

WELCOME

from the AAAS Chair, William H. Press, and the CEO, Alan I. Leshner



Scientific discovery benefits humanity by generating technology and invention, which give rise to new products, jobs, industry, and wealth. At the same time, basic

research improves our world by enhancing the intellectual richness of society while also driving innovation. The inherent beauty and the practical benefits of science make clear why investment in the scientific enterprise pays off, yielding new ideas that drive macroeconomic growth and promise solutions to urgent global challenges—from disease and food security, to global climate change and water scarcity.

Transformative technologies such as the Internet, the Google page-rank algorithm, magnetic resonance imaging, and lithium-ion batteries, as well as life-saving advances in cancer diagnosis and treatment, are only a few examples of how science and technology have improved human welfare and the economy. Moreover, while many of us would be pleased by a 5% return on any investment, studies have shown that basic research every year offers a 20% to 60% annual rate of return on our investments.

Yet, between fiscal years 2010 and 2013, the U.S. federal investment in research and development dropped by 16.3% in constant dollars—down to roughly 0.79% as a share of the economy—its lowest level in 50 years. In contrast, China’s investment in R&D from all sources, including government and private sources, has increased by more than 400% over the past decade, while South Korea’s has more than doubled.

As U.S. science agencies in 2013 suffered across-the-board budget cuts known as “sequestration” and a federal government

shutdown interrupted critical research, AAAS spoke up for science by emphasizing the importance of R&D investments, and through objective analysis of funding trends. In February, AAAS organized a nationwide petition drive protesting sequestration, and in October, the association contributed testimony at a U.S. Senate hearing on the devastating impacts of sweeping cuts to the American scientific enterprise. When the social and behavioral sciences were singled out for cutbacks, AAAS teamed up with other leading institutions, delivering an intersociety letter to legislators on the urgent need to address science-based problems such as drug addiction (see pages 4–6). Public and policymaker briefings by AAAS meanwhile underscored the promise of neuroscience, thanks to The Dana Foundation.

Presidential Science Advisor John P. Holdren, appearing at the AAAS S&T Policy Forum, reinforced the call for a balanced portfolio of federal R&D investments. A proposal to narrow the range of projects supported by the National Research Foundation “would throw the basic research baby out with the bathwater,” Holdren cautioned (page 14). Another Forum speaker, Korean Presidential Advisor Jong-Guk Song reported that South Korea will spend 4% of its gross domestic product on science and technology while also increasing its emphasis on basic research.

AAAS work in 2013—reflecting the increasing importance of international research collaboration to both speed advances and promote diplomacy—did not stop at the U.S. borders. With a grant from the Richard Lounsbery Foundation, as an example, AAAS supported a cooperative effort between Western and North Korean scientists to better understand Mount Paektu, a volcano that straddles China and the Democratic People’s Republic of Korea (pages 10–12). *Science & Diplomacy*, published by

AAAS, provided a forum on topics such as the U.S. President's Emergency Plan for AIDS Relief. The association's Center for Science, Technology, and Security Policy organized many public discussions, including one on chemical weapons attacks in Syria, plus policymaker briefings to help inform science-security decisions. Science-focused efforts in the service of human rights took AAAS staff to Africa, Europe, and elsewhere.

Supporting the next generation of scientists and engineers remains central to the AAAS mission. In 2013, AAAS efforts in the educational realm included research-based projects to improve the way that middle-school students learn science, new tools for teaching evolution, and professional-development conferences for hundreds of educators (25–28). The *Science* Careers website offered resources to help advance careers in science and technology, and through the S&T Policy Fellowships program, which celebrated its 40th anniversary in 2013, AAAS dispatched another 279 scientists and engineers to key service roles on Capitol Hill (page 13).

As AAAS welcomed new *Science* Editor-in-Chief Marcia McNutt and News Editor Tim Appenzeller, the Board of Directors launched a comprehensive effort to make an already robust organization even stronger.

This transformation initiative will expand the association's science communication capacity; strengthen engagement with members through advocacy and career services; and position the *Science* family of journals as a leader in the dynamic, multimedia landscape of the future. Already, AAAS has redesigned its website (www.aaas.org) and announced plans for the 2015 launch of a new online-only, open-access journal, *Science Advances*, which will serve as an extended forum for the broadest possible array of high-quality, peer-reviewed research (pages 21–24).

Remarkable scientific achievements in 2013, from advances in cancer research to the experimental confirmation of the Higgs-Boson particle, reminded us of the tremendous promise of science to improve our lives and expand our knowledge. Through *Science's* award-winning news team, as well as AAAS media and public-engagement efforts (pages 7–9), the association strives to uphold the public's trust in the integrity of the scientific enterprise, and to speak up for the importance of science and scientists. We remain grateful for the support of many researchers whose hard work and dedication exemplify the beauty and the benefits of science.



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