and participated in several advocacy efforts with other scientific organizations, including public comments, congressional testimony and news media outreach that called attention to concerns about a proposed “transparency” rule that would have limited the science available for use by the Environmental Protection Agency. AAAS also provided assistance to the administrators and staff of federal agencies in connecting to experts and high-quality scientific information relevant to their decision-making.

Golden Goose Awards highlight value of basic science

Five researchers were honored with Golden Goose Awards at a Library of Congress ceremony in September, including scientists who worked to better understand human brains, revolutionized understanding of the immune system and illuminated how cells communicate. Founded by AAAS, the Association of American Universities, the Association of Public and Land-grant Universities, and others, and supported by Republican and Democrat members of Congress, the awards recognize federally funded scientific research that has led to considerable benefits to society.
Science Education and Diversity

Improving education and opportunities for students and professionals in science, technology, engineering and mathematics (STEM) is a primary goal of AAAS that benefits individuals and society, which needs science-literate citizens and a well-trained STEM workforce. AAAS facilitates policies, programs, conferences and awards that ensure society can access the full spectrum of STEM talent.

SEA Change seeks culture shift for diverse scientific enterprise

AAAS launched the SEA Change program — short for STEM Equity Achievement — in January to help transform the culture of the scientific enterprise, beginning with institutions of higher education.

Recognizing the pivotal role of academic institutions, SEA Change outlines a voluntary structural approach to ensuring the scientific community supports diversity and inclusion. Colleges and universities are called on to establish systems to recruit and keep a diverse student body and faculty in STEM disciplines. The systems also would seek to reduce attrition and build pathways to achievement.

Academic institutions must “reject the prevailing culture of STEM” and “seek a culture in which equity, diversity and inclusion are normative and much more reflective of the values we espouse than those we currently practice,” said Shirley Malcom, director of the SEA Change program at AAAS.

The program is funded by the Carnegie Corporation of New York and the Kavli, Heising-Simons, Alfred P. Sloan and Vilcek Foundations.

AAAS provides leadership in addressing sexual harassment

“We have a problem in the academy,” said elected AAAS leaders Margaret Hamburg, Susan Hockfield and Steven Chu in a September editorial in Science. “According to an extensive meta-analysis cited by the National Academies in their 2018 report Sexual Harassment of Women: Climate, Culture, and Consequences in Academic Sciences, Engineering, and Medicine, more than 50%
of women faculty and staff at academic institutions in the United States report having been sexually harassed — as do some 20% to 50% of women students, depending on their field and level of study.”

Hamburg, Hockfield and Chu recommend “systemic change. The scientific community must act with urgency to create an inclusive organizational culture and professional standards of behavior that will allow all of its members to reach their full potential.”

The AAAS Council approved a new policy for elected AAAS Fellows that defines sexual and gender-based harassment as a breach of professional ethics. The policy enables the revocation of elected AAAS Fellows “in cases of proven scientific misconduct, serious breaches of professional ethics, or when the Fellow in the view of AAAS otherwise no longer merits the status of Fellow.”

Independently, investigative work by Science reporters led to several news stories uncovering instances of sexual harassment and misconduct in the scientific community.

**Science education in theological seminaries expands**

Building on broad interest generated by a pilot project that integrates science into theological education, AAAS expanded the initiative to advance understanding of science and technology across the religious community to as many as 35 seminaries over the next five years.

In May, seven seminaries in Michigan, Missouri, Indiana, Illinois and Wisconsin were selected as the first of four groups to participate in the expanded program in the next 18 months. The Science in Seminaries program is supported by the John Templeton Foundation.

“The hope is that the seminary students exposed to enriched classes will find science relevant and interesting to their vocations, and in the future, help them make science a positive component of congregational life and favorably impact the everyday lives of a broad swath of Americans,” said Jennifer Wiseman, director of the AAAS Dialogue on Science, Ethics, and Religion program.

**Summer school explores the science of space travel**

Thousands of students around the United States explored the science of space as part of Science in the Summer, a free interactive science enrichment program aimed at second-through sixth-graders.

The program, founded and sponsored by pharmaceutical company GSK, was established in the 1980s and expanded nationally in 2015. AAAS manages the program in the Washington, D.C., area, where summer classes meet at 37 different libraries, museums and community centers in the District of Columbia, Virginia and Maryland.

With programs now in 20 states and Washington, D.C., Science in the Summer has a broader reach in combating the well-documented “summer slide” phenomenon — in which students, particularly those without access to enrichment activities, lose academic skills and knowledge during the long summer break, said Betty Calinger, senior project director at AAAS.
Leon Lederman

The scientific community lost Nobel Laureate and curiosity proponent Leon Lederman in October. A past president of AAAS, Lederman and two colleagues won the 1988 Nobel Prize in Physics for their detection of the muon neutrino, one of the basic building blocks of matter. After establishing himself as one of the most important particle physicists in history, Lederman devoted his life to primary and secondary education.

During his tenure as director of Fermi National Accelerator Laboratory and while teaching physics at the University of Chicago and Illinois Institute of Science and Technology, Lederman worked on changes to K-12 science instruction that he hoped to see implemented worldwide.

He founded the Illinois Mathematics and Science Academy and orchestrated the establishment of the Teachers Academy for Mathematics and Science in Chicago, which became a global model for improving science instruction and for closing the gap in opportunity between students from high- and low-income families.

“He understood that was the responsibility,” said Shirley Malcom, director of the SEA Change program at AAAS, where Lederman served as president in 1992. “You take whatever prestige you have earned, and you try to use it. Not for personal gain, but for influencing the situation for other people, to try to make a difference in the way that we educate kids.”
AAAS shares information about scientific advances and promotes science communication and public engagement among diverse audiences and stakeholders. Each year, AAAS hosts the world’s largest general science meeting, attracting researchers, policymakers, journalists and families. Throughout the year, AAAS discusses the latest science news with reporters and other public audiences, provides communication training and resources to scientists and engineers, and facilitates research-practice collaboration in science communication and public engagement.

AAAS Annual Meeting
Advancing Science: Discovery to Application

Concern about impacts to the scientific community of the U.S. presidential transition led many of the news-making discussions at the 184th AAAS Annual Meeting held in Austin, Texas, in February.

U.S. federal funding is necessary to support basic research “as the fundamental building block of all innovations,” said AAAS President Susan Hockfield during her presidential address. “The question for every country is, ‘Are we investing in the kind of education, research and policy that will encourage the kind of innovation that will save us from the terror of nine and a half billion people?’” asked Hockfield, who is also a professor of neuroscience and president emerita of Massachusetts Institute of Technology.

Researchers gave news briefings on the memory performance and social behavior of “superagers,” regenerating organs for patient transplants, research and policy questions for “smart” vehicles, advances in the fight against cancer, voter participation in elections, and more. Hundreds of research presentations, seminars and symposia on diverse science topics were attended by more than 7,000 people from 54 countries who participated in the meeting. Family Science Days provided free science activities and opportunities to meet scientists for thousands of children and families in the Austin area.

Communicating Science workshops celebrate 10th anniversary

Ten years after its pilot workshop at San Jose State University, the AAAS Center for Public Engagement with Science celebrated its first decade of offering evidence-based
Mani L. Bhaumik

Longtime member and renowned physicist Mani L. Bhaumik endowed the AAAS Award for Public Engagement with Science with a contribution of $500,000. Established in 1987, the award has historically recognized scientists and engineers who make outstanding contributions to the popularization of science, honoring well-known science communicators, including Carl Sagan, May Berenbaum and S. James Gates Jr.—among others—for their efforts to engage the public.

“Today, the role of scientists to communicate the importance and relevance of their work has never been more important,” said AAAS CEO Rush Holt. “Endowing this award is timely.”

Through Bhaumik’s endowment, AAAS will galvanize—in perpetuity—key attributes that the award represents to the science community and society, including recognition that public engagement and scientific communication are laudable pursuits and central to the scientific enterprise.

PHOTO CREDIT: MANI L. BHAUMIK
workshops and other resources for scientists and engineers seeking to improve their public communication skills.

Reaching more than 6,000 scientists who have participated thus far, the workshops provide opportunities to learn, practice and build confidence in the fundamentals of science communication, including defining goals, considering audiences and crafting relevant messages. The program emphasizes the importance of public engagement, which AAAS defines as intentional, meaningful interactions that provide opportunities for mutual learning between scientists and members of the public.

How We Respond to communicate climate change using local relevance

AAAS launched “How We Respond,” a new communication initiative to share the diverse ways communities across the United States are using science to respond to climate change. Funded entirely through philanthropic support, the two-year project is intended to empower public and private sector leaders, community-based organizations, scientists, and other stakeholders who can influence how climate change issues are factored into decision-making.

How We Respond will include an interactive website and multimedia stories demonstrating how U.S. communities are responding to climate change, the wide range of benefits created by response actions, and how science can help inform effective responses. These products are slated for release in fall 2019, and will be disseminated through targeted media outreach, public discussions and presentations at a variety of forums nationwide.

Leshner Leadership Fellows lead on engaging public with food and water security

Fifteen food and water scientists were selected as the third annual cohort of AAAS Alan I. Leshner Leadership Institute Public Engagement Fellows for having demonstrated leadership and excellence in their research careers and an interest in promoting meaningful dialogue between science and society. The work of the AAAS Leshner Fellows drew from varied disciplines, including anthropology, civil engineering, biological and environmental sciences, geography, hydrology, political science and economics, plant genetics, and horticulture.

“I’m thrilled to join a community of like-minded scientists committed not only to water security as a research focus, but to the creation of new and better ways to engage in dialogue with the public on one of the grand challenges of the 21st century,” said Wendy Jepson, AAAS Leshner Fellow and professor of geography at Texas A&M University.

AAAS Leshner Fellows develop and implement public engagement activities, train other scientists in their communities, and work to increase capacity for public engagement at their institutions. AAAS staff provide ongoing support and continuing professional development throughout the fellowship year.
Fellowships and Career Pathways

AAAS provides multiple opportunities for fellowships and career development, helping scientists and others diversify their skills and explore career pathways in policy, public engagement, journalism, diplomacy and more.

Science and Technology Policy Fellows share expertise with U.S. government

The 46th class of AAAS Science and Technology Policy Fellows began their two-week orientation and training in September before heading off to work in one of the three branches of the U.S. federal government. The 217 fellows in the 2018-19 class, who have advanced degrees in science, engineering or medicine, contribute technical expertise while learning about policymaking by direct experience.

Mass Media Fellows and Diverse Voices in Science Journalism Interns bring science to newsrooms

The AAAS Mass Media Science and Engineering Fellowship and the AAAS Diverse Voices in Science Journalism program allow scientists and students to spend their summer as science journalists in newsrooms across the United States. Now in its 44th year, the Mass Media Fellowship has sent more than 700 scientists and engineers into newsrooms. Twenty-four Mass Media Fellows were sponsored by a scientific society or foundation in 2018; a contribution from Johnson & Johnson Innovation supported the program’s expansion. In addition, three Diverse Voices in Science Journalism Interns, undergraduate students interested in pursuing journalism as a career, spent the summer at AAAS headquarters in Washington, D.C., covering news stories for Science.

AAAS-Lemelson Invention Ambassadors raise visibility of innovation

Established in 2014 to celebrate the importance of invention and cultivate a diverse generation of inventors, the AAAS-Lemelson Invention Ambassadors program added eight innovators to its ranks in July. With support from the Lemelson Foundation, ambassadors
participated in a three-day orientation program, presenting their inventions to public audiences, meeting with congressional staff, and attending sessions on federal agencies and programs that help inventors.

Catalyzing Advocacy in Science and Engineering program trains students in policy
AAAS and a coalition of science and engineering organizations, universities and academic groups offered training in science policy and advocacy for 190 undergraduate and graduate students from 66 academic institutions in March. The annual half-week CASE program provides workshops on effective communication, policymaking, and the federal budget and appropriations process. Afterward, students meet with their congressional representatives in Washington, D.C.

Scientific Community Engagement Fellows foster collaboration
AAAS launched an effort in October to strengthen connections in scientific communities and support professionals working to do so. Supported by the Alfred P. Sloan Foundation, the AAAS Community Engagement Fellows program equips professionals to better cultivate communities in the sciences and develops professional development support materials for scientific community managers.

Science diplomacy workshop equips scientists and diplomats in Africa
Thirty aspiring science diplomats from 17 sub-Saharan Africa countries gathered in Gauteng, South Africa, in June for a regional workshop on science diplomacy — the first such seminar to emerge from a long-standing partnership between AAAS and The World Academy of Sciences. “[Participants] came away with a greater awareness of the impact they can make as scientists or policymakers, and I look forward to seeing how they incorporate that knowledge into their work in the institutions on the African continent and beyond,” said Mahlet Mesfin, deputy director of the AAAS Center for Science Diplomacy.
Stephanie Bogle

A materials engineer and AAAS Science and Technology Policy Fellowship alum, Stephanie Bogle used her fellowship at the U.S. Agency for International Development (USAID) to work on low-emissions development, and in the process she changed her career. While her Ph.D. and postdoctoral work focused on nanostructural order in amorphous materials and metals, Bogle gained experience in international development in college by volunteering with Engineers Without Borders in India and Guatemala.

At USAID, Bogle worked in the Office of Global Climate Change, helping countries increase their capacities for low-emissions development by supporting the development of clean energy and sustainable landscape policies. She worked on metrics used to determine whether countries were making progress toward achieving their goals.

After her fellowship, Bogle remained in policy. She consulted with other companies for USAID and then moved to the Environmental Protection Agency’s Climate Change Division, where she reviews greenhouse gas data reported by U.S. facilities to verify that their accounting is accurate.

“It would have been a lot more difficult to get that experience without the fellowship,” Bogle said. “For me, it was a great way to combine all of my interests: my science background and my interest in policy and development.”
Science Diplomacy and International Relations

AAAS facilitates scientific exchange and relationships across borders. The Center for Science Diplomacy fosters closer interactions between science and diplomacy and elevates the role of science in foreign policy to address national and global challenges.

AAAS explores expanded collaboration with Chinese science organization

Leaders of the China Association for Science and Technology and counterparts at AAAS explored ways to build on a long-standing collaboration between the two scientific organizations through science communication and education partnerships during a meeting at AAAS headquarters in Washington, D.C., in May. Xu Yanhao, a vice president and executive secretary of CAST — a nongovernmental federation of Chinese academic societies — voiced particular interest in AAAS’ communication training programs.

“The Chinese government attaches great importance to the improvement of science literacy for all Chinese citizens,” said Qian Yan, deputy director-general of CAST’s Department of Science Popularization — a term that refers to a broad range of communication and educational initiatives that expand public understanding of science.

AAAS CEO Rush Holt returned the visit by participating in the Global Science Literacy Conference in Beijing, marking the 60th anniversary of CAST. “The scientific community needs to increase public appreciation of science and engineering and expand science literacy beyond students and scientists,” said Holt. “Promoting science literacy is more than teaching facts and figures about yesterday’s and today’s understanding of how the world works, but rather showing that there is a path to tomorrow’s knowledge and that path is open to everyone.” he said.
Center for Science Diplomacy celebrates 10th anniversary

Looking back on its founding a decade ago during a global recession and political tensions, the AAAS Center for Science Diplomacy celebrated its 10th anniversary in September. Margaret Hamburg, AAAS president and foreign secretary of the National Academy of Medicine, told participants at the center’s fourth annual conference that new and ongoing challenges the world now faces call for the application of science diplomacy and make the center’s role more important than ever. Science Diplomacy 2018 brought together scientists, engineers, policymakers, educators and students in the field of science diplomacy for a full day of lectures, panel discussions, networking opportunities and a poster session at AAAS headquarters in Washington, D.C.

The center has been at the forefront of science and diplomacy training and education efforts. It has organized a series of science diplomacy courses in partnership with The World Academy of Sciences since 2014, led workshops, released an online course in science diplomacy and launched the Science Diplomacy Education Network. The center also has created a platform for science diplomacy practitioners and researchers to explore the intersection of scientific disciplines and science diplomacy through the quarterly journal Science & Diplomacy.

AAAS connects emerging technologies to human rights organizations

The AAAS Scientific Responsibility, Human Rights and Law Program released a report in July examining the lessons learned providing geospatial analysis in a human rights context.

The report includes reviews of dozens of legal cases in which geospatial technology provided evidence used in international criminal prosecutions brought before the International Criminal Court; conflict-specific courts in Yugoslavia, Sierra Leone and Cambodia; and human rights courts in Europe and Central and South America.

The Geospatial Technologies Project at AAAS has evolved since its establishment in 2005, now incorporating emerging technological advances into scientific collaborations with human rights practitioners around the globe. Scientific advances in machine learning and artificial intelligence are being studied and, in some cases, tested for their ability to capture and analyze copious amounts of data. More recently, blockchain, microdrones and nanodrones have been identified as technologies that could assist in human rights investigations.

△ Photo Credit: Kathleen O’Neil/AAAS
Innovative science leaders cultivated at Next Einstein Forum in Rwanda

A panel of global scientific leaders examined the state of science and challenges confronting the scientific community across the world at the Next Einstein Forum Global Gathering in Kigali, Rwanda, identifying situations that the African research community might want to avoid.

The impact of the world’s rise in nationalist movements along with a sometimes negligent attitude toward evidence pose risks for the scientific enterprise and stir public distrust in science, said panel participants including AAAS CEO Rush Holt.

These political and social developments increase the need for nongovernmental scientific organizations such as AAAS to continue to engage and inform the public about evidence-based realities and demonstrate the many ways the scientific enterprise improves lives and contributes to global well-being, Holt said. Referencing the Next Einstein Forum’s objective to help Africa build institutions and opportunities to produce the next Albert Einstein, Holt said preserving public trust in science and the freedom of scientists to pursue their ideas are necessary for global progress.

“Political, academic and scientific freedom are not separable,” Holt said. “For science to thrive, young scientists must find confidence, freedom and sustained support. You have to have organizations that are monitoring the situation, continuing to speak out and advocating for them.”

AAAS networks with European scientists and policymakers at EuroScience Open Forum

More than 3,000 scientists, innovators, policymakers and businesses gathered in July at the EuroScience Open Forum in Toulouse, France, to discuss scientific research, innovation and science policy issues. AAAS CEO Rush Holt moderated a session on science diplomacy and staff highlighted activities of the AAAS Cambridge, U.K., office and the news-release distribution platform EurekAlert!.

Kei Koizumi, senior science policy adviser at AAAS, discussed the evolution of federal research funding in the United States during a panel session with representatives from France, Japan, and other member countries of the Organization for Economic Co-operation and Development.

In recent years, geographic funding concentration levels in the United States have remained fairly steady, Koizumi said, but leading federal research funding institutions have been testing experimental programs to spread funding more equally across the country to address economic and social inequities.

“It is important, both politically and socially, to address inequalities on multiple dimensions, and science funding is not exempt from that imperative,” Koizumi said. “We have seen that competitive research funding mechanisms, left to their own devices, can result in inequalities. They can perpetuate other inequalities that exist in society.”
Margaret Hamburg

AAAS President Margaret Hamburg believes that now is the most important time ever for science to fulfill its role in providing innovations that will help solve the world’s biggest problems, such as disease, poverty, food and water shortages, climate change, and security. Solving such problems, Hamburg said, will require cooperation across international borders and across the many scientific disciplines represented by AAAS.

“None of the challenges that we face in our modern world,” she said, “fit neatly into one area of expertise, one government agency or one domain of work. Nor can we work in isolation within our national borders.”

Hamburg sees AAAS as being critical to helping expand scientific collaboration between countries and regions, both to solve the major problems requiring international solutions and to leverage that collaboration to improve global diplomatic relations.

“I care passionately about science,” she said, “and what it can offer if we harness it to improve the lives of people and make a difference in our world.”

PHOTO CREDIT: PROFESSIONAL IMAGES PHOTOGRAPHY
Science research publications encompass advances across the biological, physical and social sciences, and news and analysis expand our understanding of the way humans persevere in the face of extreme conditions, strategies to counteract antibiotic-resistant bacteria and pests, and computational science’s potential to help solve complex problems, among other issues.

**Breakthrough of the Year**

*Science* selected single-cell analyses of gene activity through time as its 2018 Breakthrough of the Year, highlighting methods that have enabled researchers to determine which genes are turned on and off as an early embryo develops.

**Special issue and news highlights**

*Science* published several special issues, including “Far From Over” (on the continuing AIDS crisis), “Frontiers in Computation” and “Gas Giant Planets.” In 2018, the magazine won 19 awards for design, photography and graphics, including *Folio*’s art director of the year. Two 2017 online visualizations — Cracking the Mystery of Egg Shape and Solar System Graveyard — earned Webby nominations in 2018, and the 2017 “Migrations” special issue won a 2018 National Academies of Sciences, Engineering, and Medicine Communication Award.

**2018 research highlights**

**DETECTION AND LOCALIZATION OF SURGICALLY RESECTABLE CANCERS WITH A MULTI-ANALYTE BLOOD TEST** Researchers have developed a noninvasive blood test based on combined analysis of DNA and proteins that may allow earlier detection of eight common cancer types. (*Science*, 19 January)

**THE SPREAD OF TRUE AND FALSE NEWS ONLINE** An analysis of how true and false news stories spread on Twitter reveals that false news spreads substantially faster, and to far more people. (*Science*, 9 March)

**ASSESSMENT OF METHANE EMISSIONS FROM THE U.S. OIL AND GAS SUPPLY CHAIN** Methane leakage from the U.S. oil and natural gas supply chain is greater than previously estimated, researchers report. (*Science*, 22 June)
THE ACCURACY, FAIRNESS AND LIMITS OF PREDICTING RECIDIVISM

A new study suggests that a commercial software widely used to predict which criminals will commit crimes again is no more accurate than untrained people at foreseeing recidivism. (Science Advances, 17 January)

EVIDENCE FOR A LARGE EXOMOON ORBITING KEPLER-1625B

Taking advantage of observations from the Hubble Space Telescope, researchers provide evidence of what could be the first exomoon — a moon orbiting a planet outside our solar system. (Science Advances, 3 October)

THE VERMIFORM APPENDIX IMPACTS THE RISK OF DEVELOPING PARKINSON’S DISEASE

A large-scale epidemiological analysis of more than 1 million individuals from Sweden has demonstrated that removal of the appendix is associated with reduced risk of Parkinson’s disease in almost 20% of cases, a finding that implicates the tiny organ as a contributor to the onset of the condition. (Science Translational Medicine, 31 October)

A POINT-OF-CARE DIAGNOSTIC FOR DIFFERENTIATING EBOLA FROM ENDEMIC FEBRILE DISEASES

Researchers created a point-of-care diagnostic test that, in fewer than 30 minutes, distinguishes Ebola infections from other endemic diseases that share similar initial symptoms, such as Lassa fever and malaria. (Science Translational Medicine, 12 December)

DEVELOPMENTAL PHOSPHOPROTEOMIC IDENTIFIES THE KINASE CK2 AS A DRIVER OF HEDGEHOG SIGNALING AND A THERAPEUTIC TARGET IN MEDULLOBLASTOMA

A search for protein alterations in the cells that give rise to medulloblastoma — the most common type of malignant pediatric brain cancer, with roughly 350 cases diagnosed in the U.S. each year — in mice has identified a protein called CK2 that could be a useful new treatment target in drug-resistant types of the aggressive brain tumor in patients. (Science Signaling, 11 September)

TLR7 ESCAPES X CHROMOSOME INACTIVATION IN IMMUNE CELLS

Scientists are now equipped with greater insight into why the poorly understood autoimmune disorder systemic lupus erythematosus is more prevalent in women. (Science Immunology, 26 January)

PROSTHESIS WITH NEUROMORPHIC MULTILAYERED E-DERMIS PERCEIVES TOUCH AND PAIN

Prosthetic devices may soon be able to communicate the sensation of pain in combination with other tactile information to their users, thanks to a new electronic skin, which its inventors call an “e-dermis,” and a neural stimulation system. (Science Robotics, 20 June)
Thank You to Our 2018 Donors

Lifetime Giving Society
The Lifetime Giving Society recognizes individuals who have contributed a cumulative total of $100,000 or more during the course of their involvement with AAAS.

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Daniel J. Lew and Sally A. Kornbluth
2018 Financial Statements

Consolidated Statements of Financial Position for the years ended December 31, 2018 and 2017 ($ in thousands)

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASSETS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>7,572</td>
<td>8,104</td>
</tr>
<tr>
<td>Accounts receivable, net</td>
<td>3,851</td>
<td>5,117</td>
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<tr>
<td>Grants and contributions receivable, net</td>
<td>18,470</td>
<td>19,976</td>
</tr>
<tr>
<td>Prepaid expenses and other</td>
<td>2,597</td>
<td>2,577</td>
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<tr>
<td>Investments</td>
<td>57,425</td>
<td>59,397</td>
</tr>
<tr>
<td>Property, plant and equipment</td>
<td>53,817</td>
<td>55,655</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td><strong>143,732</strong></td>
<td><strong>150,826</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LIABILITIES AND NET ASSETS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Liabilities:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounts payable and accrued expenses</td>
<td>11,530</td>
<td>11,109</td>
</tr>
<tr>
<td>Deferred dues, subscriptions revenue and other</td>
<td>22,476</td>
<td>20,232</td>
</tr>
<tr>
<td><strong>Total liabilities</strong></td>
<td><strong>34,006</strong></td>
<td><strong>31,341</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Net assets:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net assets without donor restrictions</td>
<td>61,555</td>
<td>70,111</td>
</tr>
<tr>
<td>Net assets with donor restrictions</td>
<td>48,171</td>
<td>49,374</td>
</tr>
<tr>
<td><strong>Total net assets</strong></td>
<td><strong>109,726</strong></td>
<td><strong>119,485</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total liabilities and net assets</strong></td>
<td><strong>143,732</strong></td>
<td><strong>150,826</strong></td>
</tr>
</tbody>
</table>

Consolidated Statements of Activities and Changes in Net Assets for the years ended December 31, 2018 and 2017 ($ in thousands)

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenues:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publishing</td>
<td>57,938</td>
<td>55,809</td>
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<tr>
<td>Member dues</td>
<td>9,541</td>
<td>9,405</td>
</tr>
<tr>
<td>Grants and other program support</td>
<td>28,302</td>
<td>22,965</td>
</tr>
<tr>
<td>Leasing, investments and other</td>
<td>11,345</td>
<td>11,423</td>
</tr>
<tr>
<td><strong>Total revenues</strong></td>
<td><strong>107,126</strong></td>
<td><strong>99,602</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expenses:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Journals</td>
<td>29,556</td>
<td>29,119</td>
</tr>
<tr>
<td>Policy, education and other programs</td>
<td>38,748</td>
<td>38,138</td>
</tr>
<tr>
<td>Publishing</td>
<td>15,985</td>
<td>14,344</td>
</tr>
<tr>
<td>Membership services</td>
<td>7,917</td>
<td>10,064</td>
</tr>
<tr>
<td>General and administrative expenses</td>
<td>18,678</td>
<td>16,942</td>
</tr>
<tr>
<td><strong>Total expenses</strong></td>
<td><strong>110,884</strong></td>
<td><strong>108,607</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating income, before tax</td>
<td>(3,758)</td>
<td>(9,005)</td>
</tr>
<tr>
<td>Provision for income tax</td>
<td>55</td>
<td>101</td>
</tr>
<tr>
<td>Nonoperating revenue and expense</td>
<td>(4,742)</td>
<td>1,933</td>
</tr>
<tr>
<td>Change in net assets without donor restrictions</td>
<td>(8,555)</td>
<td>(7,173)</td>
</tr>
<tr>
<td>Change in net assets with donor restrictions</td>
<td>(1,204)</td>
<td>18,475</td>
</tr>
<tr>
<td>Change in net assets</td>
<td>(9,759)</td>
<td>11,302</td>
</tr>
<tr>
<td>Net assets, beginning of year</td>
<td>119,485</td>
<td>108,183</td>
</tr>
<tr>
<td><strong>Net assets, end of year</strong></td>
<td><strong>109,726</strong></td>
<td><strong>119,485</strong></td>
</tr>
</tbody>
</table>
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