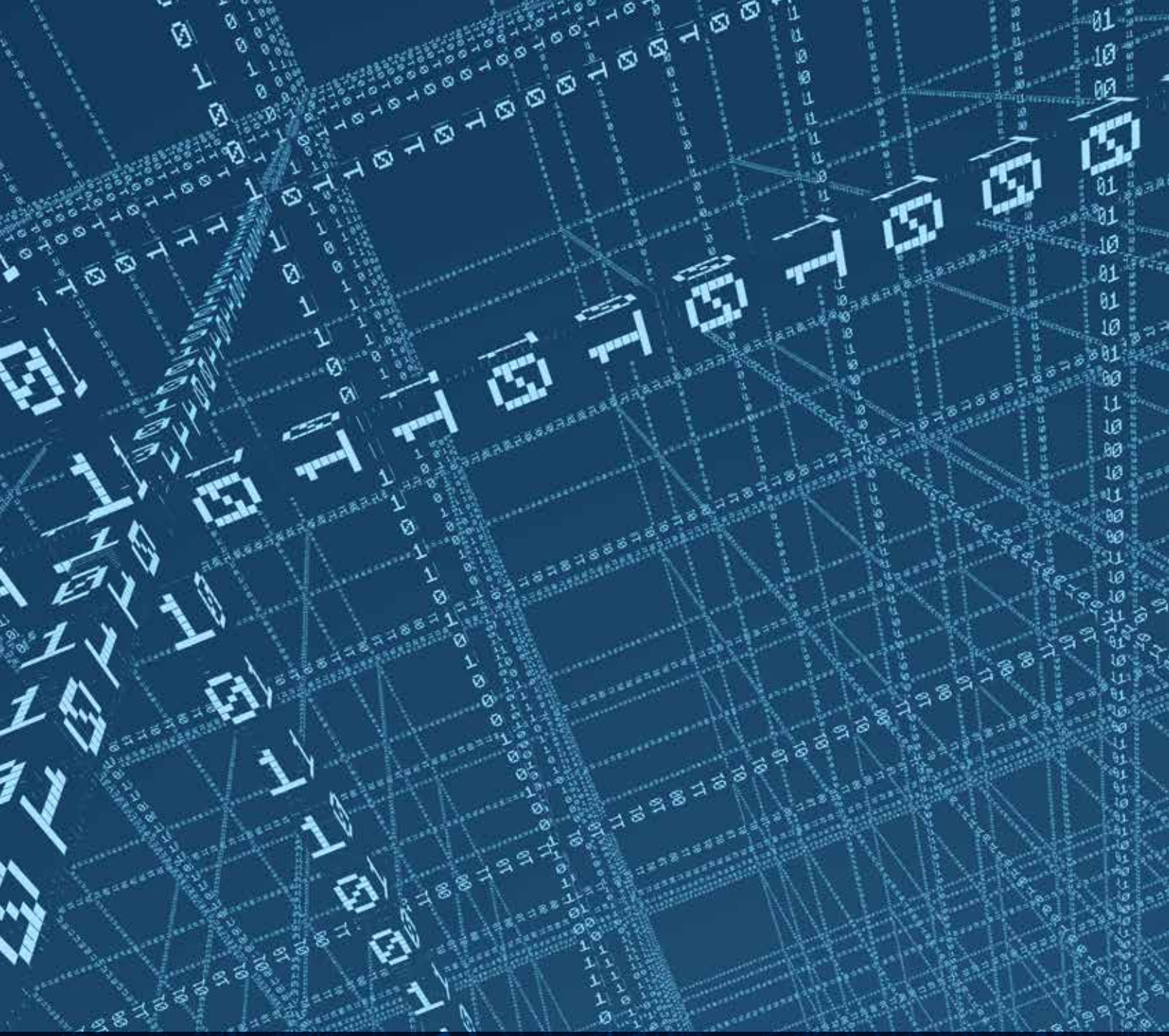

Alfred P. Sloan Foundation

2013 Annual Report

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Preface

The **ALFRED P. SLOAN FOUNDATION** administers a private fund for public benefit. The Foundation recognizes its obligation, therefore, to report periodically the policies which govern the management of the fund and the uses to which it is put, and to name the donees who are benefited by it. Accordingly, this public report is submitted for the year 2013.

Mission Statement

The **ALFRED P. SLOAN FOUNDATION** makes grants primarily to support original research and broad-based education related to science, technology, economic performance, and the quality of American life. The Foundation is unique in its focus on science, technology, and economic institutions—and the scholars and practitioners who work in these fields—as chief drivers of the nation's health and prosperity. The Foundation has a deep-rooted belief that carefully reasoned systematic understanding of the forces of nature and society, when applied inventively and wisely, can lead to a better world for all. The Foundation's endowment provides the financial resources to support its activities. The investment strategy for the endowment is to invest prudently in a diversified portfolio of assets with the goal of achieving superior returns.

In each of our grants programs, we seek proposals for original projects led by outstanding individuals or teams. We are interested in projects that have a high expected return to society, and for which funding from the private sector, government, or other foundations is not yet widely available.

2013 Year in Review

Dr. Paul L. Joskow

In this annual report, you will find an accounting of the grantmaking activities of the Alfred P. Sloan Foundation for the year 2013. In it, we describe the Foundation's grantmaking programs, the grants we made, to whom we made them, and what each aims to accomplish. And while this is the appropriate and proper purpose of an annual report, it is not the whole story of 2013. It leaves out the most important work of all: the work done by our grantees with the funds that we have provided to them. The Sloan Foundation has the distinct privilege of supporting some of the finest scholars in the world—brilliant, imaginative, dedicated researchers who work steadfastly to expand the frontiers of scientific knowledge. The Foundation also supports a wide range of activities to advance public understanding of science, technology, economics and their contribution to the quality of American life. Because the Foundation makes more than 300 grants each year, I cannot hope to recognize all the achievements, findings, discoveries, and significant work performed by all of our grantees in 2013. Accordingly, I will highlight some of the notable accomplishments of our grantees and how their work is advancing scientific knowledge and public understanding and education of it.

I. STEM Research

No activity is more central to the Sloan Foundation's mission than the support of original, high-quality, scientific research. Major scientific research programs funded by the Foundation include the Sloan Research Fellowships, the Deep Carbon Observatory, the Microbiology of the Built Environment program, the Sloan Digital Sky Survey, and our small program in Synthetic Biology.

Sloan Research Fellowships

The Sloan Research Fellowships, the Foundation's longest continuously running program, had another successful year in 2013. As in prior years, 126 out-

standing early career researchers were selected for the award from nearly 800 nominees. Drawn from eight scientific and technical fields and selected by an independent group of senior scholars in each of these fields, the Sloan Research Fellows represent the best and brightest young scientists. Several former Fellows were honored in 2013 in recognition of their research accomplishments. Harvard microeconomist and former Sloan Research Fellow Raj Chetty received the John Bates Clark Medal, the highest honor given to U.S. economists under the age of 40. Specializing in tapping the power of large data sets to address policy-relevant issues, Chetty was recognized for his work on a wide variety of issues, from measuring the economic value of a good kindergarten teacher, to examining how consumers respond to sales tax increases, to evaluating the effectiveness of tax breaks as a means to incentivize retirement saving. Chetty is the most recent in a nearly unbroken chain of former Sloan Research Fellows to be awarded the John Bates Clark Medal. Of the 15 young economists to have been awarded the medal since 1987, 14 have been former SRFs. Another former Sloan Research Fellow won the John Bates Clark Medal in 2014.

Also in 2013, three former Sloan Research Fellows were awarded the Nobel Prize. Chemists Martin Karplus of Harvard and Ariel Warshel of the University of Southern California received the Nobel Prize in chemistry for their pioneering work creating and deploying the first sophisticated computer models for understanding chemical processes. University of Chicago economist and former Sloan Research Fellow Lars Peter Hansen received the Nobel Prize in economics (shared with Eugene Fama and Robert Schiller) for (separate) theoretical and empirical work on financial markets and asset prices. In total, 42 former Sloan Research Fellows have received the Nobel Prize, including seventeen in chemistry and five in economics. These awards demonstrate why the Sloan Research Fellowship is widely regarded as a reliable marker of researcher quality and potential. Being a fellow has become one of the most prestigious awards available to young scholars.

Deep Carbon Observatory

The Deep Carbon Observatory (DCO) is an ambitious ten-year scientific program aimed at building an international, multidisciplinary community of researchers united behind a common purpose: to revolutionize our understanding of the quantities, movements, origins, and forms of Earth's subsurface carbon. Headquartered at the Carnegie Institution for Science and led by geologist Robert Hazen, the Deep Carbon Observatory is now nearly halfway through its ten year course and is beginning to publish surprising, noteworthy findings. In March 2013, the DCO published *Carbon in Earth*, a massive, 700-page, open access volume that synthesizes the existing scientific literature about what is known and what remains unknown about Earth's deep carbon. Containing contributions from more than 51 authors spanning 6 continents, *Carbon in Earth* offers a uniquely comprehensive, current look at deep carbon science and provides a benchmark against which the DCO's forward-looking research agenda can be developed and measured. Other findings published by Deep Carbon Observatory scientists in 2013 garnered significant attention both inside and outside the scientific community. A paper showing how deep Earth carbon can explain the irregular geochemistry of volcanic glass on the ocean floor was the cover story of the June 14 issue of *Science* magazine. The discovery of a 2.6-billion-year-old patch of "the world's oldest water" at the bottom of a Canadian mine ranked as one of the most significant and widely reported science stories of the year. And in December 2013, researchers announced that deep Earth microbes recovered from sites thousands of miles apart had remarkably similar genes, revealing a puzzle about how such closely related life could spread through continents of rock. Halfway in its ten-year program, the Deep Carbon Observatory is poised to fulfil its promise to transform what we know about subsurface carbon.

Microbiology of the Built Environment

The aim of the Foundation's Microbiology of the Built Environment program (MoBE) is expansive and ambitious: to grow a new field of scientific inquiry, one focused on understanding the invisible microbial ecosystems that thrive in our homes and hospitals, skyscrapers and schools. Grantmaking has focused on building a networked community of microbiologists, architects, engineers, and data scientists who will develop standards and protocols, build and deploy new instruments, and create and execute a compelling research agenda to bring this nascent field from infancy to maturity. Earlier Foundation grantmaking in this program began to bear fruit in 2013, with several significant results released. A major study of neonatal intensive care units showed that the microbes living in these "sterile" environments significantly influence the development of intestinal microbes in infants.

Microbiologist Jonathan Eisen of the University of California, San Diego developed new techniques for the genetic analysis of microbes that allow researchers to recover hundreds of genome sequences from single cells, vastly improving analytic capabilities in microbial identification and population analysis. A bacterial analysis of New York City subway systems showed that, surprisingly, the "dirty" air inside subway tunnels and stations is no dirtier, microbially speaking, than the "clean" air outside. As these and other results continue to find their way into peer-reviewed journals, we see more and more conclusive evidence that indoor microbial ecology holds the possibility for exciting new discoveries and is deserving of long term support at the federal level.

Sloan Digital Sky Survey

The Foundation is a founding supporter of the Sloan Digital Sky Survey (SDSS), a pioneering astronomical survey that utilizes a state-of-the-art 2.5 meter digital telescope at Apache Point Observatory in New Mexico to map the Northern sky, catalog and analyze stellar objects, and provide valuable insights into galactic structure, cosmic evolution, and the expansion history of the universe. In addition to its scientific merits, the SDSS was an early and extremely successful experiment in open science and "big data." Every image ever collected has been released under open access principles so that astronomers, astrophysicists and the public may use them in their own research. By making its data freely and easily available, the SDSS has become one of the most cited telescopic surveys in astronomy, vastly expanding its impact and serving as a model for future astronomical projects. More than 5,800 refereed astronomy papers cite SDSS data, and those papers have themselves been cited nearly 250,000 times. In 2013, researchers using SDSS data continued to make important discoveries. Using advanced statistical techniques, SDSS scientists analyzed light from distant quasars to examine what occupies the vast, lightless regions between galaxies, detecting the existence of super-cold magnesium gas. Other SDSS findings published in 2013 include the discovery of hundreds of stars orbiting the center of the Milky Way and the detection of a new class of "hypervelocity" stars moving so quickly—over a million miles per hour faster than other galactic objects—that they are able to escape the immense gravitational pull of the galaxy in which they were born.

In 2012, the Foundation made another major investment in SDSS, pledging $10 million in support of its fourth phase of operation, scheduled to begin in 2014. Early support from the Foundation for SDSS-IV has proved crucial, allowing the project to engage in advance planning, build institutional partnerships, secure further funding, and develop a compelling research agenda. With Sloan support, SDSS-IV will partner with a sister telescope in the Chilean Andes, enabling the survey to catalog stellar objects in the Southern sky.

Synthetic Biology

Our small program in Synthetic Biology is coming to a planned end in 2014, so grantmaking in 2013 focused on securing gains made over the course of the program and leaving lasting institutions to continue the good work of our grantees. Our goal in this program has been to raise awareness among scientists, policymakers, and the public of the social, ethical, and public policy issues raised by developments in synthetic biology and to encourage the development and implementation of practices designed to mitigate risks posed by research in and applications of developments in synthetic biology. Major grants in 2013 went to the University of Pittsburgh Medical Center to assess the current state of affairs in synthetic biology governance; to the University of California, Berkeley to design a leadership development course for early career synthetic biology researchers; and to the University of Pennsylvania to use innovative new risk assessment techniques to assess five applications of synthetic biology.

II. STEM Higher Education

Good science requires good scientists, and there can be no good scientists without first class scientific training. The Foundation's programs in STEM Higher Education focus on improving the quality of graduate education in the sciences, focusing on understanding entry and exit paths from graduate education, encouraging innovation in scientific instruction, and ensuring that the scientific enterprise is accessible to everyone, regardless of gender or race.

Education and Advancement for Underrepresented Groups

Grantmaking in the Foundation's Education and Advancement for Underrepresented Groups program, which aims to increase the diversity of STEM higher education, entered a major new phase in

2013. Under the new leadership of Program Director Elizabeth S. Boylan, the program underwent an extensive 18-month evaluation and assessment involving educators, program leaders, university administrators, faculty, and students from all 35 participating campuses. The assessment led to a decision to shift strategies and concentrate our resources through partnerships with a smaller number of select universities across the country. The goal of the new strategy is to create a small number of University Centers of Exemplary Mentoring (UCEMs), centers that provide systemic support to underrepresented minority graduate students in STEM fields. The new UCEMs will marshal resources from all over the university, from the classroom, to the lab, to the department, to the Provost's Office to provide the resources minority students need to succeed in graduate studies in the sciences and engineering. In 2013 the Foundation was proud to announce the planned creation of the first three UCEMs, to be hosted by Cornell University, Georgia Tech, and Penn State University. While the majority of Sloan funds, as always in this program, will be used to support scholarships for talented STEM students from underrepresented groups selected by the National Action Council for Minorities in Engineering, additional funds will now provide enhanced support for a diverse and interrelated network of support services at each institution, including peer and faculty mentoring, seminar and speakers' series, and workshops aimed at helping minority students navigate the sometimes difficult waters of graduate study. The UCEMs promise to improve graduate education in the sciences, create institutional leaders skilled at successfully educating STEM graduate students from underrepresented groups, and serve as hubs for both pedagogical innovation and for the dispersion of best practices and new models for meeting the needs of minority scholars. The Foundation plans to partner with additional universities to create more UCEMs in 2014.

III. Digital Information Technology

Universal Access to Knowledge

2013 was a big year for the Sloan Foundation's program in Universal Access to Knowledge. After years of careful planning and strategic grant-making, the Digital Public Library of America (DPLA) launched in April. Inaugurated at a historic two-day conference funded by the Sloan Foundation in 2010, the DPLA is the first fully digital library system, a network of public and university libraries, museums, and other cultural institutions using a common platform to provide open access to the nation's cultural and scientific heritage. Launched in April with 500 contributing partners and more than 2 million digital books, photos, and videos, the DPLA grew steadily, with a collection of more than six million items from 1,200 contributing partners after its first year. More than one million users visited the DPLA website in 2013, not including the countless others that visited the online collections of DPLA partner institutions and the more than 10 million calls to its online API.

Wikipedia passed the half billion mark in monthly visitors and held onto its position as the fifth largest web site in the world and the only nonprofit among the top 70 web sites. It also revamped and simplified its user interface and made progress with Wikipedia Zero.

Data and Computational Research

The Foundation's program in Data and Computational Research aims to help researchers develop tools, establish norms, and build the institutional and social infrastructure needed to take full advantage of the new possibilities unleashed by the past decade's revolutionary advances in data storage and computational speed. In November 2013, the Foundation announced it would partner with the Gordon and Betty Moore Foundation to launch a five-year, $37.8 million dollar initiative to help universities develop the technical, institutional and human resources necessary to harness the full potential of the data-rich world that characterizes all fields of science and discovery. The funds will support major new initiatives at New York University, the University of California, Berkeley, and the University of Washington that will accelerate data science though developing meaningful, productive, sustained interactions between researchers with deep, discipline-specific knowledge in the sciences and those in computational and methodological fields like computer science, statistics, and applied mathematics who are skilled at managing and analyzing large amounts of data. In addition, each institution will focus on creating new career paths for data scientists who specialize in the collection, management, storage and analysis of data, and on building an ecosystem of analytic tools and practices that will allow researchers to more easily and effectively work with data at scale.

Scholarly Communication

The Foundation's program in Scholarly Communication aims to study the ways that the rise of the Internet and the emergence of new digital technologies are changing how scientists communicate and to support the development and adoption of new resources that empower scientific communication, collaboration, and resource sharing. In October 2013, Foundation grantee ORCID—an organization devoted to the development and promotion of a system of unique, persistent identifiers for researchers—celebrated its first year anniversary. A widely adopted system of universal identifiers promises significant gains for scientific communication, allowing researchers to quickly, easily, and unambiguously locate the work of their peers. In less than 12 months of operation, ORCID registered IDs for more than 350,000 researchers; built a network of over 90 institutional partners that includes publishers, universities, and academic professional societies; and launched a successful Sloan-funded pilot program to reward and recognize innovative implementations of ORCID IDs. The year also included the release of a new, significantly improved version of Hypothes.is, a Foundation-supported online annotation tool that provides researchers with the ability to annotate materials on the web and share those annotations with colleagues. Features include in the new release include an updated, easier-to-navigate user interface, an extension for the Chrome browser, and integration for the popular Wordpress blogging platform.

IV. Economic Performance and Quality of American Life

Economic Institutions, Behavior, and Performance

Our Economic Institutions, Behavior, and Performance program aims to accelerate advances in economics through funding high-quality, theory-driven, policy-relevant empirical research on the structure, behavior, and performance of the U.S. economy. It also supports research, applications, and activities that advance the quality of empirical research in economics and related social sciences, such as the collection of data sets, the development of computational and experimental methods, and the creation of open access platforms to make research available. Our grantees in this program made many significant contributions in 2013. November saw the launch of OpenLEIs.com, a Foundation-funded website that aims to provide unique identifiers to every legal corporate entity on the planet, helping regulators, investors, policymakers and the public sort out the complex relationships between global corporate entities. In addition, the Foundation partnered with the American Academy for the Advancement of Science to support a new behavioral science fellow at the White House Office of Science and Technology Policy. The new fellow is tasked with improving U.S. public policy by bringing insights from the economic and behavioral sciences to bear on policy design and implementation. Also in 2013, the Foundation provided much needed funding for methodological improvements to the Penn World Tables, a highly-influential dataset that provides comparative information on prices and living standards across 167 countries from 1950 to 2011. An updated version was released in August 2013, and Sloan funds will ensure that this invaluable dataset continues to be updated and accessible to researchers for years to come.

With core support from the Foundation, researchers at MIT announced the launch of a major new economic research network, J-PAL North America. Under the leadership of economists Amy Finkelstein and Lawrence Katz, the new research network will support high-quality, theoretically-informed, randomized controlled trials on policy relevant issues in North America. In conjunction with the launch of J-PAL, the American Economic Association announced the launch of a new Sloan-supported registry for randomized controlled trials in economics, allowing researchers to share methodologies, datasets, hypotheses tested, and other details of their empirical work. Reseachers will not only be able to quickly and easily find high-quality research related to their own interests, the site will also protect against publication bias, ensuring that trials that produce negative, ambiguous, or otherwise unlikely-to-be-published results do not disappear from scholarly view.

After a successful planning grant, the Yale School of Management launched a new Program on Financial Stability. The new program, led by finance professor Andrew Metrick, will train the next generation of financial regulators by exposing them to the most up-to-date research on macroprudential regulation and financial stability. The program brings together economic theory, empirical work, and case studies on the costs, benefits, and unin-

tended consequences of real world financial regulation. The Yale project provides a sorely-needed investment in human capital, aiming to instill the knowledge and skills needed to effectively manage the increasingly complicated responsibilities faced by financial regulators in the wake of the 2008 global financial crisis and subsequent recession.

Working Longer

The Foundation's Working Longer program aims to support original, high-quality multidisciplinary research on the institutional adjustments needed to accommodate the aging of the American workforce and to stimulate informed discussion of this research among academics, policymakers, employers, and the public. In 2013, the Foundation provided support for an important new partnership between the Associated Press (AP) and the National Opinion Research Council (NORC). The new collaboration provides the AP with direct access to the high quality researchers at NORC, informing and improving its reporting, while at the same time providing NORC researchers with an effective, established distribution network for their research. The partnership included the creation of a pilot fellowship program for a reporter specializing in issues facing older workers that resulted in the publication of a dozen informed, widely-distributed pieces on topics like the increasing incidence of delayed retirement, whether older workers are displacing younger ones, and the happiness and job satisfaction of older workers relative to their younger colleagues. Other grantees in this program worked to fill in lacunae in the existing scholarly literature on the older workforce. A Sloan-supported study by the RAND Corporation took aim at the curiously understudied demand side of labor markets for older workers, examining how older workers differentially respond to demand shocks in local labor markets. A better understanding of this dynamic is crucial to crafting effective policy responses to the aging U.S. workforce. Other major initiatives in this program in 2013 include the launch of a new project led by Virginia Reno of the National Academy of Social Insurance to educate Americans about how delaying the collection of Social Security benefits can significantly increase post-retirement income; an in-depth study by the Brookings Institution of how retirement delays differentially affect high- and low-income workers, and a massive new empirical study by economists Rob Clark and Melinda Sandler Morrill of North Carolina State University which will examine the labor market behavior of more than 875,000 public sector employees. Lastly, the Foundation partnered with the American Council of Education in 2013 to launch a major new initiative to help America's colleges and universities implement innovative, effective policies for successful transitioning older faculty into the culminating stages of their academic careers.

V. Public Understanding of Science, Technology, and Economics

Our multifaceted program in the Public Understanding of Science, Technology, and Economics aims to instill in the public a keener appreciation for the increasingly scientific and technological world in which we live through a nationwide strategy that includes the support of engaging, scientifically accurate books, film, radio, theater, television, and new media. 2013 was a particularly strong year for our Theater program which featured two science plays supported by Sloan at the Manhattan Theatre Club including the second MTC-Sloan Broadway production in two years. The plays were Sharr White's *The Other Place* about a brilliant neurologist studying and then succumbing to Alzheimer's disease, and Nell Benjamin's satirical comedy about a female scientist trying to enter a men-only group called *The Explorers Club*, also featured at the 2013 Sloan-supported World Science Festival. Our longstanding Ensemble Studio Theatre partnership produced a hit Sloan-commissioned play *Isaac's Eye* about a young Isaac Newton battling Robert Hooke which received rave reviews.

In Television, Sloan's long-time grantee *The American Experience* aired *Silicon Valley*, an in-depth look at the birthplace of many technological innovations. The Foundation also partnered with PBS to produce *Brains on Trial with Alan Alda*, a popular two-part broadcast that explores how the insights of modern neuroscience could affect the criminal justice system.

In Radio, the Sloan-supported *Studio 360* received its second Peabody Award; *Radiolab,* the wildly successful show of which Sloan is a founding sponsor, took its hit show on the road to sold-out audiences nationwide; and *BURN: An Energy Journal,* of which Sloan is a lead funder, became one of the most acclaimed and widely carried public radio specials.

In Film, the Sloan Feature Film Prize at Sundance for 2013 was awarded to Andrew Bujalski's *Computer Chess*, about a 1980 competition between human and computer chess players, supported by Sloan's film development pipeline. The film was released to critical acclaim in August and nominated for three prestigious Independent Spirit Awards. The 2013 Tribeca Film Festival included a retrospective screening and panel discussion about the AIDS film *And the Band Played On,* and the premiere of *A Birder's Guide to Everything* about a group of teen birders*,* which was developed by Sloan's film pipeline and distributed by Focus Features. *Future Weather,* another film developed through Sloan's pipeline was selected for the State Department's American Film Showcase to tour at schools, embassies and other non-theatrical venues across the country. *Decoding Annie Parker*, about Mary-Claire King's discovery of the BRCA-1 gene was awarded the Sloan Feature Film Prize at the Hamptons International Film Festival and gained theatrical distribution. Sloan's pioneering *Science on Screen* program continued to thrive and expanded to twenty more art house cinemas across the country.

The Books program produced a number of important new works including: Edward Ball's *The Inventor and the Tycoon* about Eadweard Muybridge; Volume 19 of *The Correspondence of Charles Darwin* focusing on the year Darwin published *The Descent of Man;* and Bernard Carlson's *Tesla,* a new biography of Nikola Tesla.

VI. Select Issues—Energy

Over the last few years the Foundation has developed a significant portfolio of grants that focus on advancing our knowledge about the resources, technology, and changes in human behavior that can facilitate an efficient transition to a low carbon economy. In 2013, the Foundation made several major grants in this program, including a grant to Scott Tinker at the University of Texas at Austin's Bureau of Economic Geology to study the economics of state-of-the-art shale oil extraction based on detailed analyses of the geological and economic attributes of the Bakken and Eagle Ford shale oil plays; continued support to Michael Levi at the Council on Foreign Relations to pursue a wide ranging research program on international energy security; a suite of 16 research projects coordinated by the Environmental Defense Fund that will deploy a host of new technologies and methodologies to study the incidence, distribution, and cause of methane leaks; a first-of-its-kind study led by Richard Newell at Duke University examining the economic impacts of shale oil and gas development on local municipalities and public finance; a project by Resources for the Future to develop and build a consensus around a set of guidelines for addressing high-priority, widely-accepted risks associated with shale gas development; and a project by Kenneth Medlock of Rice University to model the likely consequences of proposed federal and local regulations on future natural gas development and pricing.

The year also saw the completion of several significant Energy grants made in prior years. In February, a multidisciplinary team at the Bureau of Economic Geology (BEG) at the University of Texas at Austin released the findings of their Sloan-funded study of the Barnett Shale. Analyzing actual production data from 16,000 individual wells drilled in the Barnett, combined with geological data on shale thickness and porosity, the BEG team worked with economists to construct a model that estimates future shale production in the Barnett given a variety of assumptions about the trajectory of gas prices. Given the assumption of $4 per thousand cubic feet, the model predicts the Barnett could produce as much as 44 trillion cubic feet of natural gas through 2030. The study represents the most precise, detailed assessment of the productive capacity of a major U.S. shale gas play. Also in 2013, MIT and the University of California at Berkeley announced the launch of "E2e," a major new, cross-institutional research center devoted to directing significant scholarly resources to understanding the "energy efficiency paradox", explaining why energy efficiency improvements judged cost effective in theory nevertheless fail to find wide adoption in practice. A model in interdisciplinary collaboration, the new center will bring together behavioral economists, energy experts, technologists, engineers, and policy analysts to conduct experiments, analyze extant data, and shed light on what has become one of the thorniest problems in U.S. energy policy.

In 2014 we expect to formalize and refine a strategy for transforming this portfolio of energy grants into a new 10-year program.

VII. Civic Initiatives

The Foundation maintains a small program devoted to making grants that benefit New York City, where the Foundation has been headquartered since its founding in 1934. In 2013 the Foundation pledged $3 million to Cold Spring Harbor Laboratory to open a new New York City location of its DNA Learning Center. The world's largest provider of student lab instruction in molecular genetics, the DNA Learning Center has brought hands-on genetics education to more than 265,000 precollege students since its first teaching lab opened. Nearly 30,000 New York area students receive science enrichment each year through one of the Center's six locations during half-day field trips, in-school visits, and week-long DNA camps. The planned new location will bring high-quality molecular genetics education to an estimated 45,000 New York City students annually, and will provide significant educational opportunities to low-income, minority, and underserved student populations. Also in 2013, the Foundation made a major grant to InsideSchools.org, a not-for-profit, user-friendly website that offers detailed profiles of New York's 1,700 public schools, including in-class videos, student achievement statistics, and insights gained from on-site visits. Supported by the Foundation since its inception in 2002, InsideSchools.org moved to a new home at the New School for Social Research in 2010 (also thanks to help from the Foundation) and will use grant funds to improve the offerings of the site, including expanded information on each school's science and mathematics course offerings.

In May, the Fund for the City of New York announced the winners of the 2013 Sloan Public Service Awards. Supported by the Foundation for over 25 years, the annual awards recognize six lifetime New York City civil servants for their dedication, passion, and commitment to the City. In 2013, the Foundation recognized a variety of extraordinary individuals drawn from all over city government, including the Department of Education, Department of Sanitation, Department of Youth and Community Services, the Health and Hospitals Corporation, the New York Public Library, and the Traffic Enforcement Division of the NYPD.

In November, the Fund for the City of New York announced the seven winners of the 2013 Sloan Awards for Excellence in Teaching Science and Mathematics. Started in 2009, the awards recognize innovative, effective science and mathematics instruction in New York City public high schools. Selected by an independent panel of educators and other civic leaders and drawn from each of the five boroughs, the 2013 awardees were honored in public ceremonies at their schools and at the Great Hall at Cooper Union and receive a $5,000 prize and $2,500 to use to improve their school's science and math offerings. The awards provide a rare opportunity to raise the profile of exceptional public school teachers and to highlight the truly exceptional science and math instruction that you can find all across New York City.

Conclusion

Alfred P. Sloan Jr. created the Sloan Foundation in 1934 in the hopes that his considerable fortune would be used to accelerate the advance of our scientific knowledge of the world and that we would use that knowledge to improve the common welfare and the quality of American life. It is a daunting mission, but as I look back at everything our grantees have accomplished in 2013, I am immensely encouraged. And I have no doubt that Mr. Sloan, were he here with us, would be encouraged, too.

President's Letter

Dr. Paul L. Joskow

In 2011, the Alfred P. Sloan Foundation launched a new grant-making program in Digital Information Technology. The goal of that program is to leverage advances in digital information technology—the "Big Data Revolution," as it has come to be called—to advance the Foundation's mission to promote high quality research and education in the natural and social sciences, engineering, and mathematics. In what follows, I would like to go into some detail about the Foundation's perspective on "big data:" what it is, what opportunities and challenges it presents to our mission, and how the Foundation is taking advantage of those opportunities and meeting those challenges.[1]

What is big data?

In some sense, big data has always been with us. Ancient civilizations kept detailed records of rainfall, floods, eclipses, moon phases, the appearances of comets, tidal behavior, and crop performance to help early proto-scientists discern patterns in the natural world. Government tax authorities have long collected property, income, and household information about their citizens to ensure effective tax collection. The U.S. government conducts a decadal population census that includes information on almost every resident. Beginning in the early 19th century, the census expanded to include additional surveys of manufacturers, agriculture, transportation, and other sectors of the economy. Especially since the beginning of the 20th century, the amount of information collected by governments on individuals, private firms, and other organizations has grown rapidly.

The private sector has also collected large amounts of data for many years. Credit card companies, brick-and-mortar stores and e-commerce sites, credit bureaus, banks, and insurance companies collect information about virtually every transaction made by every individual in the U.S. and many other countries. Companies operating search engines, email platforms, and social networking sites "see" enormous quantities of information transmitted between individuals, and between individuals and public and private organizations. They also have a lot of information about their employees and their behavior.

1 A caveat. I am an economist by training and, though I am no stranger to the complexities of using data in research, I am not well-positioned to comment authoritatively on many of the technical, ethical, and legal issues raised by the big data revolution. What follows is therefore a layman's perspective, not that of an expert. For more in-depth discussion, a list of references that I have relied upon is included at the end of this letter.

Thus, "big data," in the sense of large datasets, is as old as human record keeping itself. The volume of data collected by governments, firms, and other organizations has grown rapidly over the last century, and exponentially over the last two decades. While governments, private firms, and other organizations have collected data for many years, these data did not rise to being what I think of as "big data" until relatively recently. Historically, information was collected and stored on paper; was used to support narrow administrative functions of the agencies or firms collecting the data; was difficult to access or link together; and was generally not retained because there were not enough filing cabinets on Earth to store it. Little or no effort was made to combine these datasets or to associate the information from different government agencies with specific individuals and organizations. Moreover, these data were often subject to strict privacy and proprietary control rules. Access to them was accordingly limited.

"Big data," in the sense of large datasets, is as old as human record keeping itself.

If "big data" does not simply mean "lots of data," what does it mean? As I shall use the term, "big data" refers to a number of interrelated aspects of the rapidly evolving digital information ecosystem that has arisen over the last two to three decades, including:

1. The rise of new, more, and different types of *digital* information that are collected by researchers, governments, private firms, and other organizations. This information is stored in any of a wide variety of digital formats, including numerical data, digitized books and papers, photos and other visual images, audio and video recordings, and mathematical formulae, to name a few;

2. The development of new technologies—both software and hardware—that have increased our capacity to collect, store, transfer, access, manipulate, present, and analyze this information;[2]

3. The creation of new computational methods that enable us to analyze large datasets effectively and efficiently;

4. The advent of new institutions—such as preprint archives, databases like GenBank, and standards-setting organizations like the World Wide Web Consortium—that have sprung up in response to advances in digital information technology;

5. The increasing accessibility of data to individuals and organizations in ways conducive to the effective pursuit of public and private ends.

Defined by these five interrelated developments, big data has a number of important features.

It's big and it's useful. Though large datasets have always been with us, the datasets now available for scientific study and analysis are larger by orders of magnitude than anything previously available to researchers. A terabyte of data, not long ago considered gargantuan, is now considered smallish. Researchers today often work with petabytes or even exabytes of data. Yet the number of exabytes, petabytes, and terabytes of digital information now available is not interesting in and of itself. Rather, it is the rapid growth in the *kinds* of information carried by these bytes of data that is exciting. The information contained in these huge modern datasets creates both tremendous possibilities for discovery and daunting challenges related to the storage, management, analysis, and the ethical use and dissemination of data.

It's computable. In 2012, the U.S. Bureau of the Census released disaggregated data from the 1940 decadal U.S. population census. Though the data were made available online, they are in manuscript form, composed of millions of paper surveys scanned in as PDFs. Though the surveys are technically in digital format, the information they contain is "locked" inside the PDFs, unavailable for direct scientific computation. To rise to the level of "big data," information has to be stored in a way that makes it amenable to the application of modern computational methods, able to be combined with other related datasets, and organized so that ap-

2 I use the term "technology" throughout to refer to both software and hardware.

propriate statistical and simulation methods can be applied to it to advance scientific discovery.

It's heterogeneous in the extreme. Talk of big data has focused on internet data: data collected by search engines, social networking sites, e-commerce sites, and by third party database brokers. These data describe the behavior of internet users and the machines that power the web. "Big data" is not synonymous with "internet data," however. Many of the earliest big data archives have little to do with consumer behavior. Large scientific datasets like GenBank, which contains genetic sequences; Protein Data Bank, which contains data on protein composition and structure; and the Sloan Digital Sky Survey's Sky Server, which contains astronomical survey data, were created by scientists seeking to share large amounts of scientific data in digital format with their colleagues.

Another type of big data is the so-called "administrative data" created by various levels of government, private firms, and other organizations. As already noted, federal, state, and local governments have long collected large amounts of information about their citizens and participants in various government programs. Data of this type include the decadal Population Census; the Economic Census; Social Security, Medicare, and Medicaid records; birth and death records; immigration records; income and property tax records; EZ pass records; criminal records; vehicle registration information; vehicle accident and driving violation records; data on energy production, imports, and consumption; emissions data for a wide range of pollutants; etc. Nearly every government agency is involved in some way in large-scale data collection and analysis.

The private sector is also an important source of a variety of types of administrative data. Credit card companies, brick-and-mortar stores and e-commerce sites, credit bureaus, banks, and insurance companies all collect information about virtually every transaction made by every individual in the U.S. and many other countries. Private businesses also hold a wealth of information about their employees and their behavior. They have access to their employees' employment histories, performance evaluations, salaries, 401k plan investment choices, sick days taken, health insurance plan choices (or, if they self-insure, even more individual health information), corporate email and internet activity, as well as information about where employees live, their home telephone numbers and private email addresses, their military service, and much more.

The forms in which all these data are collected and kept are as varied as their sources and content. They are often stored in proprietary systems or formats, encrypted to various degrees, and scrubbed or manipulated into analyzable form though a wide variety of methods and protocols.

The extreme heterogeneity in the sources, contents, and forms of big data means that the paths to effective and efficient access to it are likely to be equally heterogeneous. Each comes with its own set of benefits and costs. Multiple approaches will be needed to fully take advantage of the promise of big data, and multiple approaches will be needed to use it efficiently and in ways consistent with established social and ethical norms.

It is (too often) not collected for use by scientists. Much of the modern data of interest to researchers were not collected with scientific analysis in mind. Instead, the data are either the by-product of other, non-scientific activities (for example, an e-commerce site monitoring user transactions) or collected intentionally by a firm or government agency to answer a narrow set of questions. Much big data research, especially in the social and behavioral sciences, involves repurposing, in the interests of science, data collected for other reasons.

It's changing rapidly. The tremendous speed with which new datasets are being created, new standards are emerging, and new technologies are evolving is a defining characteristic of the big data revolution. For example, in just a few short years, online auction site eBay has, arguably, collected more data on economic behavior in auctions than has ever been collected in history. Increases in computational speed allow for analyses of datasets that would have taken weeks or months just a few decades ago. New programming languages and other tools to deal with data have sprung up, sometimes seemingly overnight, in response to the data deluge. This rapid pace of change has profound implications for the skills and training necessary to do good science and consequent implications for both the content of scientific education and the structure of scientific collaboration.

To put things succinctly, the big data revolution, as I refer to it, is characterized by an exponential increase in the *volume, velocity, and variety of data*

and in the technologies available to use them effectively. But the question now arises: So what?

Opportunities: Big Data is a Big Deal

The Alfred P. Sloan Foundation is a private, philanthropic organization whose mission is to improve the quality of American life through the support of high quality research and education in science, technology, engineering, mathematics, and economics. In this section I lay out some of the opportunities the big data revolution has created to advance scientific knowledge, improve scientific education and training, and deepen the public's understanding of science, technology, and economics. I also explain how the Foundation is taking advantage of these opportunities, both through grantmaking in our Digital Information Technology program, and through grantmaking in our other programs. In the next section, I discuss some of the challenges of the scientific enterprise in the big data era and what the Foundation is doing to meet those challenges.

The information contained in these huge modern datasets creates both tremendous possibilities for discovery and daunting challenges.

The Foundation has been a leader in developments in digital information collection and dissemination for many years through its Universal Access to Knowledge program led by Vice President and Program Director Doron Weber and through the Sloan Digital Sky Survey (SDSS) projects now led by Program Officer Evan Michelson. After a strategic review of the Foundation's programs in 2008, I proposed to the Foundation's Trustees that we create a new program focused on digital information technology to expand the Foundation's grantmaking in this area.

Launched in 2011 and led by Program Director Joshua M. Greenberg, the Foundation's Digital Information Technology program aims to leverage developments in digital information technology to empower scientists, enable new forms of data-intensive research, and improve and expand the dissemination and evaluation of scholarship. The program has two dimensions, one outward- and one inward-facing. In its outward-facing dimension, the program works directly with researchers, technologists, engineers, academic publishers, and university administrators to speed the development and adoption of tools, standards, norms, and practices that will enable researchers to better communicate with one another and more effectively work with large datasets. It also aims to facilitate the creation of career paths for data scientists and to educate the scholarly community about new big data opportunities, methods, and challenges. In its inward-facing dimension, the program seeks to support and encourage the effective use of new datasets, data repositories, data dissemination, and computational techniques across Sloan's other grantmaking programs.

Big data makes it possible to both improve the quality of existing research and expand the set of questions amendable to scientific investigation and analysis. What drives this potential is not that the data are "big" per se, but that they include new and different kinds of data that can be used to empirically examine questions with unprecedented precision or, in some cases, answer questions that could not previously be addressed empirically in a credible fashion at all. In many areas, the advances in digitization, data storage, data management, data transfer, visualization, and computational technologies have also dramatically enhanced our ability to achieve data transparency, open access, and research reproducibility. Opportunities presented by the big data revolution include:

Creation of new open access datasets. Advancements in digital information technology have dramatically lowered the cost of storing data, making that data available to others, and enabling collaboration between scientists, both within a single scholarly discipline and across disciplines. Open access datasets, when they are properly structured, well-documented, and well-maintained are a boon to science, allowing scholars anywhere to use them in their research. The Foundation has supported a number of scientific initiatives that

have resulted in the creation of large, open access databases. Foundation support for the Sloan Digital Sky Survey, an astronomic survey using a pioneering 2.5 meter optical telescope in New Mexico, has enabled the collection of millions of images of stellar objects, all freely available to astronomers and astrophysicists worldwide to use in their research. Foundation support for the development and adoption of DNA barcoding technology, a method to cheaply and easily identify plant and animal species using genetic material, resulted in an open access database—the Barcode of Life Database (BOLD)—that has collected more than 3.3 million genetic barcodes to date. The Encyclopedia of Life, supported by Sloan and the MacArthur Foundation since 2007, is an international scientific collaboration that aims to create a webpage with high-quality, scientifically accurate information on each of Earth's 1.8 million named species. In the five years since its launch, the project has compiled more than 1.3 million species pages. Another effort, by OpenCorporates.com, is developing a system of legal entity identifiers, allowing financial regulators, policymakers, academics, watchdog groups, and the public to better understand the interlocking, sometimes byzantine global system of corporations, subsidiaries, and shell companies. The Foundation is also funding data collection for the Deep Carbon Observatory (DCO), an international geoscience project that aims to revolutionize our understanding of the sources, movements, and properties of carbon deep in Earth. Similarly, researchers in the Foundation's Microbiology of the Built Environment program (MoBE) are working together to deposit genomic samples taken from indoor environments into a common repository under uniform standards, allowing today's data collection to form the basis of tomorrow's discoveries.

Computational analysis of new datasets. The rise of the internet and the associated explosion of big data have resulted in the creation of a wide variety of interesting datasets that have the potential to expand our understanding of the world. For example, a 2012 Foundation grant to economist Jonathan Levin of Stanford University supports his collaboration with the online auction site, eBay. Levin and his team will analyze eBay's incredibly rich data on the millions of online auctions it has held, providing an unprecedented opportunity to test existing hypotheses in auction theory and to develop new theories to test against eBay's data. Other datasets are allowing Foundation-supported researchers in our Science of Learning STEM program to analyze the educational and career paths of STEM students, providing easier access to information about the attributes of students, their education, and their careers. These data have increased our ability to understand the impacts of educational interventions and our efforts to increase diversity and opportunity within STEM higher education.

Development and deployment of new sensor technologies. Technological advancements are also allowing scientists to develop, test, and deploy a host of new instruments and sensors, and enabling the collection of novel data to shed light on previously unanswerable questions. In 2013, for example, the Foundation partnered with the Environmental Defense Fund to develop and deploy a number of experimental sensing technologies designed to measure methane leaking from well pads in natural gas fields. If successful, the new sensors will provide the first scientifically respectable estimates of methane leakage from natural gas extraction sites, crucial information for policymakers interested in evaluating the attractiveness of natural gas relative to other energy sources. Other innovative uses of new sensing technologies include the development of new instruments by researchers working in the Microbiology of the Built Environment program to sample and analyze microbial populations living indoors, and efforts by the Deep Carbon Observatory to measure carbon emissions from the world's volcanoes.

Linking existing datasets into new, more useful datasets. With data, the whole is often more than the sum of its parts. Questions that cannot be answered adequately by either dataset A or dataset B alone can often be answered by joining A and B together. This linking of datasets, once a laborious task, has been made much more tractable by developments in digital technology. There are promising prospects for the expansion of scientific knowledge by linking data together. A 2011 grant through the Foundation's Working Longer program is helping the University of Michigan's Maggie Levenstein link the Health and Retirement Survey, a nationally representative panel study of Americans over 50, with the U.S. Business Register. The linked dataset will enable researchers for the first time to detect and analyze correlations between characteristics of older workers (like income, health, and family structure) with the features and characteristics of their workplaces, creating opportunities for all sorts of new research in psychology, labor economics, and organizational behavior.

Increasing public access to and understanding of science. Rapidly dropping costs for the storage and transfer of data have dramatically expanded the opportunities to increase the public's access to the fruits of scientific discovery. The Foundation's Universal Access to Knowledge program, led by Vice President and Program Director Doron Weber, aims to facilitate the openness and accessibility of all knowledge for the widest public benefit (under reasonable provisions to cover the costs of producing and distributing that knowledge). Early grantmaking in the program provided support for the Internet Archive, a site that catalogs and preserves the rapidly changing web. The program also supported several pioneering efforts in the digitization of print materials, partnering with the Library of Congress and several regional consortia of libraries and museums to jump-start efforts at the high-quality digitization of their collections. More recently, the program provided landmark support to Wikipedia, helping it expand and professionalize its operations. In 2013, Sloan Foundation support led to the planning and launch of the Digital Public Library of America, the nation's first fully digital library and an open access platform linking together the online collections of hundreds of libraries, museums, and other institutional partners.

From a scientific perspective, big data is a big deal.

Citizen Science. With a dataset containing millions or billions of discreet observations, the task of cleaning, coding, or otherwise getting data into analyzable shape becomes impractical. One way around this obstacle—and there are several—is to enlist the aid of volunteer citizen scientists to help in the coding and cleaning of scientific data. The Foundation has partnered with the Zooniverse, an online citizen science engagement platform run by the Adler Planetarium in Chicago, to experiment with ways to allow the public to meaningfully contribute to the scientific enterprise. With Sloan support, the Zooniverse project has launched more than a dozen separate citizen science initiatives, covering areas from astronomy to zoology, where users can participate in such diverse tasks as classifying the shapes of galaxies, identifying animal calls, or transcribing the handwritten logs of 19th century sea captains. In addition to providing a valuable service to the scientific community, citizen science projects like the Zooniverse also have an obvious relation to improving the public understanding of and engagement with science.

Improving scientific peer review, reproducibility, and transparency. As data become easier to store and transfer, scientists have new tools at their disposal to check one another's work, test other scientists' hypotheses, and evaluate the conclusions of other researchers' papers, published and unpublished alike. In the past, it was impractical to share one's data widely. As a result, it was difficult to check or expand on a researcher's work by re-producing her experiments, re-running her model simulations, re-analyzing her data, or using her data for additional research. The big data revolution is changing that, with consequent opportunities to improve scientific practice. Depositing the data, models, algorithms, and code upon which a paper is based—along with suitable documentation—in an accessible archive strengthens the scientific process by allowing scientists to verify reported research results and expand upon them. The Foundation has supported several initiatives in this area. A grant to a team led by Gary King at Harvard University supports the expansion of DataVerse, a software platform designed for publishing, sharing, referencing, and analyzing social science datasets. With Sloan help, King and his team are partnering with a number of high impact academic journals to provide a mechanism whereby reviewers and interested scholars can examine the data underlying an article both before and after publication. Similarly, a partnership with the American Economic Association resulted in the launch of the first randomized controlled trial (RCT) registry for economics, allowing economists who are fielding RCTs to publicly register their experiments, methodology, error structure assumptions, and other useful information about their research, ideally before the actual experiments are conducted.

These are just a few of the ways in which the big data revolution is creating exciting new opportunities to support the advancement of research and education in the natural sciences, technology, engineering, mathematics, and economics. From a scientific perspective, big data is a big deal. But big data also poses significant challenges, both for the responsible conduct of science, and for the public at large. Those challenges also represent opportunities for innovative grantmaking.

Big Data: Challenges and Issues

Big data creates a variety of new challenges for government agencies, businesses, research institutions, educational institutions, and individuals and organizations that create, collect, disseminate, analyze, or support the effective and efficient use of big data. I will focus here on a small set of the issues that arise in connection with the Foundation's research and educational programs that comprise our core mission.

Data infrastructure. To take advantage of the opportunities big data creates, datasets, algorithms, models, and code must be created and archived in widely used digital formats. Archived information must be accurate; it must be available over the long term (often long after the researcher who originally collected the data has moved on to other things); and it must be easy to access. These tasks require money, data management and curation skills, and agreement on norms for data formatting, access, and quality control. Databases that encourage researchers to contribute and upload their own data are one good way to facilitate data archiving. Yet they create the risk that inaccurate and incorrectly formatted data will be introduced into a dataset, reducing the quality of the entire archive. While the major federal funding agencies, some universities, and some foundations have issued requirements for data archiving and access, the requirements are often not precisely defined, and the money to implement the requirements is difficult for researchers to obtain and sustain. This needs to change. Data archiving, access, and curation protocols and plans should be an integral component of research proposals. Grantmaking organizations, including federal agencies, should expect to provide funding for these activities. The Foundation has made several grants to address this challenge. Grantmaking in our basic research programs often include major funds for data infrastructure and computing. Foundation grants in support of the Sloan Digital Sky Survey, the Microbiology of the Built Environment program, and the Deep Carbon Observatory have all provided significant funds for data infrastructure. In addition, the Foundation has recently adopted new grantmaking guidelines that require all grantees to develop plans for whether and how the intellectual products of their work (be they papers, data, algorithms, etc.) will be made accessible going forward, requiring grantees to think beyond their current research interests to the issue of long term access more broadly.

Data Mining, Statistics, and Causal Inference. Large datasets have the capacity to be a tremendous boon to scientific discovery. The size of big datasets often means that researchers have a sample of sufficient size that they may make estimates or draw conclusions with a confidence unavailable to the researcher working with more modest amounts of data. However, the availability of big datasets does not relieve the researcher of the requirement of careful modeling, hypothesis specifications, and the application of appropriate statistical methods to the questions being analyzed. Failure to do so can result in big data leading to bad science. Often, scientific failure is due to poorly thought-out experiments, unrealistic error structure assumptions, sample biases, unfamiliarity with other extant research, failure to distinguish between endogenous and exogenous variables, faulty estimation of unobserved parameters, etc. All of the issues that arise for empirical research using "small data" continue to exist for empirical analyses using big data.

But big data comes with its own hazards. The enormity of large datasets can tempt one to engage in "data-mining," scouring data for statistically significant correlations to make predictions regardless of whether the mechanisms underlying such correlations are understood or whether the correlations are related to some plausible scientific theory or guided by the causal structure of the relationships that drive changes in the variables that data-miners seek to predict.[3] Other problems arise due to the complexity of big datasets. In the typical "small dataset," the number of observations is relatively large compared to the number of independent variables (predictors) for which data are available. With big data, the number of predictors may become large compared to the number of observations. This can be a problem because there are "too many" predictors that are correlated both with the dependent variable and with one another. Significant statistical sophistication is needed to reduce the number of predictors in a big dataset and produce statistically robust scientific analyses. Computer scientists who have refined "machine learning" techniques and protocols for analyzing and utilizing big datasets would benefit from working with statisticians and scientists who are

3 This is not to imply that data-mining has no respectable uses. It has been and continues to be usefully deployed in machine learning, e-commerce, and many other applications. Google Translate, for instance, uses machine learning and data-mining to produce reasonably competent on-the-fly translations of webpages.

focused on using big data for "causal inference" and vice versa. The whole will be greater than the sum of the parts by adding together the skills of these two groups of big data users.

To deal with the complications posed by big (and small) data, the Foundation has adopted a rigorous internal and external review process for all of our grants. Every grant proposal to the Foundation must contain a literature review demonstrating the researcher's grasp of the extant literature. Every grant proposal must also include an appendix laying out the empirical methods a researcher will deploy in his or her proposed research, including a discussion of the datasets to be used and a detailed description of the researcher's methodology. Grant proposals are then reviewed by our staff—every Sloan program director reads and evaluates every major grant considered by the Foundation—and are then sent out for review to an independent panel of experts for their evaluation of the proposal's scientific merits. The process is laborious and time-consuming but essential to the faithful execution of the Foundation's mission.

Data Citation. As an economist, I think a lot about incentives, and the incentives surrounding education and institutionalization of data collection and curation to support scientific research are worrying. Traditional citation practice is to cite published papers. There are no widely adopted practices for properly citing the datasets, algorithms, web sites, working papers, blogs, and code upon which reported research results depend. Researchers who do the essential work of creating and curating scientifically useful data, algorithms, and code will thus tend to be undervalued. Lack of widely adopted data citation practices among scientists tends to undermine the practice of sharing data. If sharing my data openly and making it available to others will result in numerous citations to my data and consequent positive impacts on my career development, then I have a powerful incentive for data sharing. Absent such a convention, there is little reason to go through the often painstaking process of archiving, documenting, maintaining, and making data available to others. In 2011, the Foundation made a grant to the National Academy of Sciences to address precisely this problem, pulling together a committee of well-regarded disciplinary experts, educators, and technologists to develop, analyze, and promote standards for the citation and attribution of datasets by research communities.

Accessing and Evaluating Research Output in the Digital Age. An integral component and a consequence of the growth of big data are the accompanying growth in the venues for disseminating research results, data, algorithms, and code. The number of traditional peer-reviewed journals is growing and they typically now publish both in print and online. The number of open access online journals has skyrocketed. In some fields, research appears in working papers long before it is published in peer-reviewed journals. In other fields, conference volumes have become the favored venue for the dissemination of new research. Blog and commentary sites contain comments on research long before it is published in peer-reviewed journals. Researchers post early versions of their research, data, and algorithms on their own websites or in open access depositories and archives. An increasing number of journals require that the data and code used in a published paper be archived in some fashion so that other researchers have access to it.

The proliferation of outlets for the dissemination of research and data, as well as the growing use of working papers, open access journals, and other forums for communicating research results, are both wonderful and overwhelming. To make effective use of this multidimensional growth in the volume of research output and the pathways through which research is disseminated, we need new ways to digitize, organize, search, and archive publications (broadly defined) and their supporting data and code.

This growth in the volume and pathways of research output also raises questions about how to effectively evaluate research quality and impact, both in relation to promotion and tenure decisions in academia and to the use of research results by the media and the public. New metrics for evaluating the quality and impact of both research and researchers are needed. The Foundation has partnered with a number of institutions to promote alternative approaches and metrics to help researchers locate relevant research in their fields and to evaluate that research. The Foundation has supported the development of ImpactStory, a platform that aggregates various impact measures of scholarly materials published on the web and has funded the National Information Standards Organization to study how different research communities are using alternative metrics in the evaluation of research outputs.

Scientific Access to Proprietary and Sensitive Datasets. Many of the new and interesting big datasets, especially those of interest to economists and other social scientists, are held by private corporations or the government. Getting access to these data, however, has historically been difficult and continues to be so. In the case of government data, two problems arise. First, there is little if any standardization in data formats, software requirements, or much of anything else across government agencies. Government data quality is highly variable and the implementation of standards for ensuring the accuracy of data submitted to these government agencies has deteriorated over time. If government agencies are going to make the data they collect publicly available—as they should, since there is significant public benefit to doing so—then more resources need to be devoted to digitization for computational use, standardization, and data curation. Second, much government data contains highly sensitive information on individuals, businesses, and other organizations. In response, government agencies often release these data only in aggregate formats constructed so that the information associated with individual persons, households, businesses, or other organizations cannot be identified directly or indirectly. This protects the privacy of the individuals covered by the data, but severely limits its scientific usefulness.

More recently, some government agencies have created secure "data enclaves" with strict security protocols that allow researchers to access data at the individual level. These enclaves have dramatically expanded research opportunities to analyze IRS tax data, Economic Census data, and certain Medicare and Medicaid data, to name a few. The procedures to gain access to government data enclaves, however, are cumbersome and time-consuming and constrain the ability of researchers to reproduce or expand upon published results. Existing policies should be re-examined to see whether privacy concerns can be accommodated within a more streamlined and efficient framework for making data accessible.

Access to proprietary data held by private firms raises similar privacy concerns. These firms, of course, have no obligation to release their data at all. Yet an increasing number of firms have been willing to release some of these data to scholars, especially after they have lost their commercial value. These data releases are generally made selectively to a chosen few, they may not be truly anonymized[4], and they may be released without information about how the data have been collected and "cleaned." Because the availability of proprietary administrative data has greatly expanded research opportunities in the social sciences, I am reluctant to recommend imposing data access rules on private firms or the researchers that have gained access to these data that go beyond rules governing privacy concerns. However, there is room for the development of norms, practices, and institutions that would help firms release proprietary data in ways that are most useful to researchers. The development and widespread adoption of a set of standard data access and Non-Disclosure Agreements (NDA) that both respect privacy considerations and make the data available under the same terms to every researcher would greatly increase the social value of proprietary administrative data at little or no cost.

Data Education and Career Paths for Data Scientists. If the big data revolution is going to lead to new and better research, enhance communication between scholars, and improve the public's understanding of science, then efforts must be made to improve education about data, data management, data archiving, and statistics as it relates to the world of big data. Here, I refer to both the general education of researchers and to specific educational programs to train data scientists who are now in enormous demand. We must also recognize that, especially in research universities, data scientists are becoming important partners in data-driven research projects. We need to find career paths for them, including careers as faculty members, and criteria for evaluating their performance and impact. In 2013, the Sloan Foundation announced a 5-year, $37.8 million partnership with the Gordon and Betty Moore Foundation to empower science in the big data era. The partnership has enabled New York University; the University of California, Berkeley; and the University of Washington to launch major, campus-wide initiatives to build meaningful bridges between data scientists with expertise in statistics, mathematics, and computer science (data science fields) with disciplinary researchers in the natural and social sciences. Other supported activities include the development of tools and resources specifically aimed at facilitating effective interactions with large datasets as well

4 This problem is not restricted to private sector data releases. Governments have also had difficulty properly anonymizing data.

as the creation of academic positions for scientists who specialize in the multi-disciplinary analysis of massive, noisy, and complex scientific data. Other Foundation grants related to helping scientists work effectively with data include a partnership with the Mozilla Foundation to fund "software boot camps" that train scientists in writing useful code and algorithms, and a project to speed the adoption of the iPython notebook, a powerful data analysis platform useful for running models and simulations in a wide variety of research contexts.

ing companies to access their private information in order to improve ad targeting or design better price discrimination strategies. Yet, there are legitimate public interests in making personal information available to researchers. Used properly, big data can improve public policy, enhance private sector performance, and inform decision makers.

Used properly, big data can improve public policy, enhance private sector performance, and inform decision makers.

Privacy. Despite the willingness of many people to share many aspects of their lives on social networking sites, privacy of information is still of major concern to individuals, businesses, and other organizations. People and organizations usually want to control the information others have about them and want to decide for themselves who knows what about them and when. Privacy concerns reflect individuals' preferences and social and ethical norms. They vary widely from individual to individual and from society to society. Whether legally correct or not, many people and organizations think that they "own" their own data.[5]

The big data ecosystem increases the number and nature of situations where data collection, release, and utilization raise privacy concerns. As access to information about individuals expands; as it becomes easier to link digital datasets to people and organizations; as more and more information is collected by governments, search engines, social networking sites, e-commerce sites, and the internet of things confrontations with privacy concerns will only increase.

We want to empower individuals and organizations to protect their privacy and give them a say in how information about them is made available and utilized. Consumers are understandably wary of allow-

Computer scientists, mathematicians, and cryptographers have attempted to resolve this conflict of interests through the clever anonymization of sensitive datasets, protecting privacy while allowing meaningful scientific access to data. Such attempts have a spotty history, however. In the 1990s, for example, the Massachusetts Group Insurance Commission released supposedly anonymous health insurance and associated health care utilization data that had been "scrubbed" by deleting certain information from individual records to prevent the public from identifying the health records of specific individuals. Combining the Commission's "anonymous" data with other publicly available datasets, however, made it easy to identify the Governor of Massachusetts' health records, much to the Commission's embarrassment. Citizens and consumers have reason to be skeptical about whether "anonymized" datasets truly deliver on their promises.

The Foundation is thus supporting research on better techniques to anonymize data. For instance, we are supporting the work of Stanford University's Cynthia Dwork on "differential privacy," a class of data analyses that produce the same results even if any given individual's information is removed from the data. Dwork's work is a promising avenue for protecting privacy while allowing for scientifically meaningful access to data. More recent Foundation grantmaking on privacy focuses on supporting research in "fully homomorphic encryption," a technique that, if fully developed, would allow computations to be performed on encrypted data without the need to decrypt them first.

5 Privacy is also an issue related to the desire of individuals and organizations to prevent unauthorized use of credit cards, bank deposits, securities, intellectual property, and their identities. I think of these issues as related but in many ways distinct "cybersecurity" problems and will not address them further here. The Foundation has supported a lecture series on cybersecurity issues at the NYU-Polytechnic School of Engineering.

Though both approaches hold promise, I am skeptical that these "technical fixes" will completely address all legitimate privacy concerns. We must encourage those who are part of the big data ecosystem to engage ethicists, philosophers, lawyers, and psychologists to come to a better understanding of the appropriate bounds for individual and organizational privacy rights and how they can be addressed in ways that minimize adverse effects on the beneficial use of the digital information that is being created. The big data ecosystem has evolved so quickly that we have not yet had time to arrive at widely accepted and implementable information privacy standards and norms. We should move quickly to address these issues so that developments in big data and privacy standards can evolve together in harmony.

Conclusion and Acknowledgments

It is hard to do justice to the opportunities and challenges raised by the rapidly expanding big data ecosystem in a relatively short letter and in a non-technical fashion. There are many opportunities and challenges that I have either ignored or not done justice to in this letter. These include experimentation with administrative data, copyright laws that restrict the dissemination of information for long periods of time, data management and statistical challenges, and many other topics. I do hope I have made clear that the developments of the big data ecosystem are of great importance to the Sloan Foundation and its programs, that the Foundation will continue to be a leader in responsible support for and use of the big data ecosystem, and that the big data revolution presents immense opportunities for innovative and high-impact grantmaking.

I would like to conclude this letter with a few words of thanks. First, I would like to thank our Trustees. The Trustees of the Alfred P. Sloan Foundation, led by Board Chair Sandra O. Moose, are exceptional. To a person, they are committed, knowledgeable, generous with their time and counsel, and passionate about helping fulfill the Foundation's mission. They are a credit to the Foundation. Professor Peter Kim retired from the Board in June 2014 and I would like to express my deep appreciation for his service.

Second, I would like to thank the Foundation's Investment team. The funds available to the Foundation to support its grantmaking and management come from our endowment, which was created by gifts from Alfred P. Sloan Jr. and which is ably managed by the Foundation's investment team with the support of our Investment Committee. Under the leadership of Senior Vice President and Chief Investment Officer Bill Petersen, our endowment performed well in 2013, earning a 14.5 percent rate of return. As of December 31, 2013, the value of the Foundation's endowment stood at approximately $1.89 billion.

Finally, I would like to thank my friends and colleagues on the Sloan Foundation staff. The administrative demands of disbursing and managing about $80 million in grants each year are significant, demands made even more onerous by the Foundation's extensive internal and external review process. Working weekends are more the norm than the exception and the relatively small size of the Foundation staff—Sloan has roughly 30 full-time employees—means that getting everything done requires dedication, efficiency, and hard work. I am honored to report that my colleagues have risen to the task this year, exceeded my already high expectations, and served the Foundation's mission with a competence and professionalism that, I am sure, would have made Alfred P. Sloan Jr. proud.

—September, 2014

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2013 Grants by Program

About the Grants Listing

Grants listed in this report are divided into three types.

TRUSTEE GRANTS are grants for amounts greater than $125,000. All trustee grants are reviewed by an independent panel of experts and are presented quarterly to the Board of Trustees for approval.

GRANTS MADE AGAINST PRIOR AUTHORIZATIONS are grants in any amount made from funds set aside by the Board of Trustees to be used for specific purposes. Depending on the amount or subject matter of the grant, grants made against prior authorizations may or may not have been subject to external review by an independent panel of experts. For each authorization, the Foundation reports once yearly to the Board of Trustees about grants made against the authorized funds.

OFFICER GRANTS are grants for amounts less than or equal to $125,000. Depending on the amount or subject matter of the grant, officer grants may or may not have been subject to external review by an independent panel of experts. Officer grants made by the Foundation are reported to the Board of Trustees quarterly.

Grants listed herein are listed by program, then by grant type, then alphabetically by the name of the institution receiving the grant. Not all programs make grants of each type each year.

Sloan Research Fellowships

Program Director: Daniel L. Goroff

First established in 1955 by Alfred P. Sloan Jr., these $50,000 awards aim to accelerate scientific breakthroughs by providing support and recognition to outstanding early-career researchers in eight fields. Selected for their research accomplishments by an independent panel of senior scholars, the Sloan Research Fellows represent the next generation of leaders in the natural sciences, mathematics, and economics. Since the beginnings of the program nearly sixty years ago, some $159 million has been awarded to more than 5,000 fellows, many of whom have gone on to esteemed careers. 42 Sloan Research Fellows have become Nobel Laureates; 16 have received the Fields Medal in mathematics; 14 Fellows have won the John Bates Clark Medal in economics; and 63 have been awarded the National Medal of Science. Hundreds of others have received notable prizes, awards, and honors in recognition of their major research accomplishments.

2013 Fellows

University of Alberta
John P. Davis, PHYSICS
Julianne M. Gibbs-Davis, CHEMISTRY

Boston College
Joshua E. Greene, MATHEMATICS
David Treumann, MATHEMATICS

Boston University
Ramesh Jasti, CHEMISTRY

University of British Columbia
Nicholas Harvey, COMPUTER SCIENCE
Mary I. O'Connor, OCEAN SCIENCES

University of Buffalo, SUNY
Eva Zurek, CHEMISTRY

California Institute of Technology
Ryan Patterson, PHYSICS

University of California, Berkeley
Frederico Finan, ECONOMICS
Yuriy Gorodnichenko, ECONOMICS
Björn Hartmann, COMPUTER SCIENCE
Michael Lustig, COMPUTER SCIENCE

University of California, Irvine
Matthew Law, CHEMISTRY
Jeffrey Streets, MATHEMATICS
Jing Xia, PHYSICS

University of Chicago economist Lars Peter Hansen was awarded the Nobel Prize in Economics in 2013 in recognition of his pioneering work developing new methods to analyze and model financial data. Hansen received a Sloan Research Fellowship in 1982. Since 1955, 42 former Sloan Research Fellows have gone on to win the Nobel in their respective fields. (PHOTO: WIKIMEDIA COMMONS)

University of California, Los Angeles
Anastassia N. Alexandrova, CHEMISTRY
Jason Ernst, COMPUTATIONAL & EVOLUTIONARY MOLECULAR BIOLOGY
Sotiris Masmanidis, NEUROSCIENCE
Rahul Roy, PHYSICS
Yi Xing, COMPUTATIONAL & EVOLUTIONARY MOLECULAR BIOLOGY

University of California, Riverside
Naveen Reddy, PHYSICS

University of California, San Diego
Nuno Bandeira, COMPUTATIONAL & EVOLUTIONARY MOLECULAR BIOLOGY
Adrian Ioana, MATHEMATICS
Eva-Maria Schötz, PHYSICS
Martin Tresguerres, OCEAN SCIENCES

University of California, San Francisco
Sophie Dumont, COMPUTATIONAL & EVOLUTIONARY MOLECULAR BIOLOGY
Ryan Hernandez, COMPUTATIONAL & EVOLUTIONARY MOLECULAR BIOLOGY

University of California, Santa Barbara
David Weld, PHYSICS

University of California, Santa Cruz
Charlie Conroy, PHYSICS

Carnegie Mellon University
David James Brumley, COMPUTER SCIENCE
Gautam Iyer, MATHEMATICS
Seyoung Kim, COMPUTATIONAL & EVOLUTIONARY MOLECULAR BIOLOGY
Rachel Mandelbaum, PHYSICS

The University of Chicago
Dorian Abbot, PHYSICS
Emir Kamenica, ECONOMICS
Jacob R. Waldbauer, OCEAN SCIENCES
Wei Wei, NEUROSCIENCE

University of Cincinnati
Hairong Guan, CHEMISTRY

The City College of New York of The City University of New York
Arthur Szlam, MATHEMATICS

Colby College
Loren McClenachan, OCEAN SCIENCES

University of Colorado, Denver
Abigail Person, NEUROSCIENCE

University of Colorado, Boulder
Wei Zhang, CHEMISTRY

Columbia University
Mark Churchland, NEUROSCIENCE
Wei Min, CHEMISTRY
Simha Sethumadhavan, COMPUTER SCIENCE
Wei Zhang, MATHEMATICS

Cornell University
Julius Lucks, COMPUTATIONAL & EVOLUTIONARY MOLECULAR BIOLOGY

Dartmouth College
Gevorg Grigoryan, COMPUTATIONAL & EVOLUTIONARY MOLECULAR BIOLOGY

Duke University
Patrick Charbonneau, CHEMISTRY
Jianfeng Lu, MATHEMATICS

Emory University
Khalid Salaita, CHEMISTRY

Georgia Institute of Technology
Tamara Bogdanovic, PHYSICS

Harvard University
Joshua Buckholtz, NEUROSCIENCE
Krzysztof Gajos, COMPUTER SCIENCE
David T. Johnston, OCEAN SCIENCES
Sarah C. Koch, MATHEMATICS
Xi Yin, PHYSICS

University of Illinois, Urbana-Champaign
Derek W. Hoiem, COMPUTER SCIENCE
Taylor Hughes, PHYSICS
Svetlana Lazebnik, COMPUTER SCIENCE

Indiana University
Erin E. Carlson, CHEMISTRY
Sara Skrabalak, CHEMISTRY

University of Maryland, College Park
Yanir Rubinstein, MATHEMATICS

Massachusetts Institute of Technology
David Donaldson, ECONOMICS
Jacob Fox, MATHEMATICS
Anna Mikusheva, ECONOMICS
Elizabeth Nolan, CHEMISTRY
Sug Woo Shin, MATHEMATICS
Jesse Thaler, PHYSICS

McGill University
Jack Clayton Sankey, PHYSICS

University of Michigan
Sara Aton, NEUROSCIENCE
Gregory J. Dick, OCEAN SCIENCES
Stephen Maldonado, CHEMISTRY

University of Minnesota
Connie Lu, CHEMISTRY
Hoai-Minh Nguyen, MATHEMATICS
Pavlo Pylyavskyy, MATHEMATICS

New York University
Dayu Lin, NEUROSCIENCE

University of North Carolina, Chapel Hill
Anne Taylor, NEUROSCIENCE

Northwestern University
Nathaniel Stern, PHYSICS
Bruno Strulovici, ECONOMICS

Princeton University
Jan De Loecker, ECONOMICS
Zeev Dvir, MATHEMATICS
A. James Link, CHEMISTRY
Anna K. Wienhard, MATHEMATICS
Ilana Witten, NEUROSCIENCE

Purdue University
Adam Wasserman, CHEMISTRY

Rice University
Andrew Putman, MATHEMATICS

University of Rochester
Jessica Cantlon, NEUROSCIENCE
Daniel Weix, CHEMISTRY

Rockefeller University
Vanessa Ruta, NEUROSCIENCE

Rutgers, The State University of New Jersey
Swastik Kopparty, MATHEMATICS

University of South Florida
Cameron H. Ainsworth, OCEAN SCIENCES
Jiangfeng Zhou, PHYSICS

University of Southern California
Remo Rohs, COMPUTATIONAL & EVOLUTIONARY MOLECULAR BIOLOGY
Fei Sha, COMPUTER SCIENCE

Stanford University
Surya Ganguli, NEUROSCIENCE
Lisa Giocomo, NEUROSCIENCE
Sachin R. Katti, COMPUTER SCIENCE
Fuhito Kojima, ECONOMICS
Ryan Williams, COMPUTER SCIENCE

Stony Brook University
Rouven Essig, PHYSICS

University of Texas, Austin
Zheng Wang, PHYSICS

University of Texas, Southwestern Medical Center at Dallas
Uttam Tambar, CHEMISTRY

University of Toronto
Ruslan Salakhutdinov, COMPUTER SCIENCE
Bianca Schroeder, COMPUTER SCIENCE
Dwight Seferos, CHEMISTRY
Vinod Vaikuntanathan, COMPUTER SCIENCE
Robert Young, MATHEMATICS

Tufts University
Bree Aldridge, COMPUTATIONAL & EVOLUTIONARY MOLECULAR BIOLOGY

University of Utah
Megan Williams, NEUROSCIENCE

Vanderbilt University
Alexander Maier, NEUROSCIENCE

Washington University in St. Louis
Caitlin Kelleher, COMPUTER SCIENCE

University of Washington
James Carothers, COMPUTATIONAL & EVOLUTIONARY MOLECULAR BIOLOGY
Lekelia Danielle Jenkins, OCEAN SCIENCES
Daniela Witten, COMPUTATIONAL & EVOLUTIONARY MOLECULAR BIOLOGY

University of Waterloo
Matteo Mariantoni, PHYSICS

Wayne State University
Wen Li, CHEMISTRY

University of Wisconsin, Madison
Elena D'Onghia, PHYSICS
Christopher Re, COMPUTER SCIENCE
Jennifer Schomaker, CHEMISTRY

Yale University
Elena Gracheva, NEUROSCIENCE
Nilay Hazari, CHEMISTRY
Liang Jiang, PHYSICS
Alex V. Kontorovich, MATHEMATICS
Nikhil Padmanabhan, PHYSICS

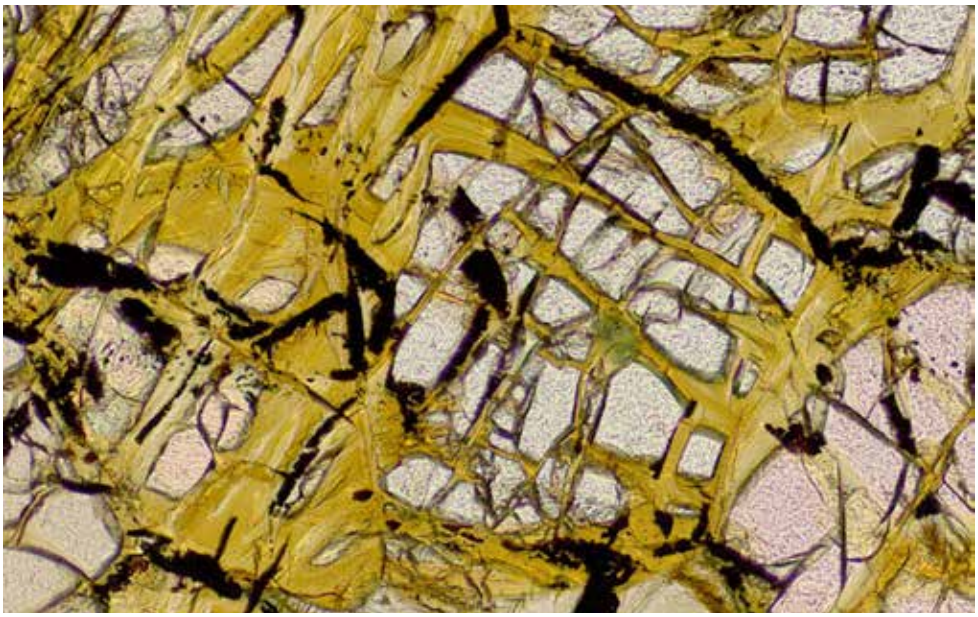
STEM Research

Deep Carbon Observatory

Program Director: Gail M. Pesyna

This ten-year program, begun in 2009, aims to revolutionize our understanding of the carbon deep in Earth, including its connections to the origins of life and to the origins, distribution, and abundance of fossil fuels. Through a multidisciplinary international network of scientists and technologists, the Deep Carbon Observatory (DCO) develops and deploys new instrumentation, collects observations, and performs analyses.

Initial activities of the Deep Carbon Observatory focused on the tremendous challenges posed by any large scale coordinated scientific enterprise: building institutional and technical infrastructure, engaging a network of scholars, setting priorities, securing funds from stakeholders, benchmarking the state of deep Earth knowledge, and developing instruments to meet the severe technical challenges associated with probing the high-pressure, high-temperature processes in Earth's deep interior. The DCO's research agenda is being carried out through four research communities, one focused on the deep biosphere, another on deep energy, a third on carbon reservoirs and the flux of carbon between mantle and surface, and a fourth focused on the extreme physics and chemistry of carbon in high-pressure, high-temperature environments.



In 2013, Deep Carbon Observatory researchers discovered that at the high pressures and temperatures prevalent deep in Earth, the common mineral olivine (left, in yellow) reacts with aluminum and water to quickly produce significant quantities of hydrogen. The discovery has several potential applications, including implications for the production of hydrogen fuel cells. (PHOTO CREDIT: BERNARD EVANS, UNIVERSITY OF WASHINGTON.)

Microbiologist Matt Schrenk samples serpentinized rocks from a drill core from a field site near Lower Lake California to investigate the presence and activity of hydrogen-utilizing microorganisms. (PHOTO CREDIT: MATT SCHRENK, MICHIGAN STATE UNIVERSITY.)

Trustee Grants

University of California, Los Angeles

Los Angeles, CA

$1,250,000 over 24 months to advance the Deep Carbon Observatory toward its decadal goals in the study of the physics and chemistry of carbon at extreme conditions.

Project Director: Craig E. Manning, Professor

Funds from this grant provide two years of continuing administrative and research support to the Extreme Physics and Chemistry Community of the Deep Carbon Observatory (DCO). One of four scientific communities within the DCO, the Extreme Physics and Chemistry Community concerns itself with crystals, fluids, and magmas at the high pressures and temperatures characteristic of deep Earth. Supported research will extend measurements on carbon-bearing systems to previously inaccessible conditions, combining an extraordinary array of experimental techniques with careful computational studies on challenging chemical systems. Under the direction of UCLA geophysicist Craig Manning, as many as 19 distinct research projects are envisioned during the next two years, with a focus on simultaneously conducting numerical simulations and laboratory measurements on the same physical properties of the same materials. Also supported under this grant is the compilation and publication of a comprehensive open-access database mapping the thermochemical properties of carbon-bearing minerals, melts, and fluids, as well as their mixtures, to lower-mantle pressure and temperature conditions. The continued research of the Extreme Physics and Chemistry Community promises to contribute in powerful ways to the DCO's goal of radically advancing our understanding of deep Earth carbon.

Carnegie Institution of Washington

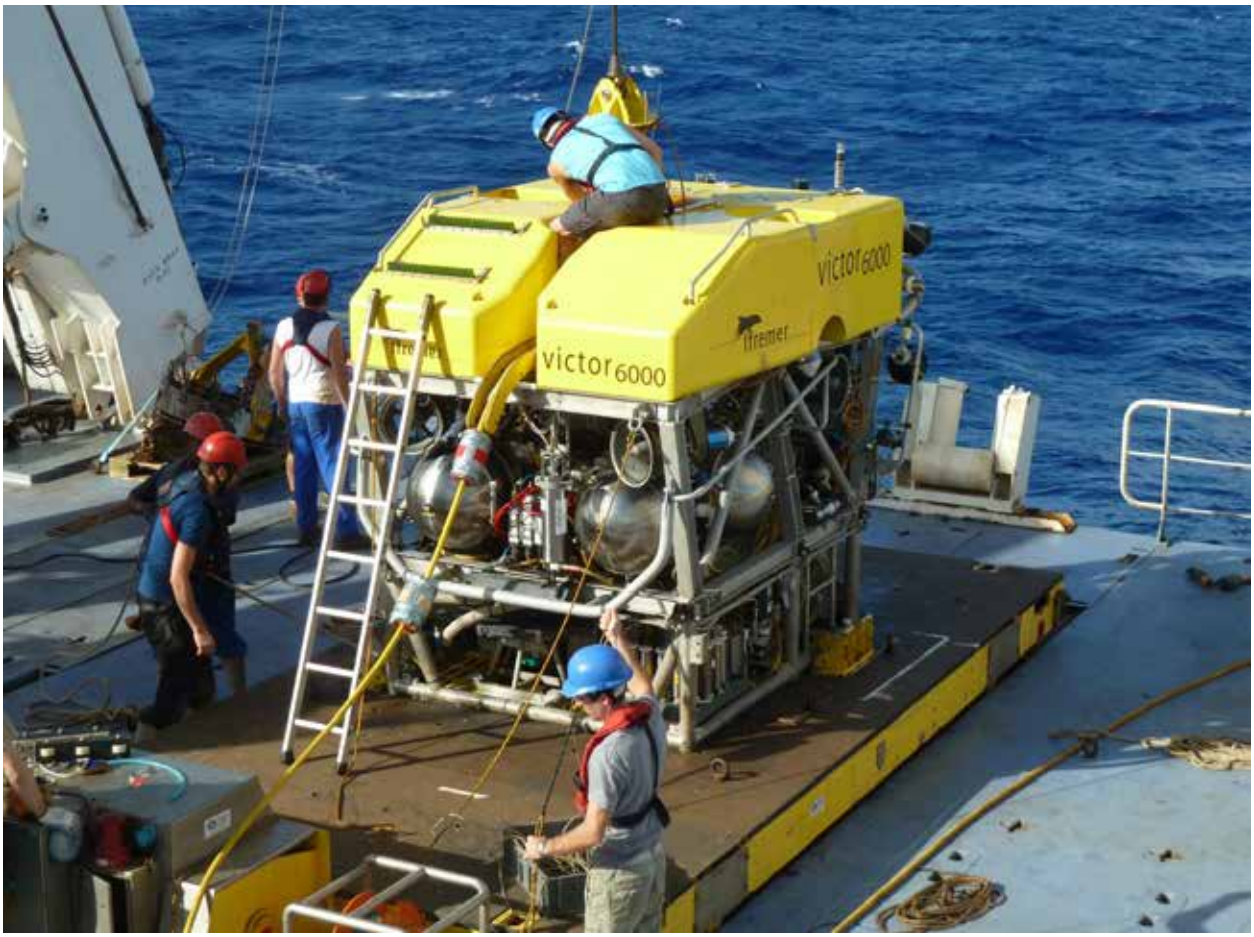
Washington, DC

$1,250,000 over 24 months to advance understanding of reservoirs and fluxes of Earth's deep carbon and thus contribute to meeting the decadal goals of the Deep Carbon Observatory.

Project Director: Erik H. Hauri, Staff Scientist

This grant provides two years of continued support for the Reservoirs and Fluxes Community of the Deep Carbon Observatory (DCO). Led from the Department of Terrestrial Magnetism of the Carnegie Institution of Washington and the Ecole Nationale Supérieure de Géologie in Nancy, France, this Community is the division of the DCO dedicated to transforming our understanding of the distribution, abundance, and movement of Earth's subsurface carbon. The group aims for important discoveries in five areas: degassing deep carbon through volcanic processes; degassing deep carbon through tectonic and other diffuse processes; origin, age, and depth of diamonds and mineral inclusions found within them; fluid dynamics of carbon transport in volcanoes and global circulation of carbon from Earth's surface to its core; and chemical forms, mineral hosts, and reactions of carbon moving between reservoirs. Collaborating with national volcano observatories, group members will also begin to establish the first global network for direct measurement of volcanic carbon dioxide flux and produce a new database on eruptions and volcanic gases.

Expected outcomes from this grant include new instruments, databases, models, insights, and several doctoral and postdoctoral researchers trained in deep carbon research.



Aboard the French vessel *Pourquois pas?*, scientists use Victor, a remotely operated vehicle, to collect images, rocks, and fluid samples from vents releasing gases and fluids on the sea floor. The samples provide greater understanding of the ongoing serpentinization process in the deep ocean. (PHOTO CREDIT: BENOIT ILDEFONSE, UNIVERSITY OF MONTPELLIER)

Carnegie Institution of Washington

WASHINGTON, DC

$400,000 over 36 months to initiate integrative and synthetic research needed for the Deep Carbon Observatory to realize its full potential by 2019.

Project Director: Robert M. Hazen, Executive Director, Deep Carbon Observatory

Launched in July 2009, the Deep Carbon Observatory (DCO) is approximately 40 percent into its planned decadal span of research. Much of the original vision of the DCO came from geologist Robert Hazen. Hazen and his colleagues have effectively set in motion many streams of observation and analysis. The unusual scope of the DCO—from diamonds to life—presents great challenges for integration and synthesis. This grant provides three years of support for the hiring of one full-time postdoctoral researcher and one graduate student to assist DCO Executive Director Hazen as he initiates this process of synthesis and integration.

Marine Biological Laboratory

WOODS HOLE, MA

$1,250,000 over 25 months to advance the Deep Carbon Observatory toward its decadal goals in the study of the abundance and diversity of deep life and its roles and interactions with the deep carbon cycle.

Project Director: Mitchell L. Sogin, Director, Josephine Bay Paul Center for Comparative Molecular Biology and Evolution

This grant provides two years of continued administrative and research support to the Deep Life Community of the Deep Carbon Observatory (DCO). One of four scientific communities within the DCO, the Deep Life community is a multinational consortium of scientists working to revolutionize our understanding of the quantities, movements, forms, and origins of deep life. Subsurface microbial ecosystems may extend to 20,000 feet beneath the seafloor and continental surface, and studies of these deep, dark biological reservoirs

suggest their total carbon content may rival all surface life. Instead of tapping into solar power, deep microbial communities harvest energy from fuels such as methane and hydrogen sulfide or buried detrital matter to drive synthesis of macromolecules and reproduction. Led by microbial biologist Mitch Sogin of the Marine Biological Laboratory, the Deep Life Community will use grant funds to extend molecular studies to a greater number of samples from high-value marine and continental sites and describe the diversity, distribution, and functional adaptations of deep life. Experiments will explore life's interplay with geological processes in the deep subsurface, including studies of microbial activities and distributions in hydrogen-rich habitats that favor abiogenic synthesis of methane and higher hydrocarbons. In addition, deep life researchers will explore the limits of deep life using improved life detection capabilities and develop and apply tracer approaches to track the flow of carbon into biomolecules and cells.

Ohio State University

Columbus, OH

$1,250,000 over 24 months to foster the Deep Energy community of the Deep Carbon Observatory with studies on the origin and distribution of abiotic hydrocarbons.

Project Director: David Cole, Ohio Research Scholar

This grant provides continued research support to the Deep Energy Community of the Deep Carbon Observatory. Led by an international team of 21 scientists from eight nations and co-chaired by David Cole of Ohio State University and Isabelle Daniel of the University of Lyon, the Deep Energy research team is conducting an ambitious research agenda aimed at transforming our understanding of the origins, abundance, and distribution of abiotic hydrocarbons in the deep Earth. Over the next two years, the team will expand its sampling to 10 key geologically representative field sites around the globe; develop and deploy new instruments for sample collection and analysis; set common protocols for the collection, preservation, and analysis of samples; and work toward the development of rigorous, effective methods for distinguishing biotic from abiotic hydrocarbon.

Officer Grants

University of Oxford

Oxford, United Kingdom

$80,000 over 11 months to organize an international workshop of early career scientists from around the world conducting research relevant to the Deep Carbon Observatory.

Project Director: Christopher Ballentine, Professor

Rice University

Houston, TX

$96,566 over 12 months to convene a meeting on new technologies in deep carbon science potentially interesting to relevant industries and to initiate studies on decarbonation of continental crust.

Project Director: Rajdeep Dasgupta, Associate Professor

Smithsonian Institution

Washington, DC

$30,000 over 3 months to research and prepare a report about the supply and demand for videos, films, books, and other media about deep carbon.

Project Director: Barbara Rehm, Chief Content Officer

Yale University

New Haven, CT

$66,971 over 12 months to support a workshop on modeling of the deep carbon cycle for the Deep Carbon Observatory.

Project Director: David Bercovici, Frederick William Beinecke Professor of Geophysics

Microbiology of the Built Environment

Program Director: Paula J. Olsiewski

Americans spend the vast majority of their time indoors where they come into contact with trillions of microorganisms—tiny life forms invisible to the naked eye. Human beings ourselves are composed of ten times as many microbial cells as human cells and we are constantly shedding, acquiring, and sharing microbes. Environmental research and policy, however, have historically focused on natural or outdoor environments. Little is known about the complex microbial ecosystems that thrive in the built environment. The goal of the Microbiology of the Built Environment program is to grow a new multidisciplinary field of scientific inquiry that brings together biologists, architects, engineers and data specialists to expand our knowledge of the invisible microbial communities that live in our homes and workplaces, hospitals and schools, airplanes and subway systems.

A common component of house dust, *Aspergillus glaucus* thrives in low-moisture environments, making it ideally suited to the dry indoor spaces built by humans. (PHOTOGRAPH BY K. SEIFERT © HER MAJESTY THE QUEEN IN THE RIGHT OF CANADA, AS REPRESENTED BY THE MINISTER OF AGRICULTURE AND AGRI-FOOD CANADA)

Trustee Grants

University of California, Davis

Davis, CA

$998,796 over 24 months to provide renewed support for the Microbiology of the Built Environment Network.

Project Director: Jonathan Eisen, Professor

This grant provides two years of continued support to microbiologist Jonathan Eisen at the University of California, Davis for the continued operation and development of the Microbiology of the Built Environment network (microBE.net), a research network and associated website that aims to encourage collaboration, resource sharing, and information exchange in the growing multidisciplinary community of researchers working on understanding the built environment microbiome. Funded activities include the continued operation of the network website, the curation and creation of tools and other resources for researchers, the coordination of several meetings and workshops, and outreach to relevant stakeholders, including researchers, regulators, government funding agencies, and the public.

University of California, San Francisco

San Francisco, CA

$300,000 over 24 months to examine the house dust fungal microbiome.

Project Director: Susan Lynch, Associate Professor

This grant supports the expansion of a major $9 million, multi-institutional research project funded by the National Institutes of Health. The NIH study aims to determine the bacterial community composition of 340 paired house dust and infant stool samples in a case cohort epidemiological study. Sloan funds will enable the research team to expand their analysis to not just bacteria, but fungi. Led by Dr. Susan Lynch of the University of California, San Francisco, the research team will perform high-resolution fungal community profiling of the 340 paired samples, conduct a variety of statistical analyses to determine whether relationships exist between fungal and bacterial community composition in house dust and infant stool, and use multivariate regression analysis to relate fungal/bacterial house dust microbiome composition to house characteristics and allergic disease outcomes.

Illinois Institute of Technology

Chicago, IL

$163,340 over 18 months to develop and document open source sensors for characterizing the built environment.

Project Director: Brent Stephens, Assistant Professor

Funds from this grant support the work of Brent Stephens at the Illinois Institute of Technology to develop and document an open network of inexpensive, standardized, and synchronized measurement devices for recording long-term indoor environmental and building operational parameters. Stephens will focus on the parameters that are most likely to influence indoor microbial communities, including environmental conditions (air temperature, relative humidity, light), characteristics of the building's heating, ventilation, and air conditioning systems (air flow rates, air exchange rates), human occupancy, and surface environmental conditions (surface temperature and water activity).

In addition to developing and testing the sensors themselves, Stephens will make public the documentation and directions for how to build and deploy the sensors. He will also prepare several peer-reviewed publications for the microbial ecology, building science, and sensor development communities.

University of Oregon

Eugene, OR

$1,325,000 over 24 months to provide renewed support for the Biology and Built Environment (BioBE) Center.

Project Director: Jessica Lee Green, Assistant Professor

The grant provides two years of continued support to the University of Oregon's Biology and the Built Environment (BioBE) Center, a pioneering research center founded with Sloan support and dedicated to developing a predictive science of the built environment microbiome through partnerships between architects and biologists. Over the next two years, the BioBE Center, led by microbiologist Jessica Green, will address two primary research questions: what dispersal vectors (e.g., ventilation, human occupancy) significantly influence the microbial profile of the built environment? And what attributes of the built environment (e.g., building materials, interior temperature) shape microbial community composition indoors? Research will be driven by the latest advances in microbiological instrumentation and methodology, includ-

ing a climate-controlled chamber, microbiome diversity mapping, high throughput sequencing and analysis, and new visualization tools. In addition to conducting basic research and disseminating results through peer-reviewed journals and conferences, the BioBE team will be involved in educating the next generation of built environment microbiologists, training at least one undergraduate student, three graduate students, two postdoctoral fellows, and two architectural research faculty; and developing a new undergraduate course focused on the biology of the built environment.

Grants Made Against Prior Authorizations

In June 2010, the Board of Trustees authorized the expenditure of up to $500,000 for a series of small grants aimed at supporting the major programmatic objectives of the Foundation's Microbiology of the Built Environment program. The following grants were made against this previously authorized fund.

American Association for the Advancement of Science

Washington, DC

$57,595 over 6 months to support a one-day symposium on Microbiology of the Built Environment.

Project Director: Mark Milutinovich, RCP Program Director

In March 2013, the Board of Trustee authorized the expenditure of up to $960,000 for a series of eight postdoctoral fellowships for outstanding early-career scientists and engineers studying the microbiology of the built environment. The following grants were made against this previously authorized fund.

University of Colorado, Boulder

Denver, CO

$120,000 over 24 months to investigate household arthropods as unique sources of microbes in the built environment.

Project Director: Anne Madden, Ph.D. Candidate

Illinois Institute of Technology

Chicago, IL

$120,000 over 24 months to study indoor bioaerosol fate, transport, and control: Implications for infectious disease transmission.

Project Director: Stephanie Kunkel, Ph.D. Candidate

Virginia Polytechnic Institute and State University

Blacksburg, VA

$120,000 over 24 months to characterize the bacterial and viral microbiome of the air and surfaces in a daycare setting.

Project Director: Aaron J. Prussin, Postdoctoral Research Associate

Yale University

New Haven, CT

$120,000 over 24 months to evaluate microbial activity in house dust and interactions with phthalate esters (PEs).

Project Director: Karen Dannemiller, Ph.D. Candidate

In October 2013, the Board of Trustees authorized the expenditure of up to $250,000 for a series of small grants in support of the development of a compelling, widely accepted research agenda among scientists and engineers studying the microbiology of built environments. The following grants were made against this previously authorized fund.

North Carolina State University

Raleigh, NC

$124,821 over 24 months to incorporate building science measures into an existing HUD-funded project on the interactions between insect infestations and microbial communities in homes.

Project Director: Coby Schal, Blanton J. Whitmire Distinguished Professor

Officer Grants

University of Colorado, Boulder
Denver, CO
$30,000 over 12 months to examine the role of flood damage and recovery to house-associated microbial communities.
Project Director: Noah Fierer, Associate Professor

Harvard Medical School
Boston, MA
$125,000 over 24 months to test whether the pH of surfaces in built environments influences the composition of microbial communities that reside there.
Project Director: Roberto Kolter, Professor

The University of Hong Kong
Hong Kong, China
$74,918 over 13 months to support the Second International Sloan Symposium on Microbiology of the Built Environment at Indoor Air 2014 in Hong Kong.
Project Director: Yuguo Li, Professor

University of Pittsburgh
Pittsburgh, PA
$33,000 over 8 months to determine the changes in the microbial ecology of a hospital hot water system caused by the introduction of a secondary disinfectant.
Project Director: Kyle Bibby, Assistant Professor

Yale University
New Haven, CT
$49,336 over 20 months to examine how building moisture influences fungal and bacterial ecology in house dust.
Project Director: Jordan Peccia, Associate Professor

Synthetic Biology

Program Director: Paula J. Olsiewski

The goals of Sloan's Synthetic Biology program are first, to identify the risks associated with synthetic biology research and synthetic biology products; second, to assess the ethical, regulatory, and public policy implications of these risks; third, to encourage the adoption of sensible risk-mitigation practices among synthetic biology practitioners; and fourth, to make the informed discussion of the ethical and societal issues an accepted, normal part of synthetic biology research and discovery. Grantmaking aims to educate scientists, policymakers, journalists, and the public about synthetic biology; improve biosecurity and biosafety within the field; lay the groundwork to address issues in regulation and governance; and develop a cadre of scholars and practitioners to evaluate the ethical, social, and public-policy consequences of synthetic-biology research. Grantmaking in this program will end in 2014, with final grants focused on synthesizing the current state of knowledge, institutionalizing ongoing initiatives, and securing the legacy of Foundation grantmaking in this area.

Trustee Grants

University of California, Berkeley
Berkeley, CA
$321,363 over 36 months to provide renewed support for a leadership development course for early career synthetic biology researchers.
Project Director: Megan J. Palmer, Staff Scientist, Deputy Director, Synberc Practices

Funds from this grant provide partial support for the development of a leadership development program for early career synthetic biologists, the University of California, Berkeley's LEadership Accelerator Program (LEAP). A small 2012 Sloan Foundation planning grant to pilot the program was successful, resulting in an inaugural class of 20 fellows selected from over 120 applicants that included representatives across career stages (senior graduate students to new group leaders), sectors (university, large industry, start-ups, think tanks, government, and amateur/DIY communities), and disciplines (biosciences, engineering, social sciences, law). The program aims to train fellows to identify and address societal and ethical issues related to synthetic biology research.

Grant funds will support the selection and training of two cohorts of 20 to 25 fellows, an annual week-long residential workshop for fellows, the production of several fellow-authored white papers, small seed grants for promising research or outreach projects, and the development of a long-term sustainability strategy for the program.

University of California, Berkeley

BERKELEY, CA

$285,000 over 12 months to develop a strategic business plan for a sustainable infrastructure for socially responsible research and development in synthetic biology.

Project Director: Jay D. Keasling, Professor

Funds from this grant provide support to the University of California, Berkeley's Synthetic Biology Engineering Research Center (SYNBERC), a multi-institutional collection of researchers devoted to developing and sharing best practices for the safe, ethical, and productive development of synthetic biology as a field. Grant funds will allow a SYNBERC team led by Nancy Kelley to develop a long-term business plan that will consider and recommend service and funding models, governance and organizational structures, and potential institutional collaborations. Additional grant funds will support a series of feasibility studies that will include examination of market and economic forces, IP and legal considerations, scale-up economics, and the market value of prospective new technologies.

This grant will help ensure the continued presence of thriving institutions devoted to the examination of societal and ethical issues in synthetic biology as Sloan grantmaking in the area comes to a planned end in 2014.

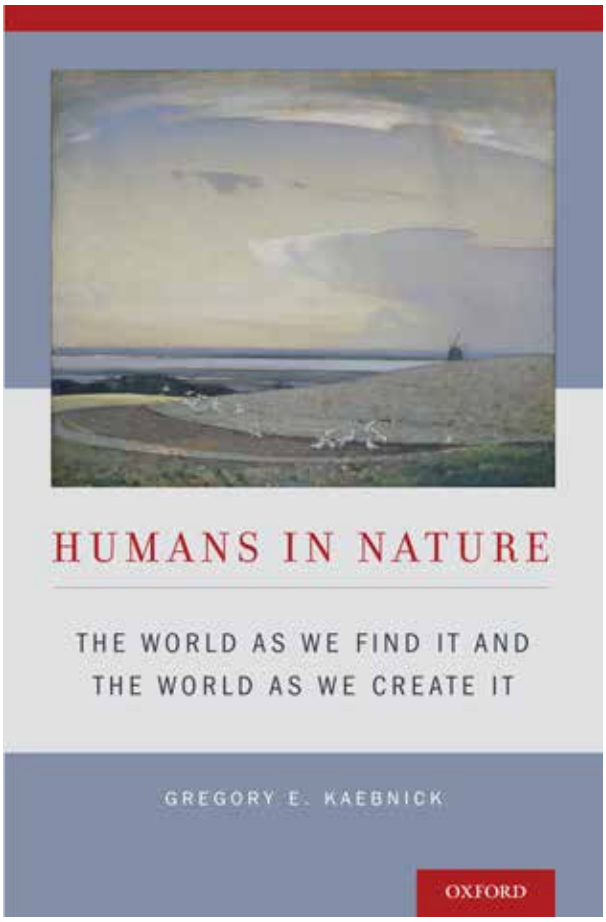
North Carolina State University

RALEIGH, NC

$173,703 over 14 months to use risk assessment tools to analyze three current synthetic biology applications.

Project Director: Jennifer Kuzma, Professor

Funds from this grant support a project by Associate Professor Jennifer Kuzma at the University of Minnesota to analyze three applications of synthetic biology using established risk assessment tools. Deploying a risk analysis method called "upstream oversight assessment" specifically developed for emerging technologies, Kuzma will construct and evaluate three synbio products as case studies: engineered bacteriophages used in industrial cleaning; medical "cyberplasm" used in disease detection and prevention; and a third synbio application yet to be determined. Kuzma plans to publish at least two peer-reviewed articles and will produce three electronic versions of the case studies for nonexperts. Grant funds will also support one student and one postdoctoral researcher. Kuzma's work promises to stimulate the ongoing scientific dialogue about best ways to assess and mitigate the risks posed by synthetic biology.



Written by Gregory E. Kaebnick, research scholar at The Hastings Center, *Humans in Nature* is a detailed philosophical examination of the proper role terms like "natural" and "artificial" play in our ethical thinking across a range of practical issues, including issues raised by synthetic biology. (COVER ILLUSTRATION COURTESY OF OXFORD UNIVERSITY PRESS)

University of Pennsylvania

PHILADELPHIA, PA

$191,695 over 15 months to use risk assessment tools to analyze five current synthetic biology applications.

Project Director: Adam M. Finkel, Senior Fellow

Funds from this grant support the work of Adam Finkel at the University of Pennsylvania School of Law, in collaboration with Andrew Maynard and colleagues at the University of Michigan School of Public Health, to use "solution-focused risk assessment" (SFRA), a new decision-making paradigm, to evaluate five current, but very different, applications of synthetic biology.

Over the course of 15 months, the team will synthesize information on the risks and risk-reduction benefits for the control of dengue fever with modified A. aegypti mosquitoes; the production of ethanol by engineered algae; the treatment of pulmonary arterial hypertension using pharmaceuticals; the production of isoprene; and the use of bacterial sensors to detect arsenic in water.

For each case study, the team will compare the risks and risk-reduction benefits of competing technologies and products, reviewing the extant literature and interviewing developers and other stakeholders. Finkel and colleagues expect to publish between three and five peer-reviewed papers, produce a short report for policymakers, disseminate their findings on social media, and hold a one-day policy briefing in Washington, D.C.

University of Pittsburgh Medical Center

Baltimore, MD

$450,000 over 18 months to assess the state of affairs in synthetic biology governance, articulate next steps for funders and policymakers, and evaluate the Foundation's Synthetic Biology initiative.

Project Director: Gigi Kwik Gronvall, Senior Associate

This grant funds an 18-month project led by Gigi Kwik Gronvall of the Center for Biosecurity of the University of Pittsburgh Medical Center to assess the global state of affairs in synthetic biology governance, examining achievements in the past several years to identify and address risks associated with synbio research; articulate challenges and priorities for leaders, scholars, and practitioners to advance responsible stewardship of synbio; and conduct a formal program evaluation of the Sloan Foundation Synthetic Biology initiative's impact on synbio governance and risk reduction, the effectiveness of its operational processes, and lessons learned. The Center will conduct primary research, interview leading scientists and thought leaders, develop and publish a book, share their findings at a half-day event in Washington, D.C., and conduct briefings of key leaders of the U.S. government and international institutions.

Officer Grants

BioBricks Foundation, Inc.

Cambridge, MA

$100,000 over 10 months to enhance discussion of ethical, risk governance, policy, and societal dimensions at the sixth annual international meeting of the synthetic biology community.

Project Director: Drew Endy, Co-Chair

Montana State University

Bozeman, MT

$10,000 over 5 months to provide partial support for a symposium on decision making under uncertainty: risk assessment and the best available science.

Project Director: Gina K. Himes Boor, Assistant Research Professor

Other STEM Research Grants

The Foundation occasionally makes research grants outside its normal grantmaking programs when a unique opportunity is presented to benefit society or advance the state of scientific knowledge. The following grants made in 2013 do not fall under the Sloan Foundation's active grantmaking programs.

Trustee Grants

University of California, Berkeley
Berkeley, CA
$200,000 over 24 months to conduct preliminary research on the chemical emissions from human occupancy of indoor spaces.
Project Director: William W. Nazaroff, Daniel Tellep Distinguished Professor

This grant supports a joint project by environmental engineer William Nazaroff and atmospheric chemist Allen Goldstein at the University of California, Berkeley to study chemical emissions from human occupancy in indoor spaces. Nazaroff and Goldstein will develop suitable sampling and analysis protocols for simultaneous indoor and outdoor measurements of airborne gaseous and particulate species and measure indoor and outdoor air concentrations in university classrooms, both while vacant and while occupied. Using these measurements, they will develop models to compute emission rates for a spectrum of organic and inorganic chemicals associated with human occupancy. The team expects to produce at least two peer-reviewed articles and will present their findings at national and international meetings. They will also prepare a short report that outlines important research questions and obstacles to be overcome in order to advance our understanding of indoor chemistry. Grant funds also provide support for the training of one postdoctoral fellow.

University of Colorado, Boulder
DENVER, CO
$200,000 over 24 months to investigate the gas-particle-surface chemistry of organic chemicals in indoor environments.
Project Director: Paul J. Ziemann, Professor

Funds from this grant support the work of chemists Paul Ziemann and Jose-Luis Jimenez of the University of Colorado, Boulder to improve our fundamental scientific understanding of the basic chemistry of aerosols in indoor environments. Using state-of-the-art instrumentation and methodology, Ziemann and Jimenez will measure the chemical composition of unperturbed and aged gases, aerosol particles, and surfaces in two to three homes and buildings; conduct laboratory studies of gases, aerosols, and surface films formed from reactions of organic chemicals commonly found in indoor air and on human occupants with O3 and NO3 radicals, water, and acids; and begin to develop theoretical models that explain these chemical reactions.

Because environmental chemistry to date has focused virtually exclusively on the reactions taking place outdoors, the supported research fills a lacuna in our scientific understanding of the world.

University of Toronto
TORONTO, CANADA
$200,000 over 24 months to conduct preliminary research on the chemistry occurring on indoor surfaces.
Project Director: Jonathan Abbatt, Professor

Funds from this grant support a project by Jonathan Abbatt, professor of chemistry at the University of Toronto, to conduct preliminary research on the chemistry occurring on indoor surfaces. Indoor surfaces are covered by films of semi-volatile chemical species that arise through the deposition of particulates, oils, and gas-phase oxidation products. This layer is known as the semi-volatile surface layer (SVSL). Abbatt's research will address three fundamental issues associated with indoor SVSLs. First, what is the chemical composition of indoor SVSL's, and how is it influenced by deposition time and location? Second, how reactive are indoor SVSL's as a function of environmental conditions, such as relative humidity? Third, what analytical techniques are well suited for the chemical study of indoor SVSLs?

Abbat will conduct studies on both model and genuine surfaces using a variety of analytical techniques including infrared spectroscopy, nuclear magnetic resonance spectroscopy, and Direct Analysis in Real Time-Mass Spectrometry (DART-MS), a new technology that has not yet been applied to the study of indoor chemistry.

Officer Grants

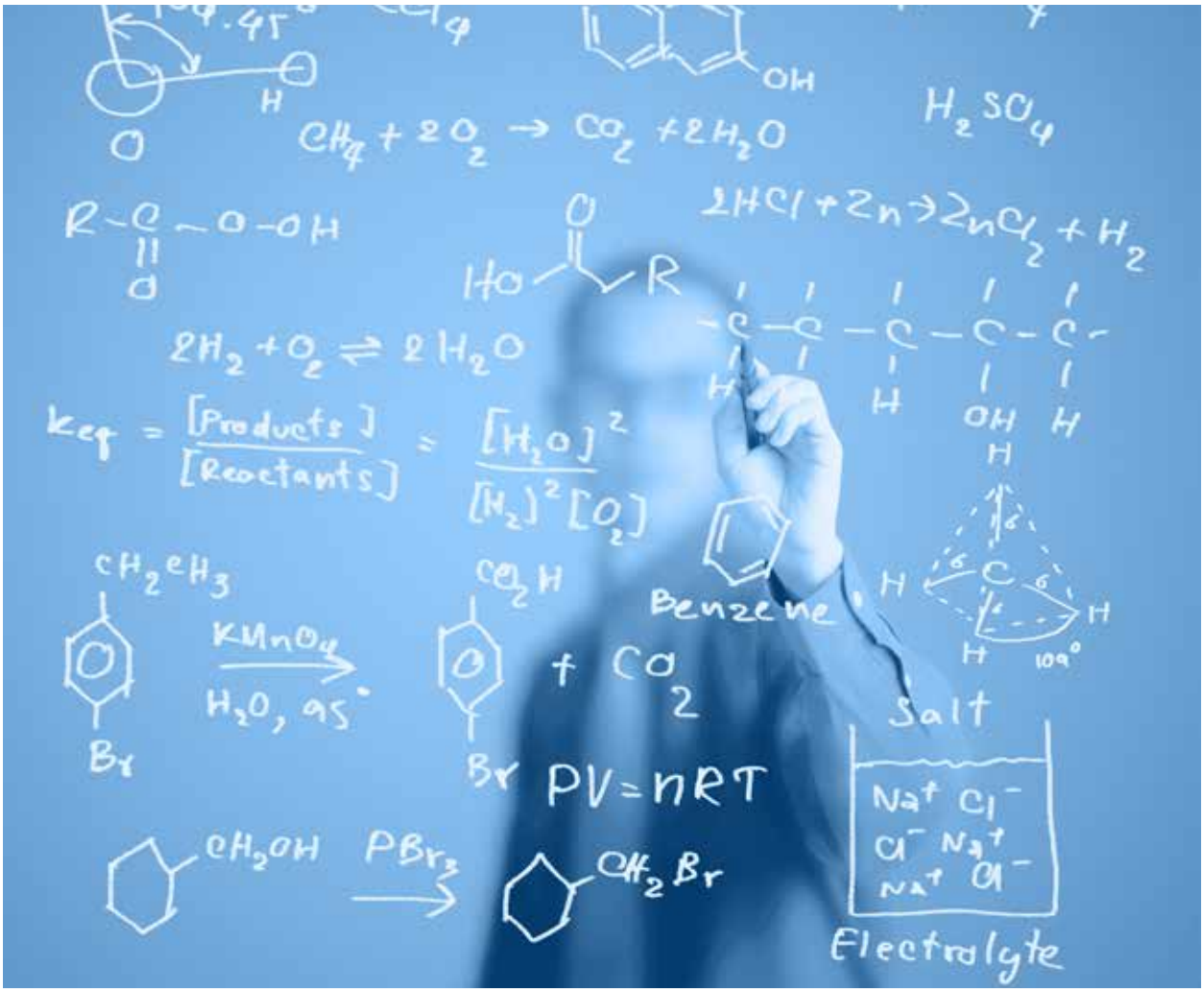
American Academy of Arts and Sciences
CAMBRIDGE, MA
$50,000 over 18 months to advance thinking about how the nation can improve policymaking in areas related to science and technology.
Project Director: Neal F. Lane, Professor

Brandeis University
WALTHAM, MA
$25,000 over 6 months to provide partial support for the 2013 Sloan-Swartz Annual Meeting on Computational Neuroscience.
Project Director: Eve E. Marder, Director

National Academy of Sciences
WASHINGTON, DC
$125,000 over 4 months to strengthen the National Academy of Sciences as it celebrates its 150th anniversary.
Project Director: Kenneth R. Fulton, Executive Director

National Academy of Sciences
WASHINGTON, DC
$17,886 over 3 months to provide partial support for a scoping meeting to examine fundamental shifts in life science.
Project Director: Katherine Bowman, Senior Program Officer

Polytechnic Institute of New York University
BROOKLYN, NY
$20,000 over 5 months to hold a research conference on the mathematical themes in Dürer's Melancolia prints as part of a celebration of their 500th anniversary.
Project Director: David V. Chudnovsky, Professor, Co-Director



STEM Higher Education

Education & Professional Advancement for Underrepresented Groups

Program Director: Elizabeth S. Boylan

Blacks, Hispanics, American Indians/ Alaska Natives, and women are among the groups that are underrepresented in the physical and natural sciences, technology, engineering, and mathematics. Grantmaking in this Foundation program aims to assist efforts to diversify the U.S. Ph.D. degree-holding workforce by increasing the recruitment, retention, and graduation of underrepresented doctoral students in STEM, especially in fields where national trends document persistent underrepresentation. The ultimate goal of this program is to change the U.S. STEM workforce (academic, corporate, governmental, NGO) so that its demographic characteristics are representative of the U.S. population, closing the achievement gaps that exist between the majority and underrepresented minority populations in STEM.

Grantmaking is divided into two major initiatives:

In the **Sloan Minority Ph.D. program (MPHD)**, the Foundation partners with colleges and universities with a demonstrated commitment to successfully recruiting and graduating minority Ph.D. candidates in STEM fields in the effort to expand and institutionalize initiatives aimed at fostering the success of underrepresented graduate students. Grants have supported the creation of five *University Centers of Exemplary Mentoring*, institution-wide centers that empower minority STEM students through providing schol-

Dr. Shenette Kydd receives an award from Dr. Ansley Abraham at the 2013 Compact for Faculty Diversity Institute on Teaching and Mentoring. Dr. Kydd, a scholar supported through the Sloan Minority Ph.D. program, was honored for completing her doctorate in Industrial Engineering from the University of Texas at Arlington. (PHOTO COURTESY OF SOUTHERN REGIONAL EDUCATION BOARD)

arships, mentoring, training, and professional development support. Other grants support *Programs of Exemplary Mentoring*, select high-quality STEM programs with department-wide initiatives to successfully recruit and educate minority scholars.

Grant funds in this program primarily provide scholarships to minority students. Additional monies provide support for administrative and organizational activities, recruitment efforts, and professional development programming and initiatives.

In the **Sloan Indigenous Graduate Partnership (SIGP)**, the Foundation provides scholarships and administrative funds to four regional centers that foster supportive, interconnected communities devoted to successfully training American Indian and Native Alaska graduate students in STEM Master's and Ph.D. programs.

The MPHD and SIGP programs are administered by longtime Foundation partner, the National Action Council for Minorities in Engineering (NACME), which receives applications, selects students for scholarships, administers awards, and supports recruitment efforts by participating faculty.

A limited number of grants support institutional programs devoted to the professional advancement of members of underrepresented groups in academic careers.

Trustee Grants

New York University

New York, NY

$444,229 over 36 months to launch a pilot program, the Ph.D. Excellence Initiative, to change the face of economics departments in the United States by identifying, training, and mentoring high-achieving students of color, preparing them for the rigors of Ph.D. study in the field.

Project Director: Peter Blair Henry, William R. Berkley Professor of Economics and Dean

The rate of underrepresented minority (URM) doctoral production in economics is dismal: an average of only 12 doctorates per year were awarded to blacks between 2001 and 2011, down from an average of 18 per year in the preceding five years. This grant supports a pilot initiative by New York University economist Peter Henry, dean of the Stern School of Business, to increase the number of economics doctorates awarded to underrepresented minority students through providing intensive, high-quality mentorship to promising URM students in economics.

Over three years, Henry will recruit six high-achieving, high-potential students of color as they graduate from college and offer them an intensive, full-time post-baccalaureate research apprenticeship where they will take selected NYU courses and develop one or more projects chosen specifically to result in co-authoring articles with Henry. Supported students will also receive peer support and mentoring from former mentees in Henry's program. Henry will also assess student progress and compile program documentation to share with others in the economics profession in the hopes that his program, if successful, can be replicated in other settings.

Yale University

New Haven, CT

$539,107 over 24 months to test the impact of interventions on both explicit (consciously held) and implicit (automatic or unintended) gender biases; ultimately, to increase the participation of women in science by reducing bias.

Project Director: Jo Handelsman, Frederick Phineas Rose and HHMI Professor

The grant provides support for a project headed by Yale biologist Jo Handelsman to find targeted interventions that increase equitable decision making and overcome the effects of explicit and implicit gender bias in the many review processes that are an essential part of academic science. Leading a multidisciplinary team, Handelsman will conduct two experiments comparing interventions designed to mitigate explicit bias, implicit bias, or both (hybrid). Depending on which intervention is found to be most effective, the team will then develop, evaluate, and distribute a training guide, and publish their results. Prospective audiences for the training guide include faculty, staff, and students in campus diversity training settings; graduate students in "responsible conduct of research" courses; faculty search committees; and senior academic administrators responsible for university personnel practices.

Grants Made Against Prior Authorizations

In March 2013, the Board of Trustees authorized the expenditure of up to $3,835,000 to support expected fellowship and administrative obligations for a limited number of high-impact University Centers of Exemplary Mentoring committed to diversity and equity in STEM educational attainment. The following grant was made against this previously authorized fund.

National Action Council for Minorities in Engineering, Inc.

White Plains, NY

$3,835,000 over 60 months to cover expected obligations to be incurred by NACME to provide phase 1 transitional support for the Sloan Minority Ph.D. program as campus programs compete for new multiyear grants for University Centers of Exemplary Mentoring or Programs of Exemplary Mentoring.

Project Director: Aileen Walter, Vice President, Scholarship Management.

Officer Grants

American Society for Engineering Education

Washington, DC

$14,391 over 4 months to produce a series of video segments to serve as a catalyst for engineering deans, chairs, and faculty to discuss issues related to specific impediments to increasing diversity, and strategies to overcome such impediments.

Project Director: Ashok Agrawal, Director, Outreach and Engagement

American Society for Engineering Education

Washington, DC

$5,434 over 3 months to capture for later webcasting a panel discussion on diversifying engineering faculty and administrators (department chairs/heads, associate deans, and deans) to be held at the April 2013 Engineering Deans Institute in New York City.

Project Director: Ashok Agrawal, Director, Outreach and Engagement

University of Arizona

Tucson, AZ

$123,050 over 12 months to plan for a new collaborative direction for the four campus groups that now constitute the Sloan Indigenous Graduate Partnership (SIGP).

Project Director: Maria Teresa Velez, Associate Dean, Graduate College

Association of Public and Land-Grant Universities

Washington, DC

$20,000 over 1 months to create more robust deal flow as measured by the launching of new ventures, increased number of tech entrepreneurs at both the faculty and student levels, and increased advocacy for innovation, commercialization, and tech-entrepreneurial activities.

Project Director: John Michael Lee, VP, Office for Access and Success

University of California, Davis

DAVIS, CA

$20,000 over 24 months to maintain the 16 percent minority enrollment rate in the department of chemistry and to determine whether providing small amounts of funds to doctoral students when they initially arrive at the university can maintain the small dropout rate.

Project Director: William Jackson, Distinguished Research and Emeriti Professor

University of California, Los Angeles

LOS ANGELES, CA

$20,000 over 19 months to support the 2014 Blackwell-Tapia Conference that seeks to address the underrepresentation of minorities in the mathematical sciences.

Project Director: Russell Caflisch, Director

Keystone Symposia on Molecular and Cellular Biology

SILVERTHORNE, CO

$78,794 over 9 months to enhance the Fellows' success rates for grant applications, provide Fellows with problem-solving techniques that can be used to address diversity challenges, and teach Fellows the behaviors and strategies which contribute to success.

Project Director: Laina King, Keystone Symposia on Molecular and Cellular Biology

Skidmore College

SARATOGA SPRINGS, NY

$74,980 over 15 months to reduce science faculty members' explicit (consciously held) and implicit (automatic or unintended) gender biases.

Project Director: Corinne Moss-Racusin, Assistant Professor

The Science of Learning STEM: A Focus on Student Learning and Performance

Program Director: Elizabeth S. Boylan

Grantmaking in this program aims to improve the quality of higher education in STEM fields through the support of original, high-quality, hypothesis-driven research on the factors affecting undergraduate and graduate student learning and retention in STEM fields.

Grants in this program primarily support consortia of colleges, universities, and other educational institutions with plans to study the impact and effectiveness of new approaches to STEM pedagogy paired with a commitment to institutionalize successful initiatives and disseminate results to the wider academic community. Successful proposals are expected to be hypothesis-driven, sensitive to the heterogeneity of STEM disciplines, attentive to differences in student demographics and motivations to pursue STEM majors and careers, and concerned with the dissemination and portability of results to other institutions.

Trustee Grants

University of Wisconsin, Madison
Madison, WI
$550,000 over 24 months to enable better sharing of pedagogical materials, strategies, and data on usage and impact by the Center for the Integration of Research, Teaching, and Learning through the development and deployment of an integrated open source IT system that connects and aggregates data from diverse online tools.
Project Director: Robert Mathieu, Director, Center for the Integration of Research, Teaching, and Learning

The University of Wisconsin at Madison's Center for the Integration of Research, Teaching, and Learning (CIRTL) is a multi-institutional center dedicated to training graduate students how to teach more effectively. Launched in 2003 as a collaborative effort between four universities, CIRTL has grown rapidly, now including 22 universities that will collectively graduate some 2,200 future faculty that will have participated in at least one CIRTL offering or training session. Funds from this grant support the construction of a new IT communications infrastructure, the CIRTL Network Commons (CNC), to replace the one that was developed when CIRLT membership was small and when capabilities for online information exchange and collaboration were much less well developed. Products to be supported by the CNC include university dashboards for access to information and tools, social tools to promote community among participants at the 22 member institutions, online community forums and learning spaces, resource sharing tools, course management tools, cognitive tutors to help students learn complex thinking and problem solving skills, and CIRTL event management and registration tools. The CNC will also enable the collection and analysis of usage data to facilitate informed assessment of the impact and effectiveness of CIRTL's programs.

Grants Made Against Prior Authorizations

In June 2012, the Board of Trustees authorized the expenditure of up to $500,000 for a series of small grants to support experiments with curricula and teaching practices that aim to demonstrably improve the quality of student learning in STEM gateway courses and degree programs. The following grants were made against this previously authorized fund.

Association of American Colleges and Universities

Washington, DC

$31,606 over 12 months to host a workshop and distribute a sourcebook that will assist foundation leaders and practitioners to promote alignment between STEM classroom and laboratory practice and what we know about how undergraduates learn.

Project Director: Linda L. Slakey, Senior Fellow

Association of Public and Land-Grant Universities

Washington, DC

$74,865 over 6 months to examine the need and value of establishing a robust network and communication among university-based STEM Education Centers to contribute to transforming undergraduate science, technology, engineering, and mathematics education.

Project Director: Noah Finkelstein, Professor

Massachusetts Institute of Technology

Cambridge, MA

$20,000 over 5 months to share best practices in evaluating teaching and learning in promotion and tenure at some of the nation's top research universities.

Project Director: Daniel Hastings, Cecil and Ida Green Education Professor of Engineering Systems and Aeronautics and Astronautics

Virginia Polytechnic Institute and State University

Blacksburg, VA

$70,000 over 54 months to determine whether participation in targeted programming can encourage development of innovative thinking skills and if in doing so, facilitate retention to degree among engineering undergraduates.

Project Director: Bevlee A. Watford, Associate Dean for Academic Affairs

In October 2011, the Board of Trustees authorized the expenditure of up to $500,000 for exploratory grants in mathematics that relate to the Foundation's other grantmaking priorities. The following grants were made against this previously authorized fund.

Institute for Advanced Study

Princeton, NJ

$124,995 over 12 months to organize and launch efforts to reform postsecondary mathematics education.

Project Director: Phillip Griffiths, Professor Emeritus of Mathematics and Former Director

Officer Grants

Business-Higher Education Forum

Washington, DC

$18,000 over 5 months to undertake a series of research activities on the field of data science, focusing on work force needs and the state of undergraduate education in this emerging area, culminating in a workshop attended by New York-based thought leaders.

Project Director: Stephen A. Barkanic, Senior Director, STEM Policies and Programs

Worcester Polytechnic Institute

Worcester, MA

$125,000 over 12 months to assemble initial employment and career progression data on approximately 3,000 graduates of Professional Science Master's (PSM) degrees for program improvement purposes.

Project Director: Sheila Tobias, Science Education Consultant

Public Understanding of Science, Technology, & Economics

Books

Program Director: Doron Weber

Books are critical entry points for the entire Public Understanding program. They allow us to delve deeply into any subject and uncover or synthesize new knowledge while imparting the profoundest understanding of issues and individuals. Books also frame important questions and concerns for the public in an enlightened and accessible context. The Foundation remains committed to books, both for their intrinsic value as a matrix of uniquely rich experience and deep learning, and for their adaptability to other media for broader dissemination and popularization. The Foundation supports books that explain the scientific basis of confusing or controversial issues, that profile scientific and technological figures, and that relate the relevance of technology to daily life. Notable books supported by the Foundation over the years include *The Making of the Atomic Bomb* by Richard Rhodes, *The Hot Zone* by Richard Preston, *Collapse* by Jared Diamond, *Galileo's Daughter* by Dava Sobel, *American Prometheus* by Kai Bird and Martin Sherwin, *In Search of Memory* by Eric Kandel, and *The Poisoner's Handbook* by Deborah Blum. In 2013, three Sloan books were published—Edward Ball's *The Inventor and the Tycoon* about Eadweard Muybridge, Bernard Carlson's biography of Nikola Tesla, *Tesla: Inventor of the Electrical Age,* and *The Correspondence of Charles Darwin, Volume 19,* part of a comprehensive series. New book grants in 2013 were made to support a book on the history of the bed bug and its impact on scientific research; a book about the science and history of vitamins; a science blogging guide; a book on failure and its role in science; and a biography of physicist Enrico Fermi.

Nikola Tesla in front of the spiral coil of his high-voltage transformer at East Houston St., New York (SOURCE: WIKIMEDIA COMMONS)

Grants Made Against Prior Authorizations

In June 2012, the Board of Trustees authorized the expenditure of up to $400,000 to provide small grants for promising new books on science, technology, engineering, and mathematics. In December of 2013, the Board of Trustees authorized the expenditure of an additional $400,000 for the same purpose. The following grants were made against these previously authorized funds.

Brooke Borel
Brooklyn, NY
$40,000 over 4 months to support the research and writing of a book on the history of the bed bug and its impact on scientific research, pest control, and the general public.
Project Director: Brooke Borel, Writer

Catherine Price LLC
Philadelphia, PA
$50,675 over 6 months to support for travel and research on a book about the science and history of vitamins.
Project Director: Catherine Price, Writer

Christie Wilcox
$25,000 over 2 months to support the research and writing of a comprehensive science blogging guide for writers of all experience levels.
Project Director: Bora Zickovic, Blogs Editor

David Mindell
Cambridge, MA
$50,000 over 8 months to support the research and writing of a book about automation and robotics.
Project Director: David Mindell, Writer

Katherine Eban Finkelstein
Brooklyn, NY
$50,000 over 13 months to support the research and writing of a book on the dangers of America's use and manufacturing of generic drugs.
Project Director: Katherine Eban Finkelstein, Writer

Stuart Firestein
New York, NY
$40,000 over 12 months to support the research and writing of a book on failure and its role in science for the general public.
Project Director: Stuart Firestein, Professor

Gino Segre
Philadelphia, PA
$16,100 over 36 months to support the research and writing of a biography of physicist Enrico Fermi.
Project Director: Gino C. Segre, Writer

Robert Kanigel
Cambridge, MA
$50,000 over 36 months to research and write a biography of Jane Jacobs.
Project Director: Robert Kanigel, Writer

Yale University
New Haven, CT
$25,000 over 8 months to support the research and writing of a book and an associated website on the formation and development of the human embryo with 70 visual metaphors to illustrate basic concepts.
Project Director: Ben-Zion Shilo, Professor

Film

Program Director: Doron Weber

Launched in 1996—before the Oscar-winning *A Beautiful Mind,* the Emmy-winning hit *CSI* franchise*, Numbers,* or *The Big Bang Theory*, and before the Tony-winning Broadway hits *Proof* and *Copenhagen*—Sloan's pioneering nationwide film program has flourished and now supports six film schools; three film festivals and four screenplay development partners; select feature film production and distribution outlets; and targeted community building, mentorship, and outreach efforts.

The goal of the film program is to influence the next generation of filmmakers to tackle science and technology themes and characters, to increase visibility for feature films that depict this subject matter, and to produce new films about science and technology and about scientists, engineers, and mathematicians. Film is a universal language and an unrivaled medium for advancing public understanding of scientific and technological enterprise and of the human beings at its center.

In 2013, Sloan's film development pipeline of multiple program partners produced three more feature films: *Computer Chess,* which received grants through Sundance and Tribeca Film Institutes and premiered in theatres across the country in 2013, *A Birder's Guide to Everything* which received development funding through Tribeca and Sundance Institutes and opened in theatres in 2014, and *Druid Peak,* which received the $100,000 First Feature Prize at NYU and premiered at festivals in 2013. This brings the total number of completed Sloan films nurtured and developed by our pipeline to eight with two additional films—*2030* and *Basmati Blues*—set to premiere in 2014. Four additional films are expected to shoot in the next year: *Prodigal Summer,* co-written by best-selling novelist Barbara Kingsolver and director Nicole Kassell (*The Woodsman)* which went through the Sundance labs with Sloan support; *The Man Who Knew Infinity* which stars Dev Patel and Jeremy Irons, based on a book by Sloan-supported author Robert Kanigel; *Unmanned,* which received funding from the American Film Institute, Tribeca, Film Independent, and Hamptons International Film Festival; and *Experimenter,* starring Peter Saarsgard with Michael Almereyda directing.

Particle Fever, about the Large Hadron Collider, received a Sloan grant and will open

Spencer Treat Clark and Andrew Wilson play father and son in Druid Peak. (CREDIT: RACHEL MORRISON, DIRECTOR OF PHOTOGRAPHY)

in theatres in early 2014, and BAM's Sloan-supported documentary about the avant-garde opera *Einstein on the Beach* is planning to premiere at festivals in 2014. *Future Weather,* developed through Sloan's film pipeline at Film Independent, Tribeca, and the Hamptons International Film Festival, was selected as one of three narrative films for the State Department's 2013 American Film Showcase program. *Decoding Annie Parker,* about Mary-Claire King and the discovery of the BRCA-1 gene won the Sloan Prize at the Hamptons International Film Festival and will be opening in theatres in May 2014. The 2013 $100,000 Sloan-NYU First Feature Award went to *Radium Girls,* about teenage girls in the 1920s working at the U.S. Radium Factory.

In an effort to gain distribution for Sloan films, the Foundation has expanded the Coolidge Corner Theatre's Science on Screen effort into a nationwide program that has reached over 40 theaters across the country, while being presented annually to a consortium of 450 art house theater owners. In 2013, the program awarded twenty more grants to art house cinemas in Georgia, Florida, Tennessee, New Mexico, and more, to start their own programs and screen three films a year, including one Sloan winner, pairing each film with an introduction by a scientist.

Trustee Grants

Carnegie Mellon University

Pittsburgh, PA

$195,000 over 25 months to encourage top film students to write screenplays about science and technology.

Project Director: Robert Handel, Dramatic Writing Head and Option Coordinator

This grant provides two years of continued support for a series of initiatives at the Carnegie Mellon School of Dramatic Writing to encourage its film students to write high-quality, accurate screenplays about science and technology or that feature scientists, engineers, or mathematicians as major characters. Funded activities include a yearly symposium for film students introducing them to internationally recognized scientists; two semesters of training in screenwriting; guest-faculty workshops by accomplished mentor screenwriters; a program pairing students with scientific advisors to ensure the accuracy of scripts' scientific content; the presentation of two awards for the best student science-themed script; and a variety of professional development activities, including industry showcases of student work in both Los Angeles and New York.

Coolidge Corner Theatre Foundation

Brookline, MA

$480,606 over 24 months to support Coolidge Corner Theatre's Science on Screen program and expand its reach to another 40 theaters nationwide.

Project Director: Denise Kasell, Executive Director

The Science on Screen program, based at Boston's Coolidge Corner Theatre, creatively pairs screenings of classic or new release films with discussion of relevant scientific topics by notable scientists or technologists. Pairings featured in the Science on Screen program to date include a discussion of viral outbreaks paired with a screening of *12 Monkeys*, a discussion of dog behavior and intelligence paired with a screening of *Best in Show*, and a discussion of the feasibility of time travel paired with a screening of *Bill & Ted's Excellent Adventure*. This two-year grant to the Coolidge Corner Theatre Foundation will fund a small grant program designed to expand Science on Screen, allowing Coolidge to provide small grants to independent cinemas around the country that help offset the costs of running and publicizing their own Science on Screen series. Over the next two years, it is anticipated that at least forty new independent cinemas will sign on to the program, bringing the number of participating theaters nationwide to nearly 100.

Hamptons International Film Festival

East Hampton, NY

$186,467 over 12 months to commission and spotlight science and technology films and develop science and technology screenplays into production.

Project Director: Anne Chaisson, Executive Director

This grant provides one year of continued support to the Hamptons International Film Festival for a variety of interconnected activities to promote the development, production, and distribution of accurate, high-quality, science-themed screenplays and feature films. Supported activities include a feature film prize given to the best science-themed film submitted to the Festival; an accompanying panel and reception; a five-day screenwriters' lab to assist writers with screenplays in development; a series of screenings of science-themed works in and around New York City; and a production grant to assist with the promotion of a high-quality science-themed film.

Museum of the Moving Image

Astoria, NY

$358,170 over 36 months to maintain and expand a go-to site for the Sloan Film program that showcases Sloan-winning films and filmmakers, features original articles and status updates, and serves as a science and film web hub.

Project Director: Carl Goodman, Deputy Director and Director Digital Media

The Museum of the Moving Image (MoMI) hosts the Sloan Science and Film website, the most comprehensive single resource documenting outputs from Sloan's Film program, including a growing library of 439 Sloan film projects; 282 screenplays; and 76 Sloan-winning films presented by the Hamptons, Sundance, and Tribeca Film Festivals. In addition to the video content and award history the site catalogues, the website features articles about Sloan films; status updates about members of the Sloan film community; and general interest articles, news items, and features about science as depicted in film and television in the broader culture. This grant provides three years of continued support to MoMI for hosting and curation of the

Sloan Science and Film website. Additional funds support a series of science and film events hosted by MoMI during the World Science Festival and the Imagine Science Festival.

Sundance Institute

BEVERLY HILLS, CA

$500,000 over 24 months to support a science and technology film program at Sundance that includes film fellowships, film prizes, and film panels and outreach.

Project Director: Michelle Satter, Director, Feature Film Program

This grant funds two years of continued support to the Sloan Science-in-Film initiative by the Sundance Institute, which runs the Sundance Film Festival, the premiere independent film festival in the U.S. Funds will support five annual components of the initiative: a commissioning grant for a high-quality feature film script that involves science, engineering, or mathematics; a feature film fellowship for a talented filmmaker interested in science-themed narratives; a $20,000 best Science and Technology feature film prize; a moderated panel discussion by filmmakers and scientists, and an awards reception.

Tribeca Film Institute

NEW YORK, NY

$761,744 over 24 months to develop new science and technology films for production and to hold panels and readings at the Tribeca Film Festival.

Project Director: Natalie Mooallem, Manager, Feature Programming

Funds from this grant provide two years of funding to the Tribeca Film Institute for its ongoing efforts to support films and filmmakers that explore scientific and technological themes. With Sloan Foundation support, the Institute will award up to $150,000 each year to between three and six compelling narrative filmmaking projects that explore scientific, mathematical, and technological themes and storylines, or that feature a leading character who is a scientist, engineer, innovator, or mathematician. In addition to such financial support, Tribeca provides selected filmmakers with professional guidance and mentorship, including project notes, networking assistance, and exposure to financing and distribution executives. Funds from this grant also support a series of high-profile events at the Tribeca Film Festival, including a screening and discussion series, readings of in-progress scripts exploring scientific and technological themes, and an awards ceremony and reception honoring winning filmmakers.

Women Make Movies, Inc.

NEW YORK, NY

$247,546 over 13 months to support wide theatrical release, enhanced outreach, and an educational campaign around the film Particle Fever*, a dramatic documentary about the Large Hadron Collider.*

Project Director: David Kaplan, Professor

In 2007, Professor David Kaplan started filming events inside a 17-mile tunnel containing the largest scientific experiment ever conducted by humankind: the Large Hadron Collider. A milestone in scientific collaboration involving more than 10,000 scientists from 100 countries, the Large Hadron Collider is the largest, most powerful high-energy particle accelerator ever constructed and its operation led to the much celebrated confirmation of the existence of the Higgs boson in 2012—and to a Nobel Prize for Peter Higgs. Kaplan has turned his footage into a documentary about the project, *Particle Fever*, an affecting portrait of scientists and a beautiful illustration of the value and validity of basic research. Funds from this grant provide support for outreach and promotion of *Particle Fever*, enabling the producers to build an online community using social media, host live events in the run-up to the official theatrical release, and promote the film in digital and print media.

Radio

Program Director: Doron Weber

The Foundation's goal with radio is to show the centrality of science and technology to our lives, to highlight the intersection between science and the arts, and to use storytelling to explore complex themes in science. Radio is a leading medium in its mass market penetration, and Sloan reaches more people through radio than any other medium.

The Foundation supports original high quality programming on a range of radio programs tackling science, technology, and economics. Sloan grants started the science and technology desk on National Public Radio and on Public Radio International's *The World*, and have supported feature radio series, such as the Peabody-Award winning *The DNA Files,* and sponsored science coverage on commercial radio, such as *The Osgood File*. Current partnerships include support for *Radiolab, Studio 360, Science Friday, PRX, BURN: An Energy Journal,* and *Planet Money*. The Foundation also supports *LA Theatre Works* to record full-length science plays with A-list actors as part of a series called *Relativity*, broadcast on public radio. The recordings include numerous plays originally commissioned by the Foundation's theater program.

In 2013, Sloan made a new planning grant to New York Public Radio to support the research and piloting of a new Healthcare Reporting Unit which will cover New York healthcare policy and economics and the impact of the Affordable Care Act on consumers. *Radiolab,* supported by Sloan since inception, created an interactive live show that drew full houses at venues across America. *BURN: An Energy Journal,* an award-winning public radio show about energy hosted by Alex Chadwick, is currently broadcast on over 250 stations, and has won awards for its balanced and nonpartisan treatment of controversial energy issues. Sloan made a second grant to *PRX,* an award-winning public media company, to experiment with new voices outside the radio mainstream—presenting science content on their signature shows such as *The Moth, 99% Invisible,* and *PRX Remix*—and to try new approaches to presenting STEM content, including a new podcast hosted by a female scientist.

Trustee Grants

National Public Radio, Inc.

Washington, DC

$300,000 over 25 months to support an innovative, on-air, and online multimedia reporter at the Science Desk for two years before NPR covers this new, full-time position.

Project Director: Anne Gudenkauf, Senior Supervising Editor, Science Desk

Funds from this grant provide salary and administrative support for a full-time on-air and online multimedia storyteller working at National Public Radio's (NPR) Science Desk. The new position, originally funded with Sloan support in 2012 as a one-year experiment, is tasked with enhancing NPR's scientific coverage by supplementing traditional reporting with original animations, blog posts, illustrations, infographics, and video content, bringing NPRs high-quality reporting to new, digital audiences. This grant provides two years of bridge funding for the position after which it is anticipated NPR will incorporate the position into its yearly operating budget.

New York Public Radio

New York, NY

$750,000 over 36 months for production and enhanced distribution of Radiolab*, an innovative and popular science-themed radio show, via multiple platforms.*

Project Director: Ellen Horne, Executive Producer

This grant provides three years of continued support for the production and distribution of WNYC's *Radiolab*, the popular award-winning radio show hosted by Jad Abumrad and Robert Krulwich. Each year for the next three years, the *Radiolab* team will use grant funds to produce 12 to 15 hours of original audio-based scientific content for broadcast on the show, including 10 hour-long episodes, 16 podcasts, 2 interactive "activities" for web audiences, and between 8 and 10 real-time science demonstrations to be used in the annual *Radiolab* live tour. Additional funds will allow expansion of the weekly *Radiolab* broadcast to include 500 radio stations.

Alex Chadwick recording on Alton Street in Miami Beach during the King Tide in October, 2013.
(PHOTO COURTESY OF SOUNDVISION PRODUCTIONS® FOR *BURN: AN ENERGY JOURNAL*)

New York Public Radio

NEW YORK, NY

$750,000 over 36 months to support the production and distribution of science and technology coverage on Studio 360*, an award-winning arts and culture show.*

Project Director: David Krasnow, Senior Editor

This grant provides three years of support for WNYC's award-winning radio show, *Studio 360*, hosted by Kurt Andersen, to continue its popular Science and Creativity series. *Studio 360* features the latest research and findings in science and technology, relating these developments to arts, culture, and everyday life. Grant funds support a large, diverse board of science advisors for the program, a major planning meeting that flies in experts from around the country, a science-programming consultant, high-quality freelance reporting, and outside contributors who assist the full-time staff. Also supported are a series of live events which aim to engage a younger, more diverse audience than traditional radio broadcasts.

New York Public Radio

NEW YORK, NY

$125,000 over 6 months for a planning grant for WNYC's new Healthcare Reporting Unit to research and pilot episodes targeted at New York healthcare policy and the impact of the Affordable Care Act on consumers.

Project Director: Jim Schachter, Vice President of News

Funds from this grant support the development of a new Healthcare Reporting Unit at New York City radio station WNYC. The contemplated unit will use personal stories to spotlight issues in American healthcare with an emphasis on research and policy, taking a consumer-friendly approach that links lived experience to broader systemic issues in the health care system through documentary-style reports, banded segments for local and national news programs, hour-long specials, podcasts, and partnerships with leaders in healthcare journalism. The grant will provide funds for convening a diverse panel of experts, assembling an advisory board, and conducting research for targeted reporting on healthcare policy in New York and surrounding states, including research on the impact of the Affordable Care Act on consumers.

Science Friday Initiative, Inc.

NEW YORK, NY

$684,117 over 36 months to support Science Friday*, focusing on science and the arts, including radio broadcasts, digital science videos, blog posts, and associated media.*

Project Director: Ira Flatow, President

Funds from this grant provide three years of continued operational and programming support to *Science Friday*, the only regular weekly slot on public radio—two hours long—devoted to all things science. Reaching more than two million people each week via his radio show, podcasts, blogs, online videos, mobile apps, and social media, award-winning host Ira Flatow targets the fertile intersection between science and the arts and has made the show a magnet for filmmakers, playwrights, authors, musicians, sculptors, painters, and digital artists who engage with science. In addition to providing operational support, funds support several new initiatives, including collaborative (audience) art projects, a *Science Friday* book club, a film viewing and discussion series, an artist of the month spotlight, and an annual remote broadcast about science and the arts produced in conjunction with the Foundation-supported Science and Entertainment Exchange.

Television

Program Director: Doron Weber

The Foundation's goal in television is to tell stories and explore subjects, both historical and contemporary, about science and technology, and to portray the lives of the men and women engaged in scientific and technological pursuits. Television continues to be a powerful medium in terms of audience, with public television regularly delivering several million viewers per show.

In 2013, production continued on two of the award-winning *American Experience's* Sloan-supported documentaries slated for broadcast in early 2014—*Tales from the Poisoner's Handbook* and *The Rise and Fall of Penn Station.* The *American Experience* currently has three additional Sloan films in production: on Thomas Edison, the history of tuberculosis, and the great wildfire of 1910. In 2013, Sloan also made a new grant to PBS for the pilot of a six-part, fact-based historical drama about how the Civil War drove innovations in medical science. Sloan also awarded funds to the Tribeca Film Institute to support the research and writing of a mini-series about technology innovator and Hollywood star Hedy Lamarr based on the Sloan-supported book *Hedy's Folly* by Richard Rhodes. *Brains on Trial,* a two-part television broadcast supported by Sloan and hosted by Alan Alda, on the intersection of neuroscience and the law, was broadcast in September 2013 to millions of viewers. *NOVA*,co-producer of a feature-length dramatic film on physicist Lise Meitner, is continuing to raise funds and aims to shoot in 2014. *NOVA* also continued producing the exclusive online web series "The Secret Life of Scientists and Engineers" featuring experts such as Steven Pinker and Mayim Bialik. Kikim Media's grant for production of a three-hour PBS series on the history of Silicon Valley is in production. Sloan's grant to National Geographic to provide co-funding for a television documentary, 3D feature film, and 3D IMAX release on James Cameron's historic dive and scientific expedition to the deepest part of the ocean will have its first feature film released in 2014.

Trustee Grants

Greater Washington Educational Telecommunications Association Inc.

Arlington, VA

$1,500,000 over 24 months for high-quality on-air and online coverage of economic and financial topics on the PBS NewsHour.

Project Director: Linda Winslow, Executive Producer

This grant provides two years of continued support for the production and broadcast of high-quality economics, business, and financial reporting on the *PBS NewsHour*. Led by veteran correspondent Paul Solman, the *NewsHour* team will produce approximately 80 five-to-ten-minute video segments on economic and financial topics, distributing them through on-air broadcast, the *NewsHour* website, social media, and various partnerships with partners like the Council for Economic Education and PBS Teachers. Additional original content will be produced and distributed exclusively for web audiences, including blog posts, multimedia features, and a recurring online Q-and-A with Solman himself.

PBS Foundation

Alexandria, VA

$1,000,000 over 12 months as support for the pilot of a six-part, fact-based historical drama about how the Civil War drove innovations in medical science to air on PBS and Video on Demand along with a major educational outreach campaign.

Project Director: Beth Hoppe, Chief Programming Executive

This grant provides partial support for the development and broadcast of a major, fact-based dramatic television series about how the Civil War led to major advances in medical science, including spurring innovations in emergency medicine, surgery, and epidemiology. The bloodiest armed conflict in U.S. history, the Civil War claimed two lives from infection and disease for every life lost in battle. The series will depict historical figures like Dr. Jonathan Letterman, the father of battlefield medicine who developed the ambulance corps and the three-stage evacuation system still in use today. Other characters will include Clara Barton, founder of the American Red Cross; Dr. W.W. Keen, a celebrated neurosurgeon; and pharmaceutical

Brains on Trial with Alan Alda uses a fictitious crime to explore how neuroscience is intersecting with law.
(PHOTO BY MICHAEL J. LUTCH)

entrepreneur Edward Squibb. These figures will provide dramatic examples of how the exigencies created by the need to treat wounded and dying soldiers led to pioneering advances in trauma care, anesthesia, neurosurgery, plastic and reconstructive surgery, and prosthetics.

WGBH Educational Foundation

BOSTON, MA

$2,500,000 over 38 months to research and produce four primetime films on PBS's American Experience *on the role of science, technology, and engineering in history with an engineering iPhone app, interactive website, and ancillary outreach activities.*

Project Director: Mark Samels, Executive Producer

This grant supports the production, broadcast, and promotion of four primetime science-themed documentaries by the popular PBS series, *American Experience*. Supported documentaries include *Edison*, about the life and enormous scientific contributions of the famed American inventor; *Penn Station*, about the ambitious engineering marvel that brought the Pennsylvania Railroad's tunnels and trains under the Hudson River and into Manhattan; *Tuberculosis*, about the rise and fall of the most lethal disease in American history; and *The Great Fire*, about the 1910 wildfire that burned three million acres across Washington, Idaho, and Montana and subsequently gave rise to the conservation movement, the establishment of the U.S. Forest Service, and the battle between Roosevelt and the railroad barons to establish a public, scientifically managed system of national forests. Additional funds from this grant support the development of an interactive mobile app, the Engineering Map of America, that will offer entertaining and educational walking tours of select engineering sites across the country.

Officer Grants

Tribeca Film Institute

NEW YORK, NY

$100,000 over 12 months to support the research and writing of a treatment and first draft of a mini-series about Hedy Lamarr based on Richard Rhodes's book.

Project Director: Natalie Mooallem, Manager, Feature Programming

WNET

NEW YORK, NY

$45,000 over 7 months to support the broadcast of three public television programs to enhance public understanding of science and technology on Richard Heffner's Open Mind.

Project Director: Richard D. Heffner, Producer/Host

Theater

Program Director: Doron Weber

Over the past fifteen years, the Sloan Foundation has developed a nationwide theatre program with participating theatres in many regions anchored by two acclaimed New York City partners—Ensemble Studio Theatre and Manhattan Theatre Club. The Foundation also partners with Playwright's Horizons. The goal of this program is to engage leading playwrights, actors, directors, and producers to create and develop new works for the theater about science and technology, and about scientists, engineers, and mathematicians. The Foundation's seminal theater program, which commissions dozens of new science plays each year and has backed such Tony and Pulitzer Prize-winning works as *Proof* and *Copenhagen*, is recognized as the leading supporter of science plays in the country. To date, the Theater program has received over 2000 submissions for new plays, and has commissioned more than 220 works,and staged more than 60 plays in New York City alone, with dozens more travelling to theaters across the country and abroad, helping to establish a new genre of science theater.

In 2013, Sloan supported two major productions—*The Other Place,* nominated for a Tony, and *The Explorers Club,* nominated for a Drama Desk award—at the Manhattan Theatre Club, bringing the total number of MTC-Sloan productions in the 2012–13 season to three, including two on Broadway. The Ensemble Studio Theatre produced the critically acclaimed Sloan-commissioned work *Isaac's Eye* as part of its 2013 EST-Sloan First Light Festival, which received an extended run due to popular demand. EST's 2014 First Light Festival began in December 2013 and continued through March 2014 featuring the Sloan-commissioned work *Fast Company* as its mainstage production. A previous EST-Sloan play, *Photograph 51,* the story of Rosalind Franklin, is being developed as a film project, with Oscar-winner Rachel Weisz attached. L.A. Theatre Works, which produces and broadcasts radio theatre and has audiences around the world including in China where it reaches millions of listeners each year, recorded Patrick Link's *Headstrong,* supported by Sloan at EST, about brain trauma in professional athletes as part of its Sloan-supported *Relativity* series. It has plans to record three more Sloan-supported works: *The Explorers Club, The Other Place,* and *An Enemy of the People,* all produced at MTC.

Trustee Grants

Ensemble Studio Theatre, Inc.

New York, NY

$1,791,000 over 36 months to commission, develop, produce, and disseminate new science plays in New York and across the country.

Project Director: William Carden, Artistic Director

Funds from this grant provide three years of continued support to New York City's Ensemble Studio Theatre (EST) for the creation and development of new plays that explore scientific or technological themes or feature scientists, engineers, or mathematicians as major characters. EST will commission between 10 and 20 new plays per year from emerging and established playwrights, stage a production of a science-themed play annually, and host the First Light Festival, an annual month-long celebration of science-themed plays that includes panels, workshops, and staged readings of plays in development.

Grants Made Against Prior Authorizations

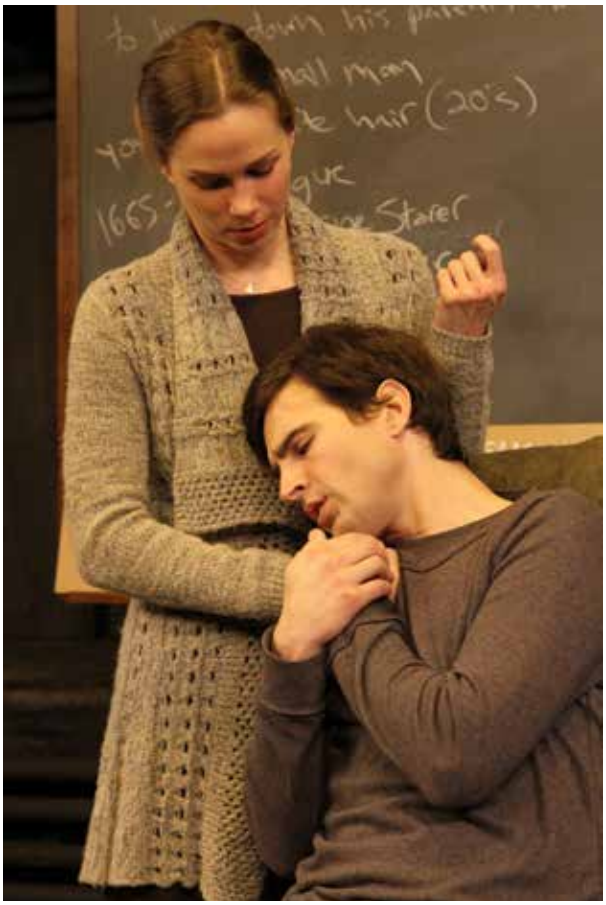
In December 2012, the Board of Trustees authorized the expenditure of up to $425,000 for grants that aim to incentivize the production of more science and technology plays at the Manhattan Theatre Club by offering production support for qualifying plays. The following grants were made against this previously authorized fund.

Manhattan Theatre Club

New York, NY

$125,000 over 4 months to support the production of the Manhattan Theatre Club's science-comedy The Explorers Club.

Project Director: Annie MacRae, Sloan Project Manager



Kristen Bush & Haskell King in *Isaac's Eye* by Lucas Hnath; directed by Linsay Firman. EST/Sloan Project Mainstage 2013. (PHOTO BY GERRY GOODSTEIN)

New Media

Program Director: Doron Weber

This program encompasses a range of initiatives—through museums, the internet, live performances, lectures, and conferences—that aim to bring the "two cultures" together to advance public understanding of science and technology.

Recent grants were made to the Chemical Heritage Foundation to create a chemistry set iPad app; to the Library Foundation of Los Angeles for the scientific component of a month-long multimedia program on the contemporary relevance of Moby Dick, which took place in 2013 featuring over 90 readings, workshops, concerts, panels, and screenings with participation from renowned scientists; and to the Science Festival Foundation for the development and production of the World Science Festival. The 2013 World Science Festival featured four Sloan projects—two Sloan supported films, one program based on the Sloan-supported TV show *Brains on Trial,* and a fourth program featuring Sloan's theatre production *The Explorers Club. False Conviction*, the New York Hall of Science's interactive ebook on the science behind the Innocence Project, was published on the iTunes store in December 2013.

Trustee Grants

Chemical Heritage Foundation

Philadelphia, PA

$410,740 over 12 months to create a chemistry set iPad app for free download that recreates the experience of working with a real chemistry set.

Project Director: Shelley Geehr, Director, Roy Eddleman Institute

This grant funds an ambitious new project by the Chemical Heritage Foundation to build a free mobile app for the iPad that recreates the excitement and educational potential of working with a chemistry set. Structured like a game, the app will instruct users in the principles of chemistry and guide them through a series of increasingly complicated virtual experiments that explore the properties of matter, thermodynamics, gases, and chemical energy. The app will be focused on 12-to-15-year-olds and will be available to download for free. The project is an experiment in how to leverage new developments in information technology and media to advance the public understanding of science.

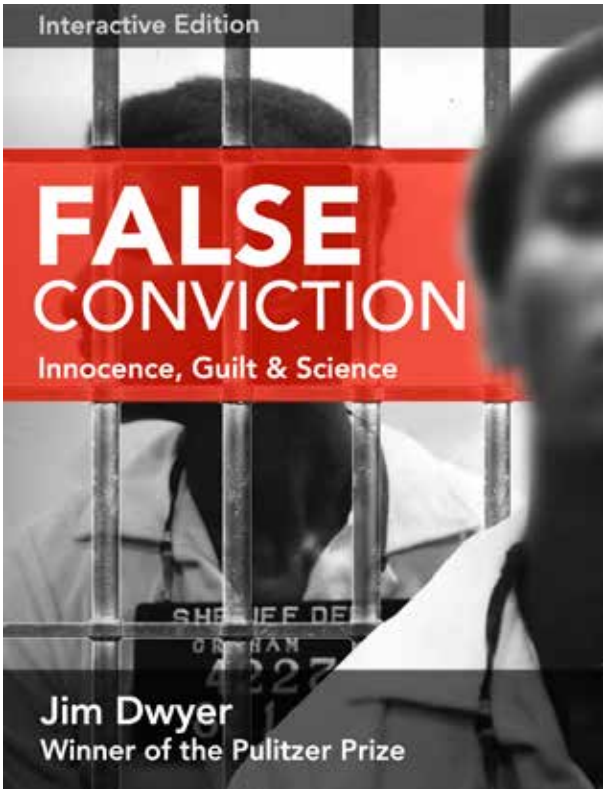
Science Festival Foundation

New York, NY

$1,300,000 over 24 months to support program development and production of the World Science Festival for two years.

Project Director: Tracy Day, Producer/Broadcast Journalist

This grant provides two years of continued support to the Science Festival Foundation for development and production of the World Science Festival, a week-long celebration of all that is fun and fascinating about science. Held each year in New York City, the Festival brings together scientific luminaries, technologists, artists, tastemakers, and the public for a series of panels, lectures, demonstra-



False Conviction is an interactive ebook for iPad about the role of DNA in overturning wrongful convictions.
(PHOTO COURTESY OF THE NEW YORK HALL OF SCIENCE)

tions, exhibitions, and educational events that aim to make manifest how engagement with science is as indispensable to a rich life as other cultural mainstays like music, theater, and literature. Grant funds support the production of the 2014 and 2015 World Science Festivals; additional scientific programming to be produced year-round; expanded educational programming focused on reaching students; expansion of the Festival's web offerings to enable participation of those outside New York; and the development and implementation of a long-term sustainability plan for the Festival.

Officer Grants

Library Foundation of Los Angeles
Los Angeles, CA
$50,000 over 4 months to support the scientific component of a month-long multimedia library program on the contemporary relevance of Moby Dick.
Project Director: Kenneth Brecher, President

Massachusetts Institute of Technology
Cambridge, MA
$50,000 over 12 months to support a two-day workshop on the changing face of public science engagement and potential research in this area.
Project Director: David Kaiser, Professor

New York University
New York, NY
$20,000 over 22 months to provide support to the Institute for the Study of the Ancient World in expanding audiences and building engagement for a traveling exhibition exploring the scientific, technological, and cultural roots of time reckoning and our understanding of time.
Project Director: Jennifer Y. Chi, Exhibitions Director and Chief Curator

Economic Performance and Quality of Life

Economic Institutions, Behavior and Performance

Program Director: Daniel L. Goroff

This program supports nonpartisan research on the structure, behavior, and performance of the U.S. economy with the goal of providing fundamental insights that can inform and strengthen critical decisions facing leaders, policymakers, and the public.

While some refocusing is underway, grantmaking during 2012 was divided into four thematic sub-programs.

- **Economic Implications of the Great Recession**
  Projects in this sub-program study markets and governments, specifically with regard to lessons we can draw from the recent financial crisis and Great Recession. Research topics include systemic stability; international regulatory coordination; risk measurement, capital requirements, and credit ratings; labor market recovery rates and liquidity; and integrated macroeconomic and financial sector modeling.
- **Behavioral Economics and Household Finance**
  Projects in this sub-program study individuals and households, specifically with regard to the quality of their economic decision-making. Research topics include the annuity paradox; the energy efficiency paradox; insur-

Professor Amy Finkelstein, co-Scientific Director of J-PAL North America, presents on the work of a new Sloan-supported research center, launched in 2013. J-PAL North America, one of six regional centers around the globe that carry out the work of the Abdul Latif Jameel Poverty Action Lab (J-PAL), is designed specifically to improve the effectiveness of social programs in North America by supporting researchers conducting randomized evaluations, helping decision-makers use research evidence in policy decisions and program design, and providing training courses on the value of impact evaluation. (PHOTO: AUDE GUERRUCCI)

ance markets; risk-taking, savings, and personal bankruptcy; cognitive biases; evidence-based policy making; public understanding of economics and markets for financial advice.

- **Economic Analysis of Science and Technology**

  Projects in this sub-program study universities and groundbreaking industries, specifically regarding human capital development and applications of information technology. Research topics include labor markets for scientists and engineers; high-skilled immigration; patterns of scientific publication, collaboration, and intellectual property protection; the economics of digitization; and the social returns on investments in research and development.

- **Empirical Economic Research Enablers**

  Projects in this sub-program study economic researchers, specifically with regard to their needs, opportunities, incentives, and professional practices. Research topics include legal entity identifiers; data citation standards; identification and tracking systems for scholars; federal statistics; smart disclosure platforms for obfuscated markets; data and metadata management protocols; privacy and access to social science datasets; the replicability of empirical research; and the economics of knowledge contribution and distribution.

Trustee Grants

American Association for the Advancement of Science

Washington, DC

$658,426 over 40 months to administer a public policy fellowship for placing behavioral and social scientists in the federal government.

Project Director: Edward Derrick, Chief Program Director

Funds from this grant support the extension of a fellowship program at the American Association for the Advancement of Science (AAAS) that places behavioral and social scientists in government agencies to help the government implement innovative and evidence-based policies that promote better decision making by citizens and better performance by government. AAAS's existing fellowship program supports one fellow, placed at the Office of Science and Technology policy. Funds from this grant will enable that fellowship to continue while adding an additional fellow in 2014 and one in 2015.

American Economic Association

Nashville, TN

$124,803 over 29 months to launch a study registry for randomized controlled trials in economics.

Project Director: Esther Duflo, Abdul Latif Jameel Professor of Poverty Alleviation and Development Economics

The published research literature on any given topic likely represents a highly unrepresentative sample of all that is known. That is because authors and editors are rarely interested in publishing ambiguous or disconfirming results concerning a given hypothesis. Such "publication bias" creates vexing problems when performing formal meta-analyses, or whenever anyone tries to interpret the results of a body of empirical work.

Suppose, however, that investigators could agree to collect and post public commitments to their research plans, including their hypotheses and methodologies, in advance of collecting all their data. Not only could simple transparency like this go a long way toward alleviating publication bias, it could also deter other ways researchers have of cherry picking and distorting results.

MIT President Rafael Reif and U.S. Secretary of Commerce Penny Pritzker at a March 2014 conference on big data privacy co-hosted by MIT and the White House Office of Science and Technology Policy. At the conference, researchers, policymakers and technologists convened to discuss the latest research on how to respect privacy concerns while still allowing meaningful scientific analysis of large datasets. (PHOTO COURTESY OF MIT. PHOTO BY DOMINICK REUTER.)

This grant funds a project by the American Economic Association (AEA) to bring just such a thing about. Led by MIT economist Esther Duflo, the AEA will set up a national registry for randomized controlled trials in economics. By linking study designs to related datasets and by making study details more easily searchable, the proposed registry would advance the Foundation's efforts to promote communication, transparency, and best practices among scholarly researchers.

University of California, Berkeley

BERKELEY, CA

$359,402 over 30 months to investigate and promote transparency standards for social science research.

Project Director: Edward Andrew Miguel, Oxfam Professor in Environmental and Resource Economics

This grant supports the development and organization of two four-day conferences that aim to build consensus within the social scientific community around the need for better data sharing and transparency and to investigate and discuss new approaches for doing so. Berkeley economist Edward Miguel, director of the Berkeley Initiative for Transparency in the Social Sciences, will develop and host the conferences, to be held in the summers of 2014 and 2015, and will focus on developing common transparency standards for academic publishers and on training early-career social scientists in best practices when conducting empirical research. Additional grant funds support a series of small grants for innovative student demonstration projects to increase adoption of more transparent research practices.

The University of Chicago

CHICAGO, IL

$100,119 over 7 months to hold a conference on analyzing the costs and benefits of financial regulation.

Project Director: Eric A. Posner, Kirkland and Ellis Professor of Law

Funds from this grant support a conference organized by Glen Weyl and Eric Posner of the University of Chicago on "Benefit-Cost Analysis for Financial Regulation." At the conference, economists, regulators, and lawyers will present and debate frameworks for evaluating government interventions in financial markets with the specific goal of catalyzing, collecting, and synthesizing the normative and quantitative research on the social welfare implications of rulemaking associated with the Dodd-Frank Act. Conference participants will represent a broad spectrum of practical and conceptual approaches to the issues at hand. Findings are scheduled to appear in a special issue of the *Journal of Legal Studies*. The hope is that such efforts can point the way toward more efficient, effective, and rational regimes for regulating the financial sector.

Chrinon Limited

LONDON, UNITED KINGDOM

$644,943 over 18 months to link open data about corporate legal entities to company-related filings, licenses, and other government documents.

Project Director: Chris Taggart, Co-Founder and CEO

Funds from this grant support an ambitious project by a team at Chrinon Limited to create an open access database that compiles information about legally recognized corporate entities, pulling information from dozens of public databases around the globe in the effort to identify the ownership, legal structure, and other features of every corporation, partnership, conglomerate, subsidiary, and holding company in the world. A small pilot grant from the Sloan Foundation launched the project in 2012 and the Chrinon team has made significant progress

A graphic showing one part of the Morgan Stanley corporate network, collected and collated from public data by OpenCorporates as part of its Sloan-funded work to create an online resource that makes publicly available the relationships between corporate entities. (GRAPHIC COURTESY OF OPENCORPORATES.COM CC-BY)

since then. The project website, OpenCorporates.com, already contains information on more than 65 million legal entities spanning more than 31 countries, all of which can be freely accessed by academics, regulators, and the public. Grant funds will support the continued operation and expansion of OpenCorporates, including the collection of information about corporate court proceedings, regulatory filings, and licenses.

Massachusetts Institute of Technology

CAMBRIDGE, MA

$3,562,684 over 36 months to launch a research network that promotes the rigorous empirical study of economic issues in North America.

Project Director: Amy Finkelstein, Ford Professor of Economics

This grant provides partial support to the Massachusetts Institute of Technology to expand its influential Abdul Lateef Jameel-Poverty Action Laboratory (J-PAL), creating a sister network focused on the use of randomized controlled trials to study economic issues in North America. Led by economists Amy Finkelstein of MIT and Lawrence Katz of Harvard, the new network, J-PAL North America, will build a cadre of researchers devoted to the rigorous empirical study of questions important to the formation of public policy across a variety of issues, including crime, health, and poverty. Finkelstein, Katz, and their team will build a shared administrative data platform to be used by network researchers; provide seed funding to help launch promising or innovative research projects; establish a central clearinghouse to match researchers with government or other institutional partners; and provide a centralized training program for the conduct of randomized controlled trials and policy evaluations. Other funded activities include the review and synthesis of existing evidence-based literature; the production of policy briefs for policymakers and other interested stakeholders; and the development of several "evidence workshops" to communicate with policymakers, potential donors, activists, and social entrepreneurs.

National Academy of Sciences

WASHINGTON, DC

$150,000 over 12 months to study potential changes in how the Common Rule governs behavioral and social science research on human subjects.

Project Director: Barbara Wanchisen, Director

This grant provides partial support for a study by the National Research Council (NRC) of the National Academy of Sciences on proposed reforms to the "Common Rule"—a set of rules governing the use of human subjects in federally funded research. Untouched for two decades, the Common Rule is unarguably in need of revision to reflect changes in the way modern research is conducted in the U.S. Yet ill-advised changes to the Rule could significantly hinder the conduct of harmless research, particularly in the behavioral and social sciences. A proposed rule change by the Department of Health and Human Services, for instance, would

extend the privacy guidelines in the Health Insurance Portability and Accountability Act (HIPAA) to research in all fields, even though the guidelines therein were specifically formulated to protect personal health information. If adopted, such an extension could require academic scientists of all kinds to obtain new permissions from human subjects, including survey respondents, before reusing their data for any purpose other than the one originally stated—even if those data have already been anonymized.

The NRC will convene a blue ribbon committee of scientific and policy experts, study the likely impacts of proposed and hypothetical changes to the Common Rule, issue a high-profile report on their findings, and hold a workshop with relevant stakeholders.

National Bureau of Economic Research, Inc.

CAMBRIDGE, MA

$765,900 over 36 months to support the NBER Summer Institute.

Project Director: Janet Currie, Putnam Professor of Economics

The National Bureau of Economic Research (NBER) Summer Institute is arguably the most important and influential annual event for empirical economists. For three weeks, more than 2,000 economists convene to participate in at least one of more than 50 workshops covering issues in labor economics, aging, health, and other traditional subjects. This grant provides three years of continued support to NBER for the administration of the Summer Institute. In addition to defraying administrative expenses, funds support special methodological lectures at the Institute, the videotaping of sessions for wider distribution, and scholarships that underwrite the participation of emerging scholars from underrepresented groups.

National Bureau of Economic Research, Inc.

CAMBRIDGE, MA

$682,228 over 40 months to strengthen the theoretical and empirical research base on high-skilled immigration.

Project Director: William R. Kerr, Associate Professor

This grant supports efforts by William Kerr of the Harvard Business School and Sara Turner of the University of Virginia to establish a research network focused on advancing theoretical and empirical research on high-skilled immigration. Over the next three-and-a-half years, the new research center will convene leading experts from labor economics, international trade, industrial organization, education, and other fields; develop a compelling research agenda; and publish the results of their work. Supported activities include an ongoing series of workshops, conferences, and panels; honoraria and travel expenses for researchers; funds for data acquisition; and fellowship support for one postdoctoral and three predoctoral scholars.

Resources for the Future, Inc.

WASHINGTON, DC

$466,337 over 18 months to study how information provision and disclosure policies can help or hinder the implementation of energy efficiency improvements.

Project Director: Karen Palmer, Research Director and Senior Fellow

This grant supports the work of a team led by Karen Palmer at Resources for the Future to advance our understanding of the "energy efficiency paradox," the puzzling phenomenon of consumers failing to adopt energy efficient technologies even when they will save both energy and money over the long run. Palmer and her team will focus on two specific research questions related to how information affects consumer behavior. First, do home energy audits fill an important information gap in homeowner's awareness of energy efficiency costs and savings? Second, how do city ordinances that require the disclosure and benchmarking of energy use by owners of commercial and multifamily residential buildings affect rents, occupancy, and landlord investments in efficiency improvements?

The project will produce two rich new datasets about home energy audits. One is a survey of 1,600 households across 23 states. Over 500 of these households will have had an energy audit recently. The survey instrument explores topics that existing panels do not, such as salience, defaults, and other behavioral economics considerations; time and other nonmonetary transaction costs; and tests of recommendation recall by homeowners. The second dataset will be administrative information from audit providers describing the services, recommendations, and follow-ups provided to each of their customers. Grants funds will support data collection, analysis, and the dissemination of findings to the academic community and the public.

Resources for the Future, Inc.

WASHINGTON, DC

$308,686 over 21 months to conduct ex-post evaluations of government regulations concerning health and environment in the United States.

Project Director: Richard Morgenstern, Senior Fellow

This grant supports a project led by Richard Morgenstern of the nonpartisan think tank Resources for the Future (RFF) to study the effects of specific regulations governing food safety, industrial water pollution, air toxins, and municipal water pollution. Morgenstern will also commission up to six additional regulatory assessments by outside academics whose research techniques meet high scientific criteria. The studies will focus not only on the evaluation of the specific regulations themselves, but on how new datasets and measurement capabilities can improve regulatory design and support more effective regulatory assessment. Results will be disseminated through a formal report and workshop targeted at relevant stakeholders in the government, academic, and NGO communities, and through a series of online outreach activities.

Yale University

NEW HAVEN, CT

$1,957,224 over 33 months to launch a professional training program on the theory and global practice of macroprudential regulation.

Project Director: Andrew Metrick, Professor, Finance and Management

This grant to Yale University defrays the administrative and operational costs of a new "Program on Financial Stability" aimed at training a new generation of experts on financial regulation. Led by Yale Finance and Management professor Andrew Metrick, the program will aim to translate and synthesize research on macroprudential regulation that speaks to practitioners; compile case studies containing raw data and documentation that describe the interaction between regulation and firm behavior; train early-career scholar-regulators employed by major national and international agencies; and help build an international community of scholars, regulators, and financial experts. If successful, the program promises to provide an invaluable training resource that responds to the need to develop the human, social, and intellectual capital that financial regulators need to fend off future financial crises.

Yale University

NEW HAVEN, CT

$222,525 over 7 months to plan a professional training program on the theory and global practice of macroprudential regulation.

Project Director: Andrew Metrick, Professor, Finance and Management

This grant to Yale University supports the planning and development of a new "Program on Financial Stability" aimed at training a new generation of experts on financial regulation. Led by Yale Finance and Management professor Andrew Metrick, the program will aim to translate and synthesize research on macroprudential regulation that speaks to practitioners; compile case studies containing raw data and documentation that describe the interaction between regulation and firm behavior; train early-career scholar-regulators employed by major national and international agencies; and help build an international community of scholars, regulators, and financial experts. If successful, the program promises to provide an invaluable training resource that responds to the need to develop the human, social, and intellectual capital that financial regulators need to fend off future financial crises.

Grants Made Against Prior Authorizations

In June 2010 the Board of Trustees authorized the expenditure of up to $1,000,000 to fund joint or exploratory small grants in economics, in particular to fund grants resulting from a joint initiative with the Russell Sage Foundation to identify unique research opportunities in behavioral economics. In June 2013, the Board of Trustees authorized the expenditure of an additional $750,000 for the same purpose. The following grants were made against this previously authorized fund.

American Association for the Advancement of Science

WASHINGTON, DC

$124,604 over 12 months to pilot a public policy fellowship program for placing behavioral and social scientists in the federal government.

Project Director: Edward Derrick, Chief Program Director

Third Sector New England, Inc.
BOSTON, MA
$125,000 over 12 months to test hypotheses with as much statistical power as a randomized controlled trial but with smaller control and treatment groups.
Project Director: Jonathan H. Goodman, Senior Advisor, Social Finance, Inc.

In June 2012, the Board of Trustees authorized the expenditure of up to $1,000,000 for a series of grants that aim to facilitate research on corporate demography through the design and study of data collection systems. The following grant was made against this previously authorized fund.

Financial Stability Board
BASEL, SWITZERLAND
$125,000 over 6 months to fund initial meetings and operations for directors of a Global Legal Entity Identifier Foundation.
Project Director: Irina Leonova, Member of Secretariat

OFFICER GRANTS

Behavioral Science & Policy Association
DURHAM, NC
$12,000 over 12 months to mobilize technical expertise in support of evidence-based policymaking.
Project Director: Craig R. Fox, President and Director

Columbia University
NEW YORK, NY
$20,000 over 3 months to provide support for editing an educational video about financial innovation, markets, and regulation so that it meets WNET/PBS guidelines for broadcasting.
Project Director: Bruce Kogut, Professor for Leadership and Ethics

Conference Board, Inc.
NEW YORK, NY
$125,000 over 12 months to facilitate research on major problems in labor economics by providing data like the International Labor Comparisons formerly maintained by the US Bureau of Labor Statistics.
Project Director: Bart van Ark, Executive Vice President and Chief Economist

Council of Professional Associations on Federal Statistics
ALEXANDRIA, VA
$45,000 over 24 months to facilitate access to federal administrative data by social science researchers.
Project Director: Katherine Smith, Executive Director

George Washington University
WASHINGTON, DC
$109,000 over 16 months to run four popular seminars where a variety of experts help explain the Federal Reserve System to the public.
Project Director: Paul Schiff Berman, Vice Provost for Online Ed and Academic Innovation and Manatt/Ahn Professor of Law

Massachusetts Institute of Technology
CAMBRIDGE, MA
$45,000 over 4 months to hold a workshop that informs and articulates a roadmap for research on privacy-preserving techniques for processing large sets of data.
Project Director: Samuel Madden, Professor

Massachusetts Institute of Technology
CAMBRIDGE, MA
$20,000 over 8 months to explore new methods for funding scientific research.
Project Director: Andrew W. Lo, Charles E. and Susan T. Harris Professor

Project HOPE
BETHESDA, MD
$20,000 over 7 months to brief leaders responsible for policy, media, and health decisions on economics research results concerning hospital and health care system productivity.
Project Director: John Iglehart, Founding Editor

Working Longer

Program Director: Kathleen E. Christensen

The goal of the Working Longer program is to support original, high-quality multidisciplinary research on the institutional adjustments needed to accommodate the aging of the American workforce and to stimulate informed discussion of this research among academics, policymakers, employers, and the public. Research focuses on a set of interrelated questions:

- What are the employment patterns of older Americans as they transition into and out of the labor force?
- What laws, regulations, business practices, incentives, or cultural factors impede working past age 65 and how might these factors be effectively offset?
- What are the relationships between health, cognition, age, and labor force participation that either impede or promote working longer?
- How economically secure are older Americans and how does working longer affect that economic security?
- What are the consequences of working longer for federal revenues and outlays?

Research proposals should be theory-driven, conversant in the existing academic literature on these topics, familiar with the available federal and state datasets (and their limitations), and sensitive to the analytic challenges posed by the diversity of the older workforce, including (among others) variations in income, wealth, race, gender, local labor market conditions, educational attainment, regulatory environment, union membership, and health.

Trustee Grants

American Council on Education
WASHINGTON, DC
$737,318 over 23 months to deepen understanding within higher education as to how institutions can support senior faculty choosing to work longer, assist them in transitioning to an active next career phase, and promote culminating career legacies.
Project Director: Jean M. McLaughlin, Associate Director

Funds from this grant support efforts by the American Council on Education (ACE) to understand and increase the impact of the Sloan Awards for Retirement Transitions, a series of awards given to 15 U.S. colleges and universities to honor and accelerate innovative, effective policies for successfully managing the culminating stages of faculty careers. First, ACE will monitor the progress of the 15 award winners. They will collect campus reports as to how innovative practices and programs have been embedded in campus culture so that faculty members feel free to use them and are satisfied with the outcome. Second, from this group of 15 winners, ACE will select five to six institutions that are ready and committed to take their programs to the next level of institutional transformation.

The winners of the first annual Age Smart Employer Awards, a Sloan-funded awards program that honors local New York City business for innovative policies that maximize the potential of older workers. From left to right, Patrick O'Brien (Renewal Care Partners), Alfredo Cabrera (Montefiore Medical Center), Rick Bruno (Pfizer), Jack Watters (Pfizer), New York City Council Speaker Melissa Mark-Viverito, Antonino Settipani (Ristorane Settepani & Settepani Bakery), Leah Abraham (Ristorane Settepani & Settepani Bakery) and Joe Fisher (Renewal Care Partners) (PHOTO: AMY SUSSMAN/INVISION FOR NEW YORK ACADEMY OF MEDICINE/AP IMAGES)

Three, ACE will identify three or four institutions that were initially interested in competing for the awards, but because of timing or other issues on their campuses, reluctantly chose not to compete. ACE will work closely with these schools to achieve the institutional changes necessary to support faculty in their final career stage as they are transitioning to retirement. Knowledge gained from these activities will be used to mount a deep and widespread communication effort within higher education to educate other institutions about effective ways that universities and colleges can change their campus cultures in order to support senior faculty choosing to work longer, assist them in transitioning to an active next career phase, and promote culminating career legacies.

The Brookings Institution

WASHINGTON, DC

$407,959 over 19 months to investigate the divergence of retirement and mortality trends between high- and low-income workers and determine the impact of the interaction of these two trends on the income distribution of the aged and the optimal design of public pension formulas.

Project Director: Gary Burtless, Senior Fellow

This grant to The Brookings Institution funds the work of economists Gary Burtless and Barry Bosworth, who are investigating whether longer lifespans coupled with longer work lives and delayed retirement leads to greater income disparities among Americans aged 60 to 74. Burtless and Bosworth will estimate the effects of delayed retirement on the distribution of annual incomes among workers and retirees between 60 and 74; assess the effects of delayed retirement on inequality trends among individuals past age 75; estimate the effects of delayed retirement and lengthening life spans on the distribution of lifetime incomes; and offer conclusions about the public policy implications of the changing relationship among income, expected longevity, and retirement behavior.

The income distribution issues cited above are particularly important as Congress considers reforms to the Social Security and Medicare systems in order to maintain their financial solvency. The tradeoff between restoring financial balance and avoiding adverse distributional effects is a key consideration in designing sensible reforms. The results from this research are essential to understanding possible adverse distributional effects.

University of California, Irvine

IRVINE, CA

$322,392 over 24 months to conduct newly designed field experiments on age discrimination in U.S. labor markets, eliminating potential biases in existing studies, so as to provide policymakers with a firmer basis for understanding age discrimination in hiring.

Project Director: David Neumark, Chancellor's Professor of Economics

Audit/correspondence (AC) studies are the most frequently used research design for ascertaining the extent of age discrimination in hiring. This design involves submitting nearly identical resumes online to posted job openings. Resumes differ only by the age of the applicant. Discrimination is ascertained if younger applicants get more call-backs than do older ones. This methodology, however, appears likely to generate bias in favor of finding age discrimination. Because resumes give both younger and older applicants the same, low level of experience, the older applicant will appear to have "holes" in her work history that are likely to be viewed unfavorably. On the other hand, perceived (but unmeasured) differences in the human capital investment of older workers might lead employers to prefer older to younger applicants, biasing the result of audit studies in the opposite direction.

This grant provides support for two field experiments by David Neumark of the University of California, Irvine aimed at increasing our understanding of the limitations of the audit/correspondence framework. The first will field an audit study where the resumes of older workers are not identical with their younger counterparts, but instead include work experience commensurate with their age. A finding that older workers are still less likely to be called for interviews may better match the legal standard for age discrimination. A second audit study will be fielded for both types of older applicants—those with equal low levels of experience like in past studies, and those with experience commensurate with age. Differential employer response to these resumes will capture differences in perceived indicators of human capital among older workers.

Cornell University

ITHACA, NY

$174,458 over 18 months to expand the understanding of age discrimination in employment through comprehensive examination of Age Discrimination in Employment Act (ADEA) charges.

Project Director: Sarah von Schrader, Research Associate

In 1967, the Age Discrimination in Employment Act (ADEA) was passed by Congress with the intent to "promote employment of older persons based on their ability rather than age; to prohibit arbitrary age discrimination in employment." While it has been viewed as successful in increasing employment rates for older workers, research suggests that older worker stereotypes and age discrimination still persist—or at least the perception of this discrimination still exists. Age-related charges of discrimination brought forward to the Equal Employment Opportunity Commission (EEOC) have been on the increase. Whilst that may be the case, there has not been systematic examination of these charges.

This grant funds work by a team led by Sarah Von Schrader of Cornell University that combines descriptive analyses with model-based approaches to better understand the phenomenon of perceived age discrimination in the workplace. The study will look at a number of factors, including the characteristics of ADEA charges, charging parties, and employers receiving charges over time; individual and contextual factors associated with the outcomes of ADEA charges; and the characteristics of employers, along with local labor market factors, associated with ADEA charges. Von Schrader and her team will use restricted access data sets from the EEOC in conducting this research. By developing a better understanding of perceived discrimination in the workplace, it will be possible to better identify policies and practices to mitigate such discrimination.

Harvard University

CAMBRIDGE, MA

$396,988 over 24 months to evaluate how institutions of higher education can effectively promote faculty diversity in higher education, including an evaluation of the Sloan Foundation's program on faculty career flexibility.

Project Director: Frank Dobbin, Professor of Sociology

Funds from this grant support an innovative study by Harvard University that explores how colleges and universities can promote faculty diversity. Led by Frank Dobbin and Alexandra Kalev and utilizing an original institutional-individual database on 13,000 faculty at 1,000 institutions from 1993 to 2013, the project team will examine the effects of academic hiring, promotion, diversity and work-life policies, and implementation supports on overall faculty diversity; career progress of STEM faculty from all race/ethnic-by-gender groups; and faculty family formation. Additionally, the team will specifically evaluate the impact of the Sloan Awards for Faculty Career Flexibility on these outcomes, and on the spread of flexibility policies beyond awardees and applicants.

National Bureau of Economic Research, Inc.

CAMBRIDGE, MA

$282,710 over 36 months to better understand the retirement and work prospects of currently active college women by connecting events in their early adult lives to their later employment histories.

Project Director: Claudia Goldin, Henry Lee Professor of Economics

This grant funds work by economic historian Claudia Goldin and labor economist Lawrence Katz to understand how education, employment, marriage, fertility, and health events from college to midlife shape employment and retirement later in life among college-educated women. Goldin and Katz will study cohorts born from the mid-1930s to the early 1960s and that entered college from around 1950 to 1980. These cohorts, born up to 30 years apart, will provide sharp contrasts and differences in early, late, or no marriage; college major; work patterns (whether intermittent or continuous); and if and when they had children. All of these factors contribute to how long college-educated women remain in the labor force and under what conditions. While existing research examines distinct cohorts of women, this will be the first study to link systematically the older, younger, and transitional cohorts. In addition to producing peer-reviewed articles and research papers, the project team will organize a National Bureau of Economic Research (NBER) conference and produce an NBER volume on women working longer.

National Bureau of Economic Research, Inc.

CAMBRIDGE, MA

$263,781 over 41 months to support a three-year postdoctoral program on the economics of an aging work force.

Project Director: David A. Wise, Stambaugh Professor of Political Economics

Funds of this grant support a new program at the National Bureau of Economic Research (NBER) to sponsor a postdoctoral research fellow in each of the next three academic years, beginning in 2014 to 2015, whose research will focus on the economics of the aging work force. Each fellow will receive one year of support to carry out research at NBER's offices in Cambridge, Massachusetts, as well as to participate in the NBER summer institute workshops on Aging and Labor Studies. Selection of the three fellows will be made by a panel of experts who are members of both the Aging and Labor Studies programs at NBER. The committee's decisions will be based on an evaluation of the fellows' potential to make an important contribution to the understanding of the behavior of older workers and the functioning of labor markets for these workers.

North Carolina State University

RALEIGH, NC

$547,161 over 36 months to provide new insight into the work life transitions and key retirement-related decisions by older public sector employees.

Project Director: Robert L. Clark, Zelnak Professor

This grant supports research by Robert Clark and Melinda Morrill of North Carolina State University that will study the labor market behavior of more than 875,000 public employees in North Carolina. Collaborating with the office of the North Carolina Treasurer, Clark and Morrill will investigate a series of four interrelated questions about retirement in the public sector. One, how do older public employees prepare for this transition through saving for retirement? Two, how do older public employees determine their optimal retirement age? Three, do those workers retiring from public employment move into complete retirement or ex-

tend their working life by seeking post-retirement work elsewhere? Four, how do individuals choose among annuity options within their defined benefit and defined contribution plans? The research plan involves analysis of administrative data, three employee and retirement surveys, and a field experiment that tests how information affects employees' retirement savings behavior.

RAND Corporation

SANTA MONICA, CA

$1,120,309 over 36 months to improve the understanding of the availability and importance of different pecuniary and nonpecuniary job characteristics for older workers and their effects on older worker labor outcomes.

Project Director: Nicole Maestas, Economist

One difficulty in understanding the labor market behavior of older workers is that much of the needed data is not available. For instance, the National Institute on Aging's Health and Retirement Survey—the gold standard data set for examining aging—does not collect detailed information about the pecuniary and nonpecuniary job characteristics of older workers. As such, trends in retirement and other labor market behaviors of older workers cannot be correlated with data about what their jobs are like. This grant provides support for a project by the Rand Corporation to correct this gap by collecting new data describing the actual and preferred working conditions of approximately 2,200 older Americans between the ages of 55 and 70 in the ongoing, nationally representative RAND American Life Panel (ALP). The new dataset will be made publicly available to the broader research community; will serve as encouragement to younger scholars to do research on aging and work; and will inform evidence-based conversations with the National Institute on Aging about adding items on the pecuniary and nonpecuniary attributes of work to the Health and Retirement Survey.

Society for Human Resources Management Foundation

ALEXANDRIA, VA

$909,650 over 36 months to advance and accelerate research and applied human resource policies and practices for human resource professionals and students to identify, understand, and solve work force aging issues.

Project Director: Mark Schmit, Executive Director

With support from this grant, the Society for Human Resource Management (SHRM) Foundation will work to accelerate and advance research and applications to understand and solve work force aging issues in the United States, with a particular emphasis on reaching human resource professionals. SHRM Foundation will pursue multiple strategies related to research, education, and production of materials. They will conduct a review of the relevant economic, legal, and social science literature on older workers and summarize those findings for a nonspecialist audience; they will study human resource policy and practice trends related to older workers; and they will develop new tools and programs to incentivize the adoption of best human resource practices with regard to the aging work force. Expected products include four studies, an Effective Practice Guidelines report, an Aging Workforce Strategies DVD, an executive roundtable event, a webinar series, and an online Resource Guide/Toolkit for HR practitioners.

University of Texas, Austin

AUSTIN, TX

$265,051 over 6 months to provide supplemental funds to Grant #2012-KEC-12 so as to provide adequate incentive payments to respondents of the High School and Beyond Study (HSB) to ensure an 80 percent response rate.

Project Director: Chandra Muller, Professor

In 2012, the Trustees of the Alfred P. Sloan Foundation approved a $3.2 million grant to the University of Texas to support a project to recontact and survey the original, nationally representative High School and Beyond (HSB) 1980 sophomore class cohort in order to assess the effects of early-life human capital on later-life labor market, health, and family outcomes. This new data set will provide scholars with access to a wealth of data collected contemporaneously when the respondents were adolescents and young adults. These data include measures of cognitive and noncognitive skills, school performance, standardized test scores, family socioeconomic origins, health, early life careers, and family formation. The new dataset will enable scholars to study in previously unavailable detail the antecedents of later life labor market activities. This grant provides supplemental support to that project by creating a pool of funds for incentive payments for survey participants to ensure an 80 percent response rate.

Officer Grants

Fedcap Rehabilitation Services, Inc.
New York, NY
$105,000 over 12 months to build an interactive website in order to launch and administer a two-year fellowship work program re-employing older (50+) senior managers in multiple New York City metro area industries.
Project Director: Joan Biermann, President

George Mason University
Fairfax, VA
$89,951 over 12 months to identify the primary causes of age-related differences in training outcomes and develop and examine interventions to ameliorate age-related performance discrepancies.
Project Director: Eden King, Associate Professor

Stanford University
Stanford, CA
$89,973 over 12 months to understand potential pathways between working longer and cognitive performance.
Project Director: Laura L. Carstensen, Director, Stanford Center on Longevity

American Council on Education
Washington, DC
$118,259 over 11 months to plan and execute a culminating event for the National Challenge for Higher Education to ensure a diverse and excellent 21st century work force by providing workplace flexibility for faculty at all stages of their careers.
Project Director: Jean M. McLaughlin, Associate Director

Finance Flows, Inc.
New York, NY
$20,000 over 3 months to establish a nonprofit designed to launch and administer a two-year fellowship work program re-employing older (50+) senior managers in multiple New York City metro area industries.
Project Director: Joan Biermann, President

Harvard University
Cambridge, MA
$19,200 over 6 months to study the effects of academic hiring, promotion, diversity, and work-life policies on the professional advancement of STEM faculty from underrepresented groups, and overall faculty diversity.
Project Director: Frank Dobbin, Professor of Sociology

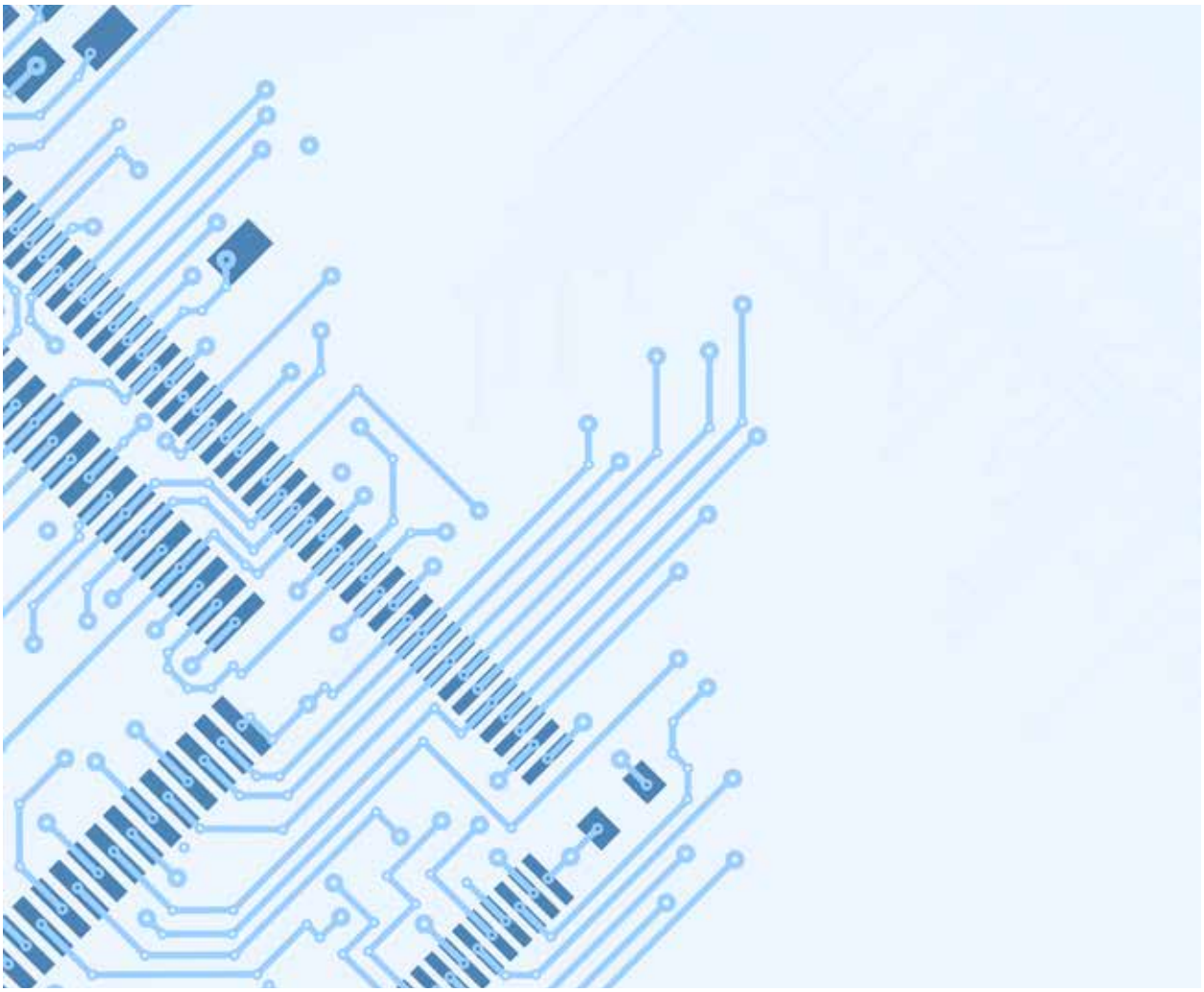
National Academy of Sciences
Washington, DC
$125,000 over 12 months to convene a workshop to explore the key stress points in the arc of an academic research career and the impact that policies and practices in each of these areas has on the others.
Project Director: Kevin Finneran, Director

North Carolina State University
Raleigh, NC
$81,951 over 9 months to better understand the research on how employees respond to individuals desiring to work longer.
Project Director: Robert L. Clark, Zelnak Professor

University of Pennsylvania
Philadelphia, PA
$15,000 over 7 months to enable 25 graduate students and international scholars to attend the WFRN 2014 conference.
Project Director: Jerry A. Jacobs, Executive Officer

ReServe Elder Service, Inc.
Brooklyn, NY
$45,000 over 4 months to develop a business plan for ReCap, a new work force development strategy for older workers who face barriers to employment due to their age, skill level, and workplace requirements.
Project Director: Mary S. Bleiberg, Executive Director, Community Impact Institute

TIAA-CREF Institute
New York, NY
$104,650 over 12 months to convene a select group of policymakers, think tanks, academic researchers, and press to consider two approaches, suggested by the National Academy of Sciences study, that address the economic challenges of an aging population, working longer, and saving more.
Project Director: Stephanie K. Bell-Rose, Senior Managing Director



Digital Information Technology

Data and Computational Research

Program Director: Joshua M. Greenberg

From the natural sciences to the social sciences to the humanities to the arts, the availability of more data and cheaper computing is transforming research. As costs for sensors, sequencing, and other forms of data collection decline, researchers can generate data at greater and greater scale, relying on parallel increases in computational power to make sense of it all and allowing the investigation of phenomena too large or complex for conventional observation.

Grants in this program aim to help researchers develop tools, establish norms, and build the institutional and social infrastructure needed to take full advantage of these important developments in data-driven, computation-intensive research. Emphasis is placed on projects that support the management and sharing of scholarly data and software, enable the replication of computational research, and develop new training and career paths made necessary by the increasingly central role data management and curation play in modern scholarship.

Trustee Grants

University of California, Berkeley
Berkeley, CA
$1,500,000 over 38 months to advance data-intensive scientific discovery through new methods, new tools, new partnerships, and new career paths.
Project Director: Saul Perlmutter, Professor

While data science is already contributing to scientific discovery, substantial systemic challenges need to be overcome to maximize its impact on academic research. This is one of three grants, made as part of a five-year, $37.8 million partnership with the Gordon and Betty Moore Foundation, that aim to empower natural and social scientists by strengthening the ability of select U.S. colleges and universities to successfully conduct data-rich and computationally intensive research. Over the next three years, supported campuses will use grant funds to develop meaningful and sustained interactions between disciplinary researchers in the natural and social sciences (e.g., astrophysics, genetics, economics) and researchers in the methodological fields that deal with large-scale data collection and analysis (e.g., applied mathematics, statistics, computer science). In addition, supported campuses will establish long- term, sustainable career paths for data scientists, and develop an ecosystem of analytical tools and research practices that will facilitate effective research across a range of diverse scientific disciplines. Additional funded activities include holding workshops and training sessions for scientists who work with data, identifying data-science bottlenecks faced by researchers, and disseminating lessons learned to the academic and research communities.

University of California, Berkeley

BERKELEY, CA

$179,267 over 12 months to produce a suite of mature R products that allow researchers to easily access disparate data sources, and develop the R scientific community through training and engagement.

Project Director: Karthik Ram, Postdoctoral Scholar

Three open source programming languages form a canon of sorts for the emerging field of data science: Python for general computation; Hadoop for managing massive unstructured data; and R for statistical analysis. Funds from this grant support efforts by Karthik Ram, a postdoctoral scholar at the University of California, Berkeley, to expand and strengthen the R community through the development of products aimed at lowering the barriers to the use of R. Ram has developed an R software module, for instance, that greatly simplifies the process of gathering data from archives and services commonly accessed by scientists, like Dryad, the Global Biodiversity Information Facility, or the Biodiversity Heritage Library. Ram's module thus obviates the need for scientists to write their own idiosyncratic code to parse data from such repositories. Grant funds will support the further development of R modules by Ram and his team, as well as outreach efforts to the scientific community to provide training and speed adoption of the new tools.

University of California, Davis

DAVIS, CA

$245,721 over 12 months to develop a web-based framework for the visualization of scientific data generated by standard data pipelines.

Project Director: Holly Bik, Postdoctoral Scholar

In many scientific fields, the process of cleaning and preparing data is managed by increasingly well-established software pipelines. Raw data goes in and structured, refined data comes out ready for analysis. Data pipelines are particularly valuable in fields where the data coming out of instruments are relatively standardized—genomic sequencers, for example, or telescopes. One potential benefit of data pipelines is that they lower the barriers to sophisticated data visualization, since platforms to explore data visually could be directly connected to data pipelines rather than rely on costly work by individual researchers to prepare and load data. Yet while basic visualization capabilities have been hard-wired to specific data pipelines, there is no generic framework that could interface between data pipelines and data visualization tools.

This grant supports efforts by biologist Holly Bik of the University of California, Davis to develop just such a framework. Partnering with leading data visualization firm Pitch Interactive, Bik will work with an initial set of use cases to develop a framework for grafting data visualization tools on top of existing genomic data pipelines, with an eye toward extending its application to other fields.

Center for Open Science

CHARLOTTESVILLE, VA

$500,000 over 19 months to help move the Open Science Framework (OSF) to version 1.0, and to foster the development of an open source/open science community.

Project Director: Brian Nosek, Treasurer

This project funds an ambitious project by Brian Nosek, a professor of psychology at the University of Virginia, to develop and expand an institutional framework for collaborative scientific work—the Open Science Framework (OSF)—that's modeled on the open source development protocols that have been so successful in the cooperative development of software. Nosek's project is based on the insight that scientists could develop much more efficient collaboration practices, saving themselves time and improving the quality and velocity of their work, by borrowing the basic methods and tools of open software development. These include versioning (creating an edit log that tracks changes to any files associated with a project), "tagged releases" (locking a particular, tested version of a project for broader dissemination), "forking" (creating a personal copy of a project to add one's own edits or additions), and "pull requests" (a request to the owner of a project to merge changes in a "forked" version back into the original). Funded activities include further development of the OSF, the construction of an applications programming interface that would allow the OSF to seamlessly interoperate with other tools and platforms, and collaborations with other developers of scientific cyberinfrastructure.

Council on Library and Information Resources

WASHINGTON, DC

$1,299,616 over 39 months to support two cohorts of data curation postdoctoral fellows, in order to develop emerging leaders in the field and encourage permanent staffing solutions within academic libraries.

Project Director: Charles Henry, President

This grant provides support for the expansion of a successful postdoctoral fellowship program run by the Council on Library and Information Resources (CLIR). The program aims to help academic libraries provide a new set of services that support data- and computation-intensive research through funding postdoctoral fellows devoted to data management and curation in the natural and social sciences. Grant funds will provide salary support to two cohorts of fellows (10 in 2013 and 12 in 2014) as well as various support activities such as professional training, travel, and networking with other data curation professionals.

New York University

NEW YORK, NY

$1,500,000 over 38 months to advance data-intensive scientific discovery through new methods, new tools, new partnerships, and new career paths.

Project Director: Yann LeCun, Director of the Center for Data Science

While data science is already contributing to scientific discovery, substantial systemic challenges need to be overcome to maximize its impact on academic research. This is one of three grants, made as part of a five-year, $37.8 million partnership with the Gordon and Betty Moore Foundation, that aim to empower natural and social scientists by strengthening the ability of select U.S. colleges and universities to successfully conduct data-rich and computationally intensive research. Over the next three years, supported campuses will use grant funds to develop meaningful and sustained interactions between disciplinary researchers in the natural and social sciences (e.g., astrophysics, genetics, economics) and researchers in the methodological fields that deal with large-scale data collection and analysis (e.g., applied mathematics, statistics, computer science). In addition, supported campuses will establish long- term, sustainable career paths for data scientists, and develop an ecosystem of analytical tools and research practices that will facilitate effective research across a range of diverse scientific disciplines. Additional funded activities include holding workshops and training sessions for scientists who work with data, identifying data-science bottlenecks faced by researchers, and disseminating lessons learned to the academic and research communities.

Researchers gather at a February 7, 2014 poster session marking the inauguration of a new data science initiative at the University of Washington. Part of a five-year, $37.8 million collaboration between Sloan and the Gordon and Betty Moore Foundation, the initiative aims to accelerate scientific advance through the creation of campus-wide institutions that support data-intensive research. (PHOTO COURTESY OF THE UNIVERSITY OF WASHINGTON ESCIENCE INSTITUTE)

University of Washington

SEATTLE, WA

$1,500,000 over 38 months to advance data-intensive scientific discovery through new methods, new tools, new partnerships, and new career paths.

Project Director: Edward D. Lazowska, Bill & Melinda Gates Chair

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Woodrow Wilson International Center for Scholars

WASHINGTON, DC

$600,001 over 24 months to work with government, emergent distributed networks, and other stakeholders to make mass collaboration for data collection, analysis, and problem solving more trustworthy, efficient, and actionable.

Project Director: Lea Shanley, Senior Program Associate

While citizen science projects, crowdsourcing, and other forms of mass collaboration on the web hold the promise to contribute significantly to scientific research, they often lack adequate institutional or systemic controls to properly mitigate data privacy, cybersecurity, legal, and financial risks. Without such controls in place, government entities or other large institutions are often barred from collaborating with citizen science initiatives, limiting their usefulness and impact. This grant supports efforts by the Commons Lab at the Woodrow Wilson International Center for Scholars to help reduce these barriers by identifying, assessing, and prioritizing the risks associated with mass collaboration projects and developing standards, policies, best practices, and other resources that both government agencies and citizen entrepreneurs can use to work together more effectively. Over the next two years, the Wilson Center will publish two peer-reviewed journal articles on privacy, human subjects, and intellectual property issues; host a roundtable series on cybersecurity; construct an inventory of U.S. government involvement in mass collaboration projects; hold a policy briefing for government agencies; and analyze governance models for mass collaboration projects.

Grants Made Against Prior Authorizations

In March 2012, the Board of Trustees authorized the expenditure of up to $500,000 for grants supporting the development of software prototypes in areas related to the Foundation's grantmaking in the Digital Information Technology program. The following grants were made against this previously authorized fund.

ARTstor, Inc.

NEW YORK, NY

$17,451 over 3 months to support a planning meeting on potential uses of ARTstor in image-based natural sciences.

Project Director: James Shulman, President

Officer Grants

Boston Symphony Orchestra

BOSTON, MA

$122,280 over 4 months to support the development of an open source web interface that links historical performance data with digitized programs and other archival material.

Project Director: Bridget Carr, Senior Archivist

Smithsonian Institution

WASHINGTON, DC

$110,000 over 6 months to combine developing and existing Smithsonian resources in novel ways to investigate, document, and demonstrate a prototypical working model for managing the digital information lifecycle.

Project Director: Robert J. Corrigan, Director of Operations

Scholarly Communication

Program Director: Joshua M. Greenberg

The shift to digitally-mediated forms of scholarship has been characterized by a substantial growth in channels for and diversity of scholarly work. We see this in the flourishing of content in preprint servers and rapid-publication channels like arXiv, PLoS ONE, and the Social Science Research Network alongside unconventional forms of scholarly communication like research blogs and personal websites, all of which enable scholars to put their work out for broad access.

The goal of this program is to empower scholars by supporting the development and adoption of new resources for managing this increasingly diverse array of digital communication channels, enabling them to more effectively locate relevant research, network with other researchers, and disseminate their own work to the scientific community and the public.

Trustee Grants

The American Assembly
New York, NY
$210,000 over 12 months to develop a vision and prototype for a large-scale online database of university course syllabi.
Project Director: Joe Karaganis, Vice President

While there are currently many different ways to find out how much a given article or book has been cited, there is no way to know how many times it has appeared on a syllabus, and the impact of scholarly research in the classroom is a blind spot for which we have no accessible data. One could, for example, imagine a "syllabus count" alongside a citation count, not just for articles and books, but also for all sorts of other resources from datasets to websites. Beyond individual impact, a broad, computable archive of syllabi could be a valuable resource for research on the evolution of disciplines.

This grant supports efforts by Joe Karaganis of the American Assembly to develop just such a resource. Karaganis has assembled a diverse team of data providers, application designers, and other collaborators to coordinate a planning and prototyping process aimed at bringing a robust syllabus archive to life.

ImpactStory

CHAPEL HILL, NC

$500,000 over 24 months to support the scaling and further development to sustainability of ImpactStory, a nonprofit open altmetrics platform that helps scholars evaluate, sort, consume, and reward web-native products.

Project Director: Jason Priem, Co-Founder

One of the goals of Sloan's Scholarly Communication program is to better facilitate the discovery and review of research products available on the Internet. Since many of these materials (from working papers to datasets) do not appear in conventional journals, a small but growing community has begun to explore the idea of alternative metrics of value and impact that cover such factors as number of downloads, inclusion in personal reference manager databases, and social media references.

Funds from this grant support the continued development of ImpactStory, an innovative altmetrics platform that aggregates citations and other mentions of academic scholarship on the Internet, including references from arXiv, Mendeley, PLOS, Dryad, PubMed and Scopus, as well as Facebook, Vimeo, YouTube, and Wikipedia. Grant funds support development of the platform and the creation and implementation of a long-term institutional sustainability plan.

National Information Standards Organization

BALTIMORE, MD

$207,533 over 28 months to study, propose, and develop community-based standards or recommended practices in the field of alternative metrics for research products.

Project Director: Todd A. Carpenter, Executive Director

Altmetrics aggregators who draw together diverse sources of data about the use of research products face a fundamental challenge: the myriad dissemination and archival platforms used by academics can make it difficult (if not impossible) to get consistent and normalized access to the data they need. While a general consensus is emerging among online publishers and repositories of articles, datasets, software, and other materials that such impact data could be valuable to their users, no clear standards exist governing how organizations should make that data accessible to others.

This grant funds efforts by the National Information Standards Organization (NISO) to lead a two-year standard-setting process for altmetrics data. NISO will begin by hosting a series of scoping meetings over the first 12 months of the grant, bringing stakeholders together to map the most salient sources of data based on demand from altmetrics services as well as the researchers, funders, and deans that represent altmetrics end users. After synthesizing those findings in a white paper for wide distribution, NISO will shift into a formal standards-setting process targeting the most pressing use cases, ultimately producing standard data exchange formats for adoption by those who produce and consume altmetrics data.

ORCID

BETHESDA, MD

$349,659 over 18 months to encourage the near-term implementation of ORCID identifiers by universities and professional associations, through a grant competition and community outreach.

Project Director: Laurel L. Haak, Executive Director

This grant supports efforts to increase adoption of the Open Researcher and Contributor ID (ORCID), an enterprising new system that aims to provide a unique, persistent identifier to every researcher on the planet, allowing scholars, content aggregators, and the public to easily pull together research associated with that researcher's ID, wherever it is published, however the author's name appears. Funds from this grant will support expansion of ORCID through a small grant competition that challenges universities, professional societies, and other academic institutions to implement ORCID identifiers into existing repository, learning management, academic profile, conference management, and other technology platforms. Ten winners will be chosen from grant applicants based on the quality of the plans submitted and the likelihood that their work will lower barriers to ORCID adoption by peers.

Grants Made Against Prior Authorizations

In October 2011, the Board of Trustees authorized the expenditure of up to $500,000 for exploratory grants in mathematics that relate to the Foundation's other grantmaking priorities. The following grants were made against this previously authorized fund.

Dartmouth College

Hanover, NH

$13,075 over 12 months to incorporate and improve MathOverflow, an open question-and-answer exchange site for mathematicians.

Project Director: Francois Dorais, John Wesley Young Research Instructor

In June 2013 the Board of Trustees authorized the expenditure of up to $750,000 to fund joint or exploratory small grants in economics, in particular to fund grants resulting from a joint initiative with the Russell Sage Foundation to identify unique research opportunities in behavioral economics. The following grants were made against this previously authorized fund.

Project Implicit, Inc.

Lexington, MA

$49,500 over 6 months to lay the necessary groundwork for a replication website initiative, aimed at increasing and disseminating replications.

Project Director: Stephanie Wykstra, Research Consultant

Officer Grants

Association of Research Libraries

Washington, DC

$50,000 over 3 months to develop a proof of concept prototype for the SHared Access Research Ecosystem (SHARE) federated digital repository for the public access, text and data mining, and long-term preservation of research articles and data produced by higher education.

Project Director: Elliott Shore, Executive Director

Northwestern University

Evanston, IL

$77,947 over 6 months to support a landscape survey and workshop on data sharing from research using technological tools to study human behavior in digital environments.

Project Director: Eszter Hargittai, Research Professor

Social Science Research Network

Rochester, NY

$20,000 over 6 months to develop a standardized and reusable tool set for testing experimental recommendation algorithms.

Project Director: Gregory J. Gordon, President/CEO

Universal Access to Knowledge

Program Director: Doron Weber

The goal of the Universal Access to Knowledge program is to facilitate the openness and accessibility of all knowledge in the digital age for the widest public benefit under reasonable financial terms and conditions, including the digitization of scientific and cultural knowledge under best practices and standards. Major grants have gone to support Wikipedia, the largest encyclopedia in history, the fifth largest website in the world, and a model of collaborative open source knowledge on the web; Internet Archive, with its huge scanning and storage capacity; the Library of Congress for the first ever mass digitization project; and the Espresso Book Machine, the revolutionary on-demand printing press now in locations across America.

The Digital Public Library of America (DPLA), championed by the Foundation since its inception, aspires to be the nation's repository and common platform for knowledge and culture that is free and open for all to use. The DPLA successfully launched in April 2013 and was immediately hailed by *Time* as one of the "50 best websites of 2013," and in October 2013 held its first ever annual DPLAfest. The DPLA is already serving as a link to thousands of libraries and cultural institutions across the country and it contains millions of digitized items. The Berkeley Law Center held its second Sloan-supported symposium in April 2013 focusing on identifying copyright barriers and crafting solutions for institutions in the digital age such as the DPLA. In 2013, Wikipedia partnered with mobile operators in a new global initiative giving 410 million people in developing countries mobile access to Wikipedia free of charge; it increased its readership to 516 million monthly unique readers; and it now hosts over 27 million articles. The National Academies Press published a report titled *Copyright in the Digital Era: Building Evidence for Policy* in May 2013 examining implications for copyright in the digital age as part of an earlier grant to the National Academy of Sciences.

DPLA Executive Director Dan Cohen delivers final remarks at the Digital Public Library of America's first-ever *DPLAfest*, which drew hundreds to Boston in October 2013 for two-days of workshops, discussions, and celebrations. Find out more at http://dp.la/. (PHOTO COURTESY OF FLICKR USER DIGITAL PUBLIC LIBRARY OF AMERICA, CC BY-NC-SA 2.0)

Trustee Grants

University of California, Berkeley

Berkeley, CA

$384,565 over 12 months for a third year of funding to continue to develop solutions to copyright law obstacles faced by digital library initiatives such as the Digital Public Library of America (DPLA).

Project Director: Pamela Samuelson, Richard M. Sherman Distinguished Professor of Law

Funds from this grant provide one year of continued support to efforts by a team led by Pamela Samuelson at the University of California, Berkeley School of Law to examine the legal obstacles posed by copyright law to digital library initiatives and the digital storage and dissemination of in-copyright works. The Berkeley team will examine a diverse range of issues, including orphan works, library and archive copyright exceptions, private ordering solutions, collective licensing for certain copyrighted works, digital lending of in-copyright works, and metadata ownership and use issues. Samuelson's team will also provide advice and counsel to the Digital Public Library of America on legal issues related to its mission and will serve as a locus for informed legal discussion of copyright issues in the digital age.

Officer Grants

New York Public Library

New York, NY

$60,000 over 12 months to support a summer teachers fellowship program at the New York Public Library to define best practices for how NYPL resources and other digital collections could be used and to share that information with the DPLA for the benefit of broader audiences.

Project Director: Maggie Jacobs, Director of Education

Select Issues

Energy & Environment

Program Officer: Evan S. Michelson

The United States is poised to play a critical role in advancing research and promoting innovation that exploits low-carbon natural resources and spurs the development of low-carbon technologies that can help address environmental concerns, improve economic conditions, and strengthen the country's security. Building on existing and previous grantmaking in this area, the goal of the Alfred P. Sloan Foundation's Energy and Environment Program is to create new, impartial knowledge about the economic, environmental, and security tradeoffs associated with low- and no-carbon resources and technologies to reduce greenhouse gas emissions.

This program has five long-term objectives. The first is to generate new research by supporting the development of a high quality science, technology, engineering, economic, and regulatory research base to inform the development of low- and no-carbon technologies and the exploitation of low-carbon natural resources. The second is to inform stakeholders and decision-makers by applying impartial research findings to inform decision-making and advance action in scaling the utilization of low- and no-carbon technologies and natural resources. The third is to build networks and communities by creating a longstanding community of practice that will endure beyond the Foundation's program timeline. The fourth is to train the next generation of scholars and practitioners by introducing new voices into the field who are capable of looking ahead and identifying novel energy challenges and opportunities. The final goal is to seed new ideas that stimulate additional support for basic research by government and philanthropies.

Specific topics for investigation are determined by the Foundation's ability to support unique opportunities to catalyze new research, address existing information gaps, create objective data to inform ongoing debates, and promote learning across different organizations, sectors, and disciplines. The Foundation's current research areas of interest include examining and analyzing the implications of shale gas and oil exploration, the application of behavioral economics to energy efficiency technologies, the challenges associated with the scaled implementation of renewable technologies, alternative pricing schemes

The Sloan Foundation supports research investigating tradeoffs associated with low-carbon technologies and natural resources to reduce greenhouse gas emissions. One area of investigation includes exploring the impact of digitally-enabled energy efficient technologies, such as this iPhone app that can be connected to a home thermostat to reduce energy use.
(PHOTO COURTESY OF DENNIS SCHROEDER / NREL)

for energy distribution, and the potential of emerging energy technologies. Due to the significant funding available from both public and private sources for energy research, the Foundation remains highly selective in the grants it makes in this area, supporting only projects for which non-partisan funding is not readily available, projects related to other Foundation programs or priorities, or projects where Foundation support could be leveraged to significantly raise the chances of the project's success.

Trustee Grants

Arius Association

BADEN, SWITZERLAND

$150,000 over 24 months to continue efforts to help initiate working groups on regional repositories for spent nuclear fuel and radioactive wastes in Arab regions and Southeast Asia.

Project Director: Charles McCombie, President

Since 2009, with support from the Sloan and Hewlett Foundations, the Arius Association has been working to promote regional nuclear waste repositories outside of Europe. If such repositories could be brought into existence, they would result in the centralized disposal of dangerous nuclear wastes in a manner that would be more cost-effective, safe, and secure (from both a non-proliferation and dirty bomb perspective) than if each country with a small nuclear power program had responsibility for disposing of its own high-level nuclear waste. Funds from this grant provide support for Arius's continued work on this issue,

including an expansion of the scope of their efforts to include discussion of regional repositories for radioactive wastes from universities, hospitals, and industry. Supported activities over the next two years include a series of workshops in Arab regions and in Asia; the production of a draft constitution and work program for a regional nuclear repository organization; development of an IAEA report on multinational nuclear waste repositories; and a series of high-level papers aimed at specialists and policymakers.

Bipartisan Policy Center

WASHINGTON, DC

$349,989 over 18 months to build broad-based support from multiple stakeholder groups on options to address the nation's nuclear waste challenges.

Project Director: Margot Anderson, Executive Director, Energy Project

Funds from this grant support efforts by the Bipartisan Policy Center (BPC) to build broad-based support from multiple stakeholder groups on options to address the nation's nuclear waste challenges. To guide the overall effort, BPC will convene a high-level advisory council to provide project direction and serve as representatives when meeting with congressional and executive branch leadership. The three-to-five-member advisory council will be composed primarily of former members of the Secretary of Energy's Blue Ribbon Commission on America's Nuclear Future and include individuals that span industry, nonproliferation, and environmental perspectives. Under the leadership of the advisory board, BPC will assess the level of support for and opposition to implementing the various proposals on nuclear waste management and disposal by hosting three full-day regional workshops, one in Washington and two elsewhere, to engage policymakers and stakeholders on the issues surrounding nuclear waste. Each workshop will begin with a brief stage-setting presentation by experts on the substance and status of the various proposals and then move to a structured discussion. Throughout the project, the BPC project team will also stand ready to assist legislators, regulators, and policymakers to better understand both technical and policy issues and stakeholders' views.

The project has been carefully designed to stay well clear of endorsing any particular policy proposal.

Council on Foreign Relations

NEW YORK, NY

$1,114,059 over 36 months to conduct a program of research and publication on energy, economics, and international security, especially related to oil and gas.

Project Director: Michael A. Levi, Senior Fellow, Energy and Environment

This grant provides three years of continued support to the Council on Foreign Relations (CFR) for its Project on Energy and National Security, a research initiative that focuses on increasing our understanding of issues at the intersection of energy, economics, and international security. Led by CFR's Michael Levi, the project will examine a diverse array of issues, including how national oil companies make investment and production decisions, how infrastructure constraints cause divergence in regional oil prices, the economic and security implications of a significant drop in global oil prices, the consequences of the shifting trade in liquid fuels, and evaluating the effectiveness and consequences of international sanctions against petro-states. Additional grant funds support an annual workshop to discuss ongoing projects and findings, and outreach activities to engage policymakers, regulators, thought leaders, industry, and the public.

Environmental Defense Fund, Inc.

NEW YORK, NY

$1,250,000 over 18 months to improve scientific understanding of how and why methane leaks occur and support improved cost-effective strategies for monitoring and reducing methane emissions.

Project Director: Steven Hamburg, Chief Scientist

Whether and to what extent natural gas is better than coal or oil with respect to climate impact depends on how much of it escapes into the atmosphere during extraction and transport. Unfortunately, little is known about "fugitive" methane emission rates. With this gap in mind, the Environmental Defense Fund (EDF), partnering with about 90 industry and academic partners, has launched 16 studies that aim to increase our understanding of methane emission rates from key elements of the natural gas system. This grant provides supplemental support for this series of studies, enabling EDF to compare and contrast the relative accuracy of a wide range of methodologies used to quantify methane emissions and to assess existing and emerging methane monitoring technologies. Their

findings, to be published in a final report, will aim to provide an impartial, evidence-based evaluation of the most promising technologies and methodologies for measuring fugitive methane emissions, identify additional research that is needed, and chart a path toward the commercialization and large-scale deployment of well pad methane monitoring systems.

Resources for the Future, Inc.

WASHINGTON, DC

$400,510 over 21 months to develop among various stakeholders suggested guidelines on effective ways to address high-priority risk pathways associated with shale gas development.

Project Director: Nathan Richardson, Resident Scholar

Funds from this grant support a collaboration between Alan Krupnick and colleagues at Resources for the Future (RFF) and a team from the Environmental Defense Fund (EDF) to develop suggested guidelines on effective ways to address high-priority pathways associated with shale gas development. Starting with a list of 15 risk pathways all identified as high priority by a diverse selection of knowledgeable industry insiders, environmentalists, and regulators, RFF will collect and integrate information on risks, mitigation costs, regulation, and best practices for each pathway, culminating in a cost-benefit and modeling analysis of regulatory options for addressing the least controversial, most pressing risks associated with shale gas extraction. EDF will then involve a small group of motivated leaders from industry, nongovernmental organizations, regulatory bodies, and academia in a sustained attempt to build a consensus around guidelines for risk mitigation in shale gas development that will aim at improving both government regulation and industry practices. Additional grant funds support outreach and educational efforts, including outreach through websites, newsletters, blogs, popular articles, discussion papers, conference presentations, and peer-reviewed articles.

Rice University

HOUSTON, TX

$275,362 over 12 months to understand how new and proposed federal and local regulations will influence future natural gas resource development and pricing in the United States.

Project Director: Kenneth Barry Medlock, Fellow in Energy and Resource Economics

This grant supports the work of Dr. Kenneth Medlock at Rice University to understand how new and proposed federal and local regulations will influence natural gas resource development and pricing in the United States. Medlock will identify the range of federal, state, and local policy options being proposed by specific stakeholders, legislators, and interest groups regarding shale gas production in the United States. He will then specify several potential regulatory scenarios for analysis. Using the Rice World Gas Trade Model, he will then quantify the impact of proposed changes in regulation and taxation on the pace and scope of natural gas resource development and on the price of natural gas in different regions of the world. This analysis will allow him to highlight the regional and global market implications and the international geopolitical implications of the potential policies. Grant funds will support an initial exploratory workshop to identify relevant policies; analysis and modeling; an interim workshop; and a major capstone conference once his analysis is completed. Written products will include two to three academic papers, six to eight economic modeling projections with regional focus, a study monograph, and a policy white paper.

University of Texas, Austin

AUSTIN, TX

$1,516,462 over 30 months to examine the capability of U.S. shale oil to contribute significantly to oil supply for the next 20 years, under various economic and technology assumptions.

Project Director: Scott W. Tinker, Director

The Bakken Shale in North Dakota and the Eagle Ford Shale in Texas are currently producing well over a million barrels of shale oil per day and have been largely responsible for the recent increase in U.S. domestic oil production and the reduction in U.S. oil imports. Understanding the productive capacity of these plays is essential to understanding how shale oil is likely to shape the future of U.S. energy production. Funds from this grant support a project by the University of Texas at Austin's Bureau of Economic Geology (BEG) to model the current and future productive capacity of the Bakken and Eagle Ford shale oil plays. Using government and industrial data—some public, some proprietary—the BEG team will conduct a well-by-well analysis to determine the total oil and gas resources in each play, perform decline analyses; calculate current technically recoverable resources; assess

acreage drained by existing wells; identify locations remaining to be drilled; and build a production outlook model that projects the development of acreage and economic reserves over the next 20 years in each basin, given a variety of assumptions about the pace of technology improvement, logistical constraints, and well economics.

Officer Grants

University of California, Berkeley
Berkeley, CA
$31,250 over 9 months to bring together world-renowned energy economists to discuss and explore new research ideas on energy markets.
Project Director: Lucas Davis, Associate Professor

Columbia University
New York, NY
$50,000 over 12 months to support the Center on Global Energy Policy's external speaker series to help inform public debate.
Project Director: Jason Bordoff, Professor and Director, Center on Global Energy Policy

Duke University
Durham, NC
$124,346 over 12 months to identify key fiscal issues faced by local governments experiencing new or increased oil and gas development and describe policy approaches for managing these issues.
Project Director: Richard Newell, Professor

International Energy Policy and Programme Evaluation Conference
Birmingham,
$10,000 over 4 months to accelerate and advance the profession on energy evaluation through instilling an interest in and connections to professional evaluation for any program.
Project Director: Pierre Landry, President

Rice University
Houston, TX
$15,000 over 4 months to convene researchers funded by the Sloan Foundation to work on aspects of U.S. shale gas development.
Project Director: Kenneth Barry Medlock, Fellow in Energy and Resource Economics

Stanford University
Stanford, CA
$33,000 over 3 months to organize an international conference on regional carbon policies to mitigate climate change and its impacts around the world.
Project Director: Frank Wolak, Director

Civic Initiatives

Civic Initiatives

Program Director: Paula J. Olsiewski

Since its founding in 1934, the Alfred P. Sloan Foundation has been proud to call New York City home. With its Civic Initiatives Program, the Foundation responds to unique opportunities to benefit the New York City metro area with an eye toward advancing the Foundation's other interests in science, technology, and economic performance. Major initiatives in this program include the Sloan Public Service Awards, annual awards which honor outstanding New York City civil servants; the Sloan Awards for Excellence in Teaching Science and Mathematics, which recognize the achievements of exceptional science and math instruction in New York City public schools, and support for InsideSchools.org, a website that provides parents, students educators, and policymakers with accurate, up-to-date information on New York City public schools.

Trustee Grants

Cold Spring Harbor Laboratory
Cold Spring Harbor, NY
$3,000,000 over 36 months to provide start-up funds for Cold Spring Harbor Laboratory's (CSHL) new DNA Center in New York City.
Project Director: David Micklos, Executive Director

The DNA Learning Center, operated by Cold Spring Harbor Laboratory, is the world's largest provider of student lab instruction in molecular genetics, operating six teaching laboratories in Cold Spring Harbor, Lake Success, and Harlem. More than 265,000 precollege students have conducted hands-on experiments at DNA Learning Center locations since its first teaching lab opened, and each year about 30,000 New York area students receive science enrichment during half-day field trips, in-school visits, and week-long DNA camps administered by the Center.

The Center has also popularized several useful methods for delivering laboratory instruction in genetics to large numbers of teachers and students—including equipment-sharing consortia, mobile vans to carry instructional labs to remote sites, and laboratory field trips.

This grant provides partial support for the opening of a new DNA Learning Center location in New York City. The new location will bring high-quality molecular genetics education to an estimated 45,000 New York City students annually, and will provide significant educational opportunities to low-income, minority, and underserved student populations.

2013 Alfred P. Sloan Foundation Teaching Champion Awardee Saji James with Sharon Epperson, CNBC Personal Finance Correspondent and Mistress of Ceremonies, at the 2013 Visionary Awards Dinner, October 22, 2013 at The Pierre, New York. (PHOTO COURTESY OF THE COUNCIL FOR ECONOMIC EDUCATION)

Council for Economic Education

NEW YORK, NY

$150,000 over 24 months to promote economics education in New York area schools by recognizing innovative teachers and promoting their methods.

Project Director: Christophe Caltabiano, Vice President of Programs Administration

This grant provides two years of support for a new awards program by the Council for Economic Education (CEE) that honors exceptional, innovative K-12 teaching of economics and finance in the New York Metropolitan Area. These "Economic Educator of the Year Awards" will be awarded by a distinguished independent committee to three K-12 teachers based on evidence of their creativity, general effectiveness, and success at motivating underserved students.

Winners will be honored at the CEE annual dinner, where a video will also be shown that highlights their achievements and showcases their teaching methods. Each winner receives a $5,000 prize and their schools will receive $2,500 each to strengthen their economic education offerings.

Fund for the City of New York

NEW YORK, NY

$1,425,000 over 60 months to provide renewed support for the Sloan Awards for Excellence in Teaching Mathematics and Science in New York City Public High Schools.

Project Director: Mary McCormick, President

This grant provides five years of continued support to the Fund for the City of New York for the administration of the Sloan Awards for Excellence in Teaching Science and Mathematics, an annual awards program that honors exceptional math and science teaching in New York City's public high schools. Selected by a distinguished independent committee of scientists, educators, and civic leaders, each of seven yearly awardees receive $5,000 with an additional $2,500 going to his or her school to strengthen its science and mathematics program. Grant funds support the administration of the awards, selection of candidates, press and media outreach, and an annual ceremony honoring the winners.

The New School for Social Research

NEW YORK, NY

$710,000 over 24 months to identify, profile, and help inform choices among exemplary mathematics and science programs in New York City schools.

Project Director: Andrew White, Director

InsideSchools.org is a comprehensive source of information on New York City schools visited by over 140,000 students, parents, educators, and members of the public each month. Its user-friendly website offers detailed profiles of New York's 1,700 schools, including in-class videos, student achievement statistics, and insights gained from on-site visits. News and advice columns also cover everything from entrance tests to new administrative appointments. To ensure access by diverse demo-

New York City middle school students participate in a math circle run by the Sloan-funded Center for Mathematical Talent of New York University's Courant Institute of Mathematical Sciences. Math Circles are informal clubs where students can explore their interest in mathematics with like-minded peers. (PHOTO COURTESY OF THE CENTER FOR MATHEMATICAL TALENT. PHOTO BY MARK SAUL)

graphic groups, the entire site can be immediately translated into 50 different languages. The Sloan Foundation has supported InsideSchools since its inception in 2002.

Funds from this grant support efforts by InsideSchools to expand its offerings by providing information about the different pedagogical and curricular offerings at each school, such as Everyday Math, TERC, Saxon, Singapore, or Montessori. In a separate effort to improve data quality, InsideSchools will also begin consulting with a statistician to help separate school effects from small sample biases or other confounding variables.

New York University

NEW YORK, NY

$210,450 over 24 months to study flood insurance, including the uptake, distributional, and incentive effects of Super Storm Sandy.

Project Director: Richard L. Revesz, Lawrence King Professor of Law, Dean Emeritus

This grant supports the research of New York University professor Richard Revesz, who is studying the effects of the National Flood Insurance Program, which provides subsidized flood insurance to at-risk communities in exchange for implementing floodplain management ordinances that would make future construction less vulnerable to the damage caused by flooding. Revesz will investigate a series of interrelated issues, including who primarily benefits from the program, how it affects construction decisions, how to estimate costs and benefits, and what "moral hazard" or "adverse selection" problems the program creates. Particular emphasis will be based on investigating consumer, government, and firm behavior in the wake of Superstorm Sandy, which caused massive flooding in the New York City metropolitan area in 2012.

New York University

NEW YORK, NY

$200,000 over 12 months to conduct planning activities for four projects at the Center for Urban Science and Progress.

Project Director: Aristides A. N. Patrinos, Deputy Director for Research

In 2012, New York University established the Center for Urban Science and Progress (CUSP), a new center dedicated to conducting research and education in the emerging field of urban informatics. Using vast data sets and new tools and strategies, CUSP plans to address the critical challenges facing cities, including infrastructure, technology integration, energy efficiency, transportation congestion, public safety, and public health. Funds from this grant provide support for the planning of four major CUSP projects: the Quantified Community project, which aims to fully instrument a section of the city to acquire and use the data collected by sensors as well as other data streams; the Urban Microbiome project, which aims to study the city's microbiological ecosystems; the Urban Observatory project, which aims to develop and deploy new sensor technologies around the city; and the Data Warehouse project, which aims to construct a pioneering computing center to facilitate the storage, management, curation, analysis, and use of urban informatics data. Grant funds will support planning of these four projects, the production of white papers examining benefits, costs, and potential obstacles, and the production of detailed project timelines, budgets, and workplans.

Northeastern University
BOSTON, MA
$575,000 over 12 months to support the rapid and sustained recovery of the metro New York City area and bolster resilience after Superstorm Sandy.
Project Director: Stephen Flynn, Founding Co-director

Funds from this grant support efforts by a team led by Stephen Flynn, Professor of Political Science at Northeastern University, to hold a series of four workshops to help guide the rapid and sustained recovery of the metro New York City region in the wake of Hurricane Sandy. The four workshops will bring together emergency managers, urban planners, and academic experts from coastal cities and the New York region to facilitate the exchange of findings and recommendations on how best to incorporate resilience into the current regional restoration efforts and future planning. The first three workshops will focus on three sectors where Sandy caused considerable disruption in the metro New York area—transportation, energy, and health services. Each workshop will aim to identify recommendations for what should be in place to mitigate future risk, what can be done to speed up recovery of these sectors, and to identify crosscutting issues amongst them. The fourth workshop will take place at the Wharton School at the University of Pennsylvania and will involve representatives from the insurance, reinsurance, and banking industries. The goal of this workshop will be to identify meaningful incentives that can be devised for advancing measures that can bolster resilience. In addition to the workshops, Flynn and his team will engage in a number of outreach activities to publicize their findings, including the publication of several reports, meetings with relevant stakeholders, and a series of high profile op-eds and media appearances.

Grants Made Against Prior Authorizations

In March 2012, the Board of Trustees approved the expenditure of up to $210,000 for small grants that support groups that provide services to the philanthropic community. The following grants were made against this previously authorized fund.

Council on Foundations, Inc.
ARLINGTON, VA
$45,000 over 9 months to support work on behalf of the nonprofit and charitable community.
Project Director: Vikki N. Spruill, President and CEO

GuideStar USA, Inc.
WILLIAMSBURG, VA
$7,500 over 12 months to support work on behalf of the nonprofit and charitable community.
Project Director: James Lum, CFO

New Venture Fund
WASHINGTON, DC
$110,000 over 12 months to support the establishment of the Science Philanthropy Alliance.
Project Director: Bruce Boyd, Managing Director

Philanthropy New York
NEW YORK, NY
$30,000 over 12 months to support work in 2014 on behalf of the nonprofit and charitable community.
Project Director: Ronna D. Brown, President

Technology Affinity Group
WAYNE, PA
$17,500 over 12 months to support development and implementation of a standards-based common grantee database.
Project Director: Lisa Dill Pool, Executive Director

Technology Affinity Group
WAYNE, PA
$5,000 over 9 months for 2013 membership dues.
Project Director: Lisa Dill Pool, Executive Director

Officer Grants

New York University
NEW YORK, NY
$124,308 over 15 months to study the accessibility and effectiveness of programs for gifted and talented students offered by New York City's Department of Education.
Project Director: James Kemple, Executive Director and Research Professor

2013 Financial Review

The financial statements and schedules of the Foundation for 2013 and 2012 have been audited by Grant Thornton LLP. They include the balance sheets, statements of activities and cash flows, and schedules of management and investment expenses.

Investment income for 2013 was $20,718,467, an increase of $1,492,971 from $19,225,496 in 2012. After the deduction of investment expenses and provision for taxes, net investment income was $9,428,208 in 2013 as compared to $5,322,907 for the prior year. Investment expenses for 2013 consisted of $4,730,322 of direct investment expenses and $5,059,937 for investment management fees. Total investment expenses and provision for taxes of $1,500,000 equaled $11,290,259 versus $13,902,589 in 2012. Total investment gains for 2013 were $232,096,280 as compared with $160,946,370 in 2012.

Grants authorized (net of grant refunds) and management expenses during 2013 totaled $96,207,011 as compared to $78,312,444 for the prior year. Of this total, grants authorized (net of refunds) amounted to $86,382,161, while management expenses were $9,824,850. For the prior year, grants authorized (net of grant refunds) were $69,352,644 and management expenses were $8,959,800.

Grant payments in 2013 were $82,100,316 compared to $76,776,612 for the prior year. Together with management expenses, investment expenses, and provision for taxes, the total of cash expenditures net of grant refunds in 2013 was $103,215,425 while in 2012 the amount was $99,639,001.

Grants authorized and payments made during the year ended December 31, 2013 are summarized in the following table:

Grants unpaid at December 31, 2012	$	57,991.294
Authorized during 2013		86,563,465
Payments during 2013		(82,100,316)
Grants unpaid at December 31, 2013	$	62,454,443

The fair value of the Foundation's total assets was $1,888,720,791 at December 31, 2013 including investments valued at $1,887,476,272 as compared with total assets of $1,734,238,378 at December 31, 2012.

Consolidated Financial Statements and
Supplementary Information Together with
Report of Independent Certified Public Accountants

ALFRED P. SLOAN FOUNDATION

December 31, 2013 and 2012

Audited Financial Statements and Schedules

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Audit • Tax • Advisory

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REPORT OF INDEPENDENT CERTIFIED PUBLIC ACCOUNTANTS

To the Board of Trustees of
Alfred P. Sloan Foundation:

We have audited the accompanying consolidated financial statements of the Alfred P. Sloan Foundation (the "Foundation"), which comprise the consolidated statements of financial position as of December 31, 2013 and 2012, and the related consolidated statements of activities and cash flows, for the years then ended, and the related notes to the consolidated financial statements.

Management's responsibility for the financial statements
Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's responsibility
Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion
In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of the Alfred P. Sloan Foundation as of December 31, 2013 and 2012, and the changes in their net assets and their cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Supplementary information
Our audit was conducted for the purpose of forming an opinion on the basic 2013 consolidated financial statements as a whole. The schedule of management and investment expenses for the years ended December 31, 2013 and 2012 on page 124 and the schedule of grants and appropriations for the year ended December 31, 2013 on pages 125 through 131 are presented for purposes of additional analysis and are not a required part of the basic consolidated financial statements. Such supplementary information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic consolidated financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic consolidated financial statements and certain additional procedures. These additional procedures included comparing and reconciling the information directly to the underlying accounting and other records used to prepare the consolidated financial statements or to the consolidated financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America established by the American Institute of Certified Public Accountants. In our opinion, the supplementary information is fairly stated, in all material respects, in relation to the consolidated financial statements as a whole.

New York, New York
June 17, 2014

Alfred P. Sloan Foundation

Consolidated Statements of Financial Position

As of December 31, 2013 and 2012

	2013	2012
ASSETS		
Cash	$ 1,244,519	$ 878,760
Investments (Note 3):		
Direct investments — equities	145,512,350	94,458,538
Direct investments — fixed income	104,982,138	163,264,399
Direct investments — mutual & exchange traded funds	209,304,270	158,863,478
Alternative investments	1,427,677,514	1,316,773,203
Total investments	1,887,476,272	1,733,359,618
Total assets	$ 1,888,720,791	$ 1,734,238,378
LIABILITIES AND NET ASSETS		
LIABILITIES		
Grants payable (Note 8)	$ 62,454,443	$ 57,991,294
Federal excise tax payable (Note 5)	12,980,634	8,779,379
Deferred compensation arrangements	928,555	1,093,388
Accrued postretirement health benefit obligation (Note 7)	6,270,079	4,882,853
Other liabilities	113,235	137,581
Total liabilities	82,746,946	72,884,495
Commitments (Notes 3, 4, and 9)		
NET ASSETS — unrestricted	1,805,973,845	1,661,353,883
Total liabilities and net assets	$ 1,888,720,791	$ 1,734,238,378

The accompanying notes are an integral part of these consolidated financial statements.

Alfred P. Sloan Foundation

Consolidated Statements of Activities

For the years ended December 31, 2013 and 2012

	2013	2012
INVESTMENT INCOME		
Interest and dividends	$ 20,718,467	$ 19,225,496
Less:		
Investment expenses	(9,790,259)	(11,902,589)
Provision for taxes (Note 5)	(1,500,000)	(2,000,000)
	(11,290,259)	(13,902,589)
Net investment income	9,428,208	5,322,907
EXPENSES		
Grants (net of refunds of $181,303 in 2013 and $374,129 in 2012)	86,382,161	69,352,644
Management expenses	9,824,850	8,959,800
	96,207,011	78,312,444
Excess of expenses over net investment income	(86,778,803)	(72,989,537)
INVESTMENT GAINS		
Net realized gain on disposal of investments	80,747,979	114,771,505
Unrealized gain on investments, net of deferred federal excise tax expense of $12,214,453 and $9,125,712 in 2013 and 2012, respectively	151,348,301	46,174,865
	232,096,280	160,946,370
Increase in net assets before postretirement benefit adjustments	145,317,477	87,956,833
Amounts not yet recognized as a component of net periodic benefit cost	(697,515)	(768,040)
Increase in net assets	144,619,962	87,188,793
Net assets at beginning of year	1,661,353,883	1,574,165,090
Net assets at end of year	$ 1,805,973,845	$ 1,661,353,883

The accompanying notes are an integral part of these consolidated financial statements.

Alfred P. Sloan Foundation

Consolidated Statements of Cash Flows

For the years ended December 31, 2013 and 2012

	2013	2012
CASH FLOWS FROM OPERATING ACTIVITIES		
Increase in net assets	$ 144,619,962	$ 87,188,793
Adjustments to reconcile increase in net assets to net cash used in operating activities:		
Net realized gain on disposal of investments	(80,747,979)	(114,771,505)
Unrealized gain on investments	(154,437,042)	(47,117,209)
Increase (decrease) in federal excise tax payable	4,201,255	(960,273)
Increase (decrease) in grants payable	4,463,149	(7,049,839)
Decrease in accrued postretirement health benefit obligation	1,387,226	1,345,379
(Decrease) increase in deferred compensation arrangements	(164,833)	208,020
Decrease in other liabilities	(24,346)	(6,514)
Net cash used in operating activities	(80,702,608)	(81,163,148)
CASH FLOWS FROM INVESTING ACTIVITIES		
Proceeds from sales of investments	101,785,986	100,727,942
Purchases of investments	(20,717,619)	(20,174,256)
Net cash provided by investing activities	81,068,367	80,553,686
Net increase (decrease) in cash	365,759	(609,462)
Cash at beginning of year	878,760	1,488,222
Cash at end of year	$ 1,244,519	$ 878,760

The accompanying notes are an integral part of these consolidated financial statements.

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2013 and 2012

1. ORGANIZATION

Alfred P. Sloan Foundation makes grants primarily to support original research and broad-based education related to science, technology, economic performance, and the quality of American life. Alfred P. Sloan Foundation is unique in its focus on science, technology, and economic institutions-and the scholars and practitioners who work in these fields-as chief drivers of the nation's health and prosperity. Alfred P. Sloan Foundation has a deep-rooted belief that carefully reasoned systematic understanding of the forces of nature and society, when applied inventively and wisely, can lead to a better world for all. Alfred P. Sloan Foundation's investment portfolio provides the financial resources to support its activities. The investment strategy for the investment portfolio is to invest prudently in a diversified portfolio of assets with the goal of achieving superior returns.

In June 2009, Sloan Projects LLC was established under the Delaware Limited Liability Company Act. Alfred P. Sloan Foundation and Sloan Projects LLC share the common charitable and educational purpose of supporting, among other projects, film, theatrical, and television projects that promote education about science and technology themes and characters and challenge existing stereotypes about scientists and engineers. Sloan Projects LLC is a single member limited liability company ("LLC") with the sole member being Alfred P. Sloan Foundation. Sloan Projects LLC is consolidated with Alfred P. Sloan Foundation for financial statement and tax purposes.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Accounting

The accompanying consolidated financial statements have been prepared on the accrual basis of accounting and include the assets, liabilities, net assets, and financial activities of Alfred P. Sloan Foundation and Sloan Projects LLC (collectively, the "Foundation"). All significant inter-organization balances and transactions have been eliminated in consolidation.

Income Taxes

Alfred P. Sloan Foundation is exempt from federal income tax under Section 501(c)(3) of the Internal Revenue Code (the "Code") and is a private foundation as defined in Section 509(a) of the Code. Sloan Projects LLC is a single member LLC and is a disregarded entity for tax purposes. The Foundation recognizes the effect of income tax positions only if those positions are more likely than not of being sustained.

Fair Value Measurements

Fair value is defined as the price that would be received to sell an asset in an orderly transaction between market participants at the measurement date. Fair value is a market-based measurement, not an entity-specific measurement, and sets out a fair value hierarchy with the highest priority being quoted prices in active markets. The Foundation discloses fair value measurements by level within that hierarchy. The fair value hierarchy maximizes the use of observable inputs and minimizes the use of unobservable inputs by requiring that the most observable inputs be used when available. Observable inputs are those that market participants would use in pricing the asset or liability based on market data obtained from sources independent of the Foundation as of the reporting date. Unobservable inputs reflect the Foundation's assumptions about the inputs market participants would use in pricing

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2013 and 2012

the asset or liability developed based on the best information available in the circumstances. The fair value is categorized into three levels based on the inputs as follows:

Level 1 — Valuations based on unadjusted quoted prices in active markets for identical assets or liabilities that the Foundation has the ability to access at the measurement date. An active market for the asset or liability is a market in which transactions for the asset or liability occur with sufficient frequency and volume to provide pricing information on an ongoing basis. A quoted price in an active market provides the most reliable evidence of fair value and shall be used to measure fair value whenever available. Since valuations are based on quoted prices that are readily available and regularly available in an active market, valuation of these securities does not entail a significant degree of judgment.

Level 2 — Valuations based on quoted prices in markets that are not active or for which all significant inputs are observable, either directly or indirectly. Also included in Level 2 are investments measured using a net asset value ("NAV") per share, or its equivalent, that may be redeemed at that NAV as of the date of the statement of financial position or in the near term, which the Foundation has generally considered to be within one-year.

Level 3 — Valuations based on inputs that are unobservable and significant to the overall fair value measurement. Unobservable inputs shall be used to measure fair value to the extent that observable inputs are not available, thereby allowing for situations in which there is little, if any, market activity for the asset or liability at the measurement date. Also included in Level 3 are investments measured using a NAV per share, or its equivalent, that can never be redeemed at NAV in the near term or for which redemption at NAV is uncertain due to lockup periods or other investment restrictions.

The categorization of a financial instrument within the fair value hierarchy is based upon the pricing transparency of the instrument and does not necessarily correspond to the Foundation's perceived risk of that instrument.

Investments

Investments in equity securities with readily determinable fair values are reported at fair value based on quoted market prices. Investments in debt securities are measured using quoted market prices where available. If quoted market prices for debt securities are not available, the fair value is determined using an income approach valuation technique that considers, among other things, rates currently observed in publicly traded markets for debt with similar terms to companies with comparable credit risk, the issuer's credit spread, and illiquidity by sector and maturity.

The Foundation follows the accounting standards of the Financial Accounting Standards Board (FASB) Accounting Standards Codification ("ASC") Subtopic, 820-10-35-59, *Fair Value Measurement and Disclosures—Fair Value Measurements of Investments in Certain Entities That Calculate Net Asset Value per Share (or its Equivalent).* This allows for the estimation of the fair value of investments in investment companies, for which the investment does not have a readily determinable fair value, using

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2013 and 2012

net asset value per share or its equivalent, as provided by the investment managers. The Foundation reviews and evaluates the values provided by the investment managers and agrees with the valuation methods and assumptions used in determining the net asset values of these investments as of the measurement date. These estimated fair values may differ significantly from the values that would have been used had a ready market for these securities existed.

Most investments classified in Levels 2 and 3 consist of shares or units in investment funds as opposed to direct interests in the funds' underlying holdings, which may be marketable. Because the net asset value reported by each fund is used as a practical expedient to estimate fair value of the Foundation's interest therein, its classification in Level 2 or 3 is based on the Foundation's ability to redeem its interest at or near December 31st. If the interest can be redeemed in the near term, which the Foundation has determined to be within one-year, the investment is classified as Level 2.

Gains and losses on disposal of investments are determined on the first-in, first-out basis on a trade date basis.

Concentrations of Credit Risk
Financial instruments which potentially subject the Foundation to concentrations of credit risk consist of cash and cash equivalents, equity and fixed-income securities and alternative investments. The Foundation maintains its cash in various bank deposit accounts which, at times, may exceed federally insured limits. The Foundation's cash accounts were placed with high credit quality financial institutions. The Foundation has not experienced, nor does it anticipate, any losses with respect to such accounts. The Foundation has a significant investment in equities, fixed income securities, mutual and exchange-traded funds and alternative investments, both marketable and non-marketable, and is therefore subject to concentrations of credit risk.

Grants
Grants are recorded as an expense of the Foundation when authorized by the Board of Trustees and the grantee has been selected and notified. In certain instances, grants are recorded as an expense and liability when the Board of Trustees appropriates amounts for selected projects. Refunded grants are recorded as a reduction to grant expense. Conditional grants are not recorded until the conditions are substantially met.

Use of Estimates
The preparation of consolidated financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from these estimates.

Subsequent Events
The Foundation evaluated its December 31, 2013 consolidated financial statements for subsequent events through June 17, 2014, the date the consolidated financial statements were available to be is-

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2013 and 2012

sued. Except as disclosed in Note 9, the Foundation is unaware of any other events that would require disclosure in the accompanying consolidated financial statements.

3. INVESTMENTS

The following tables present the fair value hierarchy of investments, the only financial instruments of the Foundation that are measured at fair value on a recurring basis, at December 31, 2013 and 2012:

	Fair Value Measurements at December 31, 2013			
	Total	**Level 1**	**Level 2**	**Level 3**
Direct investments:				
Equities:				
Domestic	$ 123,229,849	$123,229,849	$ —	$ —
International	22,282,501	22,282,501	—	—
	145,512,350	145,512,350	—	—
Fixed income:				
U.S. government	104,982,138	104,982,138	—	—
Mutual & exchange-traded funds:				
Equities	83,005,768	83,005,768	—	—
Independent return	55,661,105	55,661,105		
Fixed income	70,637,397	70,637,397	—	—
	209,304,270	209,304,270	—	—
Alternative investments:				
Equities:				
Domestic	129,038,930	—	129,038,930	—
Long/short	159,387,038	—	86,860,877	72,526,161
International	240,745,909	—	215,983,482	24,762,427
Fixed income:				
Global sovereign bonds	58,269,841	—	58,269,841	—
High yield	55,327,905	—	55,327,905	—
Independent return	468,687,617	21,169,228	186,897,683	260,620,706
Real estate	61,575,745	—	—	61,575,745
Private equity	254,644,529	—	—	254,644,529
	1,427,677,514	21,169,228	732,378,718	674,129,568
	$ 1,887,476,272	$ 480,967,986	$ 732,378,718	$ 674,129,568

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2013 and 2012

	Fair Value Measurements at December 31, 2012			
	Total	**Level 1**	**Level 2**	**Level 3**
Direct investments:				
Equities:				
Domestic	$ 72,002,729	$ 72,002,729	$ —	$ —
International	22,455,809	22,455,809	—	—
	94,458,538	94,458,538	—	—
Fixed income:				
U.S. government	163,264,399	163,264,399	—	—
Mutual & exchange-traded funds:				
Equities	65,887,339	65,887,339	—	—
Fixed income	92,976,139	92,976,139	—	—
	158,863,478	158,863,478	—	—
Alternative investments:				
Equities:				
Domestic	98,384,780	—	—	98,384,780
Long/short	127,576,451	—	59,968,535	67,607,916
International	200,738,282	—	179,673,995	21,064,287
Fixed income:				
Global sovereign bonds	60,310,179	—	60,310,179	—
Independent return	479,178,450	15,146,614	202,035,448	261,996,388
Real estate	64,605,245	—	—	64,605,245
Private equity	285,979,816	—	—	285,979,816
	1,316,773,203	15,146,614	501,988,157	799,638,432
	$ 1,733,359,618	$ 431,733,029	$ 501,988,157	$ 799,638,432

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2013 and 2012

The following table presents a reconciliation for all Level 3 assets measured at fair value at December 31, 2013:

	Beginning Balance	Purchases	Settlements/ Redemptions	Total Net Realized and Unrealized Gains	Transfers In/ (Out) *	Ending Balance
Alternative Investments:						
Equities:						
Domestic	$ 98,384,780	$ —	$ —	$ 30,654,150	$ (129,038,930)	$ —
Long/short	67,607,916	—	(2,864,000)	7,782,245	—	72,526,161
International	21,064,287		—	3,698,140	—	24,762,427
Independent return	261,996,388	71,724,916	(43,413,400)	25,640,707	(55,327,905)	260,620,706
Real estate	64,605,245	2,261,790	(14,390,433)	9,099,143	—	61,575,745
Private equity	285,979,816	19,305,634	(84,287,166)	33,646,245	—	254,644,529
	$ 799,638,432	$ 93,292,340	$ (144,954,999)	$ 110,520,630	$ (184,366,835)	$ 674,129,568

* Certain alternative investments were reclassified from Level 3 to Level 2 during 2013 due to changes in liquidity terms. Other certain investments were reclassified from Level 2 to Level 3 as the Foundation redeemed from the main fund and residual balances remained in liquidating side pockets. The Foundation recognizes transfers at the date of the statement of financial position.

The following table presents the reconciliation for all Level 3 assets measured at fair value at December 31, 2012:

	Beginning Balance	Purchases	Settlements/ Redemptions	Total Net Realized and Unrealized Gains (Losses)	Transfers In/ (Out) **	Ending Balance
Alternative Investments:						
Equities:						
Domestic	$ 77,244,606	$ —	$ —	$ 21,140,174	$ —	$ 98,384,780
Long/short	58,555,735	—	—	(18,497,862)	27,550,043	67,607,916
International	2,355,621	20,000,000	—	(1,289,881)	(1,453)	21,064,287
Independent return	257,095,237	33,450,000	(82,762,649)	90,448,938	(36,235,138)	261,996,388
Real estate	60,050,751	3,702,538	(4,994,174)	5,846,130	—	64,605,245
Private equity	296,679,055	17,507,277	(150,873,530)	109,755,036	12,911,978	285,979,816
	$ 751,981,005	$ 74,659,815	$ (238,630,353)	$ 207,402,535	$ 4,225,430	$ 799,638,432

** Certain alternative investments classified as Level 3 during 2011 were reclassified to Level 2 during 2012 due to the expiration of lock-up periods. One alternative investment was reclassified from Level 2 to Level 3 as the Foundation entered into a share class with a 2-year lock-up period. The Foundation recognizes transfers at the date of the statement of financial position.

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2013 and 2012

The following table lists the redemption terms and unfunded commitments for the alternative investments as of December 31, 2013 and 2012:

	2013					
	# of Funds	Fair Value	Unfunded Commitments ($ in millions)	Redemption Frequency	Redemption Notice Period	Lock-up Period
Alternative investments:						
Equities:						
Domestic	1	$ 129,038,930	$ —	quarterly, other	30 days	None
Long/short	6	159,387,038	—	quarterly, semi-annually, other	30–90 days	none, rolling 3-year
International	4	240,745,909	—	monthly, quarterly, other	6–60 days	none, 2-year
Fixed income:						
Global sovereign bonds	1	58,269,841	—	monthly	10 days	None
High Yield	1	55,327,905	—	semi-annually	90 days	None
Independent return	21	468,687,617	36	daily, monthly, quarterly, annually, other	30–180 days	none, 1-year, rolling 2-year
Real estate	9	61,575,745	5	None	N/A	N/A
Private equity	49	254,644,529	72	None	N/A	N/A
Total		$ 1,427,677,514	$ 113			

	2012					
	# of Funds	Fair Value	Unfunded Commitments ($ in millions)	Redemption Frequency	Redemption Notice Period	Lock-up Period
Alternative investments:						
Equities:						
Domestic	2	$ 98,384,780	$ —	quarterly, other	30 days	None, 3-year
Long/short	5	127,576,451	—	quarterly, semi-annually, other	30–90 days	None, Rolling 3-year
International	4	200,738,282	—	monthly, quarterly, other	6–60 days	None, 2-year
Fixed income:						
Global sovereign bonds	1	60,310,179	—	monthly	10 days	None
Independent return	21	479,178,450	12	monthly, quarterly, annually, other	30–180 days	None, 1–3 years
Real estate	9	64,605,245	6	None	N/A	N/A
Private equity	49	285,979,816	93	None	N/A	N/A
Total		$ 1,316,773,203	$ 111			

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2013 and 2012

Equities: Alternative investments in this category invest predominantly in equity securities including U.S., international developed and emerging markets, benchmarked against MSCI All Country World Index. Equity funds range from no lock-up provisions to no more than 3 years.

Fixed Income: Alternative investments in this category invest in domestic and international fixed income securities, benchmarked against Citigroup Salomon Broad index.

Independent Return: Independent return funds include investments such as low net exposure equity hedge funds, distressed credit, and merger arbitrage. Such strategies are expected to have equity-like long-term returns but with less correlation to the equity markets. $75.6 million is invested in draw-down structures with no predetermined redemption date.

Real Estate: Includes funds that invest primarily in commercial real estate, all of which are illiquid investments.

Private Equity: Includes private equity and venture capital, all of which are illiquid investments.

Private foundations are required by the Internal Revenue Service to distribute 5% of average assets during the year. In order to plan and budget in an orderly manner, the Foundation implements the 5% rule by using a 12-quarter rolling average of the fair value of its investment portfolio to determine the distribution level for the year. The last quarter on the 12-quarter rolling average is September 30th.

4. FINANCIAL INSTRUMENTS WITH OFF-BALANCE-SHEET CREDIT OR MARKET RISK

The Foundation's investment strategy has the ability to incorporate certain financial instruments that involve, to varying degrees, elements of market risk and credit risk in excess of the amounts recorded on the consolidated financial statements.

During 2013, the Foundation sold options contracts. S&P 500 Index put options sold were valued at approximately $21.2 million at December 31, 2013 and to $15.1 million at December 31, 2012. The Foundation does not anticipate that losses, if any, resulting from its market or credit risks would materially affect its consolidated financial statements.

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2013 and 2012

5. TAXES

The Foundation is liable for a federal excise tax of 2% of its net investment income, which includes realized capital gains. However, this tax is reduced to 1% if certain conditions are met. The Foundation met the requirements for the 1% tax for the years ended December 31, 2013 and 2012. Therefore, current taxes are estimated at 1% of net investment income for 2013 and 2012. Additionally, certain of the Foundation's investments give rise to unrelated business income tax liabilities. Such tax liabilities for 2013 and 2012 are not material to the accompanying consolidated financial statements; however, the provision for taxes, as of December 31, 2013 and 2012, includes an estimate of tax liabilities for unrelated business income.

Deferred taxes principally arise from differences between the cost value and fair value of investments. Since the qualification for the 1% tax is not determinable until the fiscal year in which net gains are realized, deferred taxes represent 2% of unrealized gains at December 31, 2013 and 2012.

6. RETIREMENT PLAN

The Foundation has a defined contribution retirement plan covering substantially all employees under arrangements with Teachers Insurance and Annuity Association of America and College Retirement Equities Fund and Fidelity Investments. Retirement plan expense was $803,288 and $801,710 in 2013 and 2012, respectively.

7. POSTRETIREMENT BENEFITS OTHER THAN PENSIONS

The Foundation provides healthcare benefits for qualified retirees. The Foundation records annual amounts relating to the plan based on calculations that incorporate various actuarial and other assumptions, including discount rates, mortality, turnover rates, and healthcare cost trend rates.

The Foundation reviews its assumptions on an annual basis and makes modifications to the assumptions based on current rates and trends as appropriate. The effect of modifications to those assumptions is recorded as a charge to net assets and amortized to net periodic cost over future periods using the corridor method. The net periodic costs are recognized as employees render the services necessary to earn the postretirement benefits.

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2013 and 2012

The following table sets forth the financial information for the plan for 2013 and 2012:

	2013	2012
Change in accrued postretirement benefit obligation:		
Benefit obligation at beginning of year	$ 4,882,853	$ 3,537,474
Service cost	299,108	150,403
Interest cost	186,625	149,956
Actuarial loss	1,173,576	1,244,101
Benefits paid	(272,083)	(199,081)
Benefit obligation at end of year	$ 6,270,079	$ 4,882,853
Components of net periodic postretirement benefit cost reported:		
Service cost	$ 299,108	$ 150,403
Interest cost	186,625	149,956
Amortization of transition obligation	476,061	476,061
Amortization of gain	(359,198)	(317,241)
Net periodic postretirement benefit cost	$ 602,596	$ 459,179
Benefit obligation weighted average assumptions at December 31, 2013 and 2012: Discount rate	4.86%	3.91%
Periodic benefit cost weighted average assumptions for the years ended December 31, 2013 and 2012: Discount rate	3.91%	4.33%

The medical trend and inflation rate is 9% in 2014 grading down to 6% in 2017 and 5.5% ultimately.

Assumed healthcare cost trend rates have a significant effect on the amounts reported for the postretirement health benefit plan. The effects of a 1% increase (decrease) in trend rates on total service and interest cost and the postretirement health benefit obligation are as follows:

	2013		2012	
	1% Increase	1% Decrease	1% Increase	1% Decrease
Effect on total service and interest cost	$ 46,879	$ (49,574)	$ 70,737	$ (71,385)
Effect on postretirement benefit obligation	922,043	(745,160)	710,751	(570,586)

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2013 and 2012

Projected premium payments for each of the next five fiscal years and thereafter are as follows:

Year ending December 31:	
2014	$ 288,763
2015	306,483
2016	322,959
2017	321,395
2018	332,947
Thereafter through 2023	1,668,128
	$ 3,240,675

The accumulated amount not yet recognized as a component of net periodic benefit cost was $(667,842) and $(1,365,357) at December 31, 2013 and 2012, respectively. The components are as follows:

	2013	**2012**
Transition obligation	$ 2,939,284	$ 3,415,345
Net actuarial gain	(3,607,126)	(4,780,702)
	$ (667,842)	$ (1,365,357)

The transition obligation and actuarial gain that will be amortized into net periodic benefit cost in 2014 will be $476,061 and $359,198, respectively.

8. GRANTS PAYABLE

The Foundation estimates that the grants payable balance as of December 31, 2013 will be paid as follows:

Year:	
2014	$ 37,003,758
2015	17,231,506
2016	5,259,179
2017	2,960,000
	$ 62,454,443

The Foundation awards multi-year grants for certain programs with continued annual funding contingent upon the respective grantee satisfying certain performance criteria as outlined in the executed grant agreement; accordingly, the Foundation has not recorded a liability for these conditional awards which are subject to annual review. Such conditional grant commitments total approximately $2.5 million at December 31, 2013.

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2013 and 2012

9. LEASE

The Foundation entered into a ten-year lease effective January 1, 1999. The lease contains an escalation clause that provides for rental increases resulting from increases in real estate taxes and certain operating expenses. On January 11, 2007, the Foundation renegotiated its lease for the period commencing on January 1, 2009 and expiring on December 31, 2016. As a result of the renegotiation, the fixed rent payable under the lease is an amount equal to $1,379,926 per annum for the period commencing on January 1, 2012 and ending on December 31, 2016. Effective November 1, 2008, the Foundation acquired additional space at an annual rent of $386,250. The lease on the additional space expires on December 31, 2016. Rent expense for 2013 and 2012, including escalations, was $1,923,254 and $1,842,768, respectively.

On November 21, 2013, the Foundation modified the original lease to provide for the leasing of a portion of the 22nd floor as substitute premises and to surrender the original premises on the 25th floor. Prior to the surrender of the original premises, the Foundation shall lease the original premises upon all of the terms of the original lease. The substitute premises were delivered on February 27, 2014. On the date after the Foundation vacates the original premises and provides written notice of the surrender to the Landlord, but in no case later than November 27, 2014, the term of the original lease shall expire on the date of surrender and the original lease shall be deemed modified. As a result of the lease modification, rent commencement on the substitute premises will occur on February 27, 2015 for a period of fifteen years ending on February 28, 2030. The fixed rent payable under the lease is an amount equal to (a) $1,740,492 per annum for the period commencing on February 27, 2015 and ending on February 26, 2020 and (b) $1,874,376 per annum for the period commencing on February 27, 2020 and ending on February 26, 2025 and (c) $2,008,260 per annum for the period commencing on February 27, 2025 and ending on February 28, 2030.

10. LINE OF CREDIT

The Foundation established a $40,000,000 line of credit with Bank of New York Mellon to provide bridge funding of grants and to finance short-term working capital needs of the Foundation. The line of credit is secured by the Foundation's investments held at Bank of New York Mellon. To date, the Foundation has not yet used the line of credit. The interest rate is calculated using the Mellon Monthly LIBOR plus 75 basis points, with a fallback rate of Wall Street Journal Prime minus 125 basis points. The interest rate was 2% at December 31, 2013 and 2012. If the line is used, interest will be payable monthly on the 15th of each month and principal will be due on demand. If payment is not made within 15 days following the payment date, a $25 late fee will be assessed.

SUPPLEMENTARY INFORMATION

Alfred P. Sloan Foundation

Schedule of Management and Investment Expenses

For the years ended December 31, 2013 and 2012

	2013	2012
Management expenses:		
Salaries and employees' benefits:		
Salaries	$ 6,574,515	$ 6,725,657
Employees' retirement plan and other benefits	2,990,154	2,670,134
Total	9,564,669	9,395,791
Rent	1,923,253	1,842,768
Program expenses	1,124,169	1,209,920
Office expenses	911,183	894,785
Website and publications	61,143	65,508
Professional fees	970,755	822,857
Total management expenses	14,555,172	14,231,629
Less direct investment and other management expenses allocated to investments	(4,730,322)	(5,271,829)
Management expenses	$ 9,824,850	$ 8,959,800
Investment expenses:		
Investment management fees	$ 5,059,937	$ 6,630,760
Direct investment and other management expenses allocated to investments	4,730,322	5,271,829
Investment expenses	$ 9,790,259	$ 11,902,589

This schedule should be read in conjunction with the accompanying consolidated financial statements and notes thereto.

Alfred P. Sloan Foundation

Schedule of Grants and Appropriations

For the year ended December 31, 2013

Grantee	Unpaid December 31, 2012	2013 Authorized	2013 Payments	Unpaid December 31, 2013
Alaska, University of, Anchorage	$ 32,000	$ —	$ 32,000	$ —
Alberta, University of	—	100,000	100,000	—
American Academy of Arts and Sciences	125,000	50,000	154,128	20,872
American Assembly	—	210,000	210,000	—
American Association for the Advancement of Science	—	840,625	532,199	308,426
American Chemical Society	12,500	—	12,500	—
American Council on Education	—	855,577	518,259	337,318
American Economic Association	—	124,803	62,402	62,401
American Film Institute	192,000	—	96,000	96,000
American Indian College Fund	100,000	—	100,000	—
American Institutes for Research	436,312	—	—	436,312
American Physical Society	6,000	—	6,000	—
American Society for Engineering Education	—	19,825	19,825	—
American University	16,662	—	16,662	—
Anstor Inc.	—	17,451	17,451	—
Arius Association	—	150,000	45,000	105,000
Arizona State University	193,790	164,852	358,642	—
Arizona, University of	—	123,050	123,050	—
Association of American Colleges and Universities	—	31,606	31,606	—
Association of Public and Land-Grant Universities	—	94,865	94,865	—
Association of Research Libraries	—	50,000	50,000	—
Astrophysical Research Consortium	—	10,000,000	500,000	9,500,000
Baylor University	193,250	100,000	100,000	193,250
Behavioral Science And Policy Association	—	12,000	—	12,000
BioBricks Foundation, Inc.	—	100,000	100,000	—
Bipartisan Policy Center	—	349,989	233,224	116,765
Borel, Brooke	—	40,000	—	40,000
Boston College	849,334	100,000	949,334	—
Boston Symphony Orchestra	—	122,280	122,280	—
Boston University	—	50,000	50,000	—
Brandeis University	—	25,000	25,000	—
British Columbia, University of	526,873	127,629	356,203	298,299
Brooklyn Academy of Music	300,000	—	300,000	—
Buffalo, University of , SUNY	—	50,000	50,000	—
Business-Higher Education Forum	236,679	18,000	115,820	138,859

Alfred P. Sloan Foundation

Schedule of Grants and Appropriations

For the year ended December 31, 2013

Grantee	Unpaid December 31, 2012	2013 Authorized	2013 Payments	Unpaid December 31, 2013
California Institute of Technology	$ —	$ 50,000	$ 50,000	$ —
California, University of, Berkeley	1,958,458	3,546,764	3,806,541	1,698,681
California, University of, Davis	387,656	1,264,517	1,103,377	548,796
California, University of, Irvine	—	472,392	362,428	109,964
California, University of, Los Angeles	710,663	1,520,000	1,383,263	847,400
California, University of, Santa Cruz	—	50,000	50,000	—
California, University of, San Diego	113,940	244,059	357,999	—
California, University of, Santa Barbara	—	50,000	50,000	—
California, University of, San Francisco	—	400,000	275,000	125,000
California, University of, Riverside	—	50,000	50,000	—
Carnegie Endowment for International Peace	100,000	—	100,000	—
Carnegie Institution of Washington	1,800,000	1,650,000	3,184,000	266,000
Carnegie Mellon University	973,249	395,000	1,037,618	330,631
Catticus Corporation	500,000	—	—	500,000
Center for Open Science	—	500,000	331,400	168,600
Chicago, University of	688,790	312,697	894,587	106,900
Chrinon Limited	—	644,943	644,943	—
Chemical Heritage Foundation	—	410,740	285,740	125,000
Cincinnati, University of	—	50,000	50,000	—
Cold Spring Harbor Laboratory	20,000	3,000,000	2,020,000	1,000,000
College, University of, London	80,000	—	80,000	—
Colby College	—	50,000	50,000	—
Colorado, University of, at Boulder	1,163,774	400,000	934,303	629,471
Colorado, University of, Denver	192,506	50,000	187,197	55,309
Columbia University	73,945	270,000	343,945	—
Conference Board, Inc.	—	125,000	—	125,000
Coolidge Corner Theater Foundation	—	480,606	250,606	230,000
Cornell University	50,000	224,458	274,458	—
Corporation for National Research Initiatives	194,147	—	194,147	—
Council for Economic Education	—	150,000	75,000	75,000
Council of Graduate Schools	260,000	—	135,000	125,000
Council on Foreign Relations	—	1,114,059	400,000	714,059
Council on Foundations, Inc.	—	45,000	45,000	—
Council on Library and Information Resources	—	1,299,616	420,243	879,373
Council of Professional Associations on Federal Statistics	—	45,000	—	45,000

Alfred P. Sloan Foundation

Schedule of Grants and Appropriations

For the year ended December 31, 2013

Grantee	Unpaid December 31, 2012	2013 Authorized	2013 Payments	Unpaid December 31, 2013
Dartmouth College	$ 899,815	$ 63,075	$ 357,457	$ 605,433
Digital Public Library of America, Inc.	1,200,000	—	900,000	300,000
Drexel University	463,121	—	113,494	349,627
Duke University	—	224,346	224,346	—
Emory University	—	50,000	50,000	—
Ensemble Studio Theatre, Inc.	—	1,791,000	597,000	1,194,000
Environmental Defense Fund Incorporated	—	1,250,000	1,250,000	—
Families and Work Institute, Inc.	434,141	—	434,141	—
Fedcap Rehabilitation Services, Inc.	—	105,000	105,000	—
Film Independent, Inc.	110,000	—	110,000	—
Financial Stability Board	—	125,000	—	125,000
Finance Flows, Inc.	—	20,000	20,000	—
Finkelstein, Katherine Eban	—	50,000	—	50,000
Firestein, Stuart	—	40,000	—	40,000
Foundation Center	65,000	—	65,000	—
Fund for the City of New York	778,548	1,425,000	1,063,548	1,140,000
Georgia Institute of Technology	—	98,731	98,731	—
George Mason University	246,028	89,951	335,979	—
George Washington University	—	109,000	—	109,000
Greater Washington Educational Telecommunications Assn., Inc.	—	1,500,000	780,000	720,000
GuideStar USA, Inc.	—	7,500	7,500	—
Hamptons International Film Festival	—	186,467	186,467	—
Harvard Medical School	—	125,000	125,000	—
Harvard University	1,100,063	616,188	1,579,263	136,988
Hong Kong, University of	—	74,918	74,918	—
ICPO-INTERPOL	350,000	—	350,000	—
Illinois Institute of Technology	—	283,340	163,340	120,000
Illinois, University of, Urbana-Champaign	—	150,000	150,000	—
ImpactStory	—	500,000	250,000	250,000
Indiana, University of	203,659	100,000	303,659	—
International Energy Program Evaluation Conference	—	10,000	10,000	—
Institute of International Education Inc.	250,000	—	250,000	—
Institute for Advanced Study	—	124,995	124,995	—
Johns Hopkins University	182,458	—	182,458	—
Kanigel, Robert	—	50,000	20,000	30,000

Alfred P. Sloan Foundation

Schedule of Grants and Appropriations

For the year ended December 31, 2013

Grantee	Unpaid December 31, 2012	2013 Authorized	2013 Payments	Unpaid December 31, 2013
Kansas, University of	$ 6,500	$ —	$ 6,500	$ —
Keck Graduate Institute	175,000	—	100,000	75,000
Keystone Symposia on Molecular and Cellular Biology	—	78,794	78,794	—
L.A. Theatre Works	352,941	—	214,941	138,000
Library Foundation of Los Angeles	—	50,000	50,000	—
Loughborough University (UK)	104,212	—	104,212	—
Manhattan Theatre Club	419,816	125,000	358,295	186,521
Marine Biological Laboratory	157,466	1,250,000	757,466	650,000
Maryland, University of, College Park	62,845	50,000	50,000	62,845
Massachusetts Institute of Technology	527,161	4,097,505	2,125,536	2,499,130
McGill University	—	50,000	50,000	—
Michigan, University of	2,929,480	230,562	1,660,167	1,499,875
Middlebury College	151,984	—	151,984	—
Mindell, David	—	50,000	—	50,000
Minnesota, University of	—	323,703	323,703	—
Montana Tech. of the University of Montana	24,065	—	24,065	—
Montana State University	—	10,000	10,000	—
Montana, University of	19,400	—	19,400	—
Mozilla Foundation	436,700	—	436,700	—
Museum of Mathematics	101,461	—	101,461	—
Museum of the Moving Image	—	358,170	208,170	150,000
National Academy of Sciences	923,106	417,886	875,992	465,000
National Action Council for Minorities in Engineering, Inc.	5,077,178	3,835,000	4,014,846	4,897,332
National Bureau of Economic Research, Inc.	840,369	1,994,619	1,487,841	1,347,147
National Geographic Society	500,000	—	500,000	—
National Information Standards Organization	—	207,533	105,314	102,219
National Opinion Research Center	373,684	—	373,684	—
National Public Radio, Inc.	500,000	300,000	450,000	350,000
New Venture Fund	—	110,000	110,000	—
New York Academy of Medicine	100,000	—	100,000	—
New York County District Attorney	60,000	—	60,000	—
New York Genome Center, Inc.	2,000,000	—	1,000,000	1,000,000
New York Hall of Science	133,000	—	133,000	—
New York Public Library	—	60,000	60,000	—
New York Public Radio	—	1,625,000	775,000	850,000

Alfred P. Sloan Foundation

Schedule of Grants and Appropriations

For the year ended December 31, 2013

Grantee	Unpaid December 31, 2012	2013 Authorized	2013 Payments	Unpaid December 31, 2013
New York University	$ 1,535,299	$ 2,648,039	$ 2,293,763	$ 1,889,575
North Carolina State University	—	753,933	331,951	421,982
North Carolina, University of, Chapel Hill	—	50,000	50,000	—
Northern Arizona University	100,000	—	100,000	—
Northwestern University	—	177,947	177,947	—
Northeastern University	—	575,000	575,000	—
Ohio State University	—	1,250,000	750,000	500,000
Open Knowledge Foundation	79,350	—	79,350	—
Oregon, University of	300,000	1,325,000	1,000,000	625,000
ORCID	—	349,659	349,659	—
Oxford University	712,836	80,000	479,878	312,958
Pennsylvania, University of	241,594	206,695	433,289	15,000
Philantrophy New York	28,000	30,000	28,000	30,000
Pittsburgh, University of	—	33,000	33,000	—
Pittsburgh, University of, Medical Center	—	450,000	250,000	200,000
Polytechnic Institute of New York University	20,000	20,000	20,000	20,000
Price, Catherine	—	50,675	50,675	—
Princeton University	36,711	250,000	286,711	—
Project HOPE	—	20,000	—	20,000
Project Implicit Inc.	—	49,500	49,500	—
Puerto Rico, University of	275,000	—	64,144	210,856
Purdue University	48,956	50,000	98,956	—
RAND Corporation	581,040	1,120,309	864,990	836,359
Rice University	—	436,928	436,928	—
Rensselaer Polytechnic Institute	450,000	—	450,000	—
ReServe Elder Service, Inc.	—	45,000	45,000	—
Resources for the Future, Inc.	—	1,175,533	791,136	384,397
Rhode Island, University of	449,381	—	449,381	—
Rochester, University of	—	100,000	100,000	—
Rockefeller University	680,000	50,000	397,333	332,667
Rutgers, The State University of New Jersey	275,907	50,000	172,300	153,607
Segre, Gino	—	16,100	—	16,100
Science Festival Foundation	—	1,300,000	700,000	600,000
Science Friday Initiative, Inc.	—	684,117	234,117	450,000
Skidmore College	—	74,980	74,980	—

Alfred P. Sloan Foundation

Schedule of Grants and Appropriations

For the year ended December 31, 2013

Grantee	Unpaid December 31, 2012	2013 Authorized	2013 Payments	Unpaid December 31, 2013
Sloan Consortium, Sloan-C	$ 500,000	$ —	$ 500,000	$ —
Smithsonian Institution	250,000	140,000	360,000	30,000
Social Science Research Network	—	20,000	—	20,000
Society for Human Resources Management Foundation	—	909,650	450,000	459,650
SoundVision Productions	473,397	—	473,397	—
Southern California, University of	238,900	100,000	219,450	119,450
South Florida, University of	—	100,000	100,000	—
Southern Regional Education Board	555,000	—	230,000	325,000
Stanford University	574,354	422,973	856,658	140,669
Stony Brook University	—	50,000	50,000	—
Sundance Institute	—	500,000	250,000	250,000
Technology Affinity Group	—	22,500	22,500	—
Texas, University of, Austin	982,703	1,831,513	1,790,204	1,024,012
Texas, University of, Southwestern Medical Center at Dallas	—	50,000	50,000	—
The Brookings Institution	451,336	407,959	566,673	292,622
The New School for Social Research	—	710,000	710,000	—
Third Sector New England Inc.	—	125,000	125,000	—
TIAA-CREF Institute	—	104,650	104,650	—
Tribeca Film Institute	108,000	861,744	594,744	375,000
Toronto, University of	376,258	400,000	676,258	100,000
Tufts University	—	50,000	50,000	—
Upjohn Institute for Employment Research	171,660	—	171,660	—
Urban Institute	364,884	—	364,884	—
Utah, University of	—	50,000	50,000	—
Vanderbilt University	—	50,000	50,000	—
Virginia Polytechnic Institute and State University	100,000	190,000	230,000	60,000
Washington, University in St. Louis	—	50,000	50,000	—
Washington, University of	361,127	1,682,022	1,293,149	750,000
Waterloo, University of	—	50,000	50,000	—
Wayne State University	—	50,000	50,000	—
Wellesley College	112,731	31,712	144,443	—
WGBH Educational Foundation	1,500,000	2,500,000	2,750,000	1,250,000
Wikimedia Foundation	1,000,000	—	1,000,000	—
Wilcox, Christie	—	25,000	—	25,000
Wisconsin, University of, Madison	$489,233	$650,000	$246,631	$892,602

Alfred P. Sloan Foundation

Schedule of Grants and Appropriations

For the year ended December 31, 2013

Grantee	Unpaid December 31, 2012	2013 Authorized	2013 Payments	Unpaid December 31, 2013
WNET.ORG	$ —	$ 45,000	$ —	$ 45,000
WNYC Public Radio	250,000	—	250,000	—
Women Make Movies, Inc.	—	247,546	—	247,546
Woodrow Wilson International Center for Scholars	844,850	600,001	1,160,852	283,999
Worcester Polytechnic Institute	—	125,000	125,000	—
Yale University	—	3,230,163	1,638,832	1,591,331
TOTAL	50,265,236	86,990,534	82,091,585	55,164,185
Sloan research fellowships to be granted in ensuing year	6,300,000	—	—	6,300,000
Other appropriations authorized but not committed	1,426,058	249,863	685,663	990,258
	57,991,294	87,240,397	82,777,248	62,454,443
Reduction for grant transfers	—	(676,932)	(676,932)	—
	$ 57,991,294	$ 86,563,465	$ 82,100,316	$ 62,454,443

This schedule should be read in conjunction with the accompanying consolidated financial statements and notes thereto.

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