Alfred P. Sloan Foundation

2012 Annual Report

Contents

Cover: The 2.5 meter optical Sloan Telescope at Apache Point Observatory, New Mexico is the primary instrument of the Sloan Digital Sky Survey (SDSS). In 2012, the Foundation made a five-year, $10 million dollar grant to support the fourth phase of the SDSS, which will focus on measuring the structure and evolutionary history of galaxies and other stellar objects, including the Milky Way.
PHOTO REPRINTED COURTESY OF THE SLOAN DIGITAL SKY SURVEY.

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.

President's Letter

Dr. Paul L. Joskow

I am pleased to introduce the 2012 Annual Report of the Alfred P. Sloan Foundation. The report contains descriptions of our grantmaking programs, a list of all grants made by the Foundation in 2012, a financial review and audited financial statements, and the names of the Foundation's Trustees, officers, and staff. In this review I provide an overview of the Foundation's grant activity in 2012.[1] The review concludes with a few personal reflections on the Foundation's mission and how we go about pursuing it effectively and efficiently. This year my reflections will focus on the question "why support basic research?"

The Alfred P. Sloan Foundation's mission is to advance the quality of American life through making grants to support research and education in science, technology, and economic performance. We also look for special opportunities to benefit the residents of the New York City metropolitan area, where our staff and their families live, work, and attend school, and to fund select projects that reflect critical national needs.

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 managed by the Foundation's investment team with the support of our Investment Committee. Led by Chief Investment Officer Bill Petersen, our investment team performed well and earned a 10.4% percent rate of return during calendar year 2012. As of December 31, 2012, the value of the Foundation's endowment stood at approximately $1.73 billion.

STEM Research

One of the most rewarding aspects of the Sloan Foundation's grantmaking is its support of new and emerging fields of scientific inquiry. New areas of scientific research are often perceived to be too risky to attract funding from major federal agencies like the National Science Foundation and the National Institutes of Health or have difficulty finding a funding "slot" between established programs which have budget lines reserved for them. The Foundation focuses its research grants in emerging areas and community-building infrastructure to support pioneering researchers as they attempt to develop and test new theo-

1 This review is a collective effort that has relied on contributions of many members of the Sloan Foundation's staff. I want to thank Nate Williams, Anne McKissick, Gail Pesyna, Kathleen Christensen, Danny Goroff, Liz Boylan, Josh Greenberg, Paula Olsiewski, Doron Weber, Joe Noon, and Sonia Epstein for their contributions.

ries, build new instruments, create new data sets, and publish new research in top academic journals. In this way the Foundation has played a vital role in the development of the now-thriving disciplines of computer science, computational biology, theoretical neurobiology, ocean sciences, and behavioral economics. In addition, Foundation grants supporting infrastructure and community-building have led to new templates, technologies, and standards for the collection, organization, and open access of scientific research and data. The Sloan Digital Sky Survey, the Census of Marine Life, and the Encyclopedia of Life are good examples of the Foundation's grantmaking in this area.

The newest entrant in this longstanding Foundation tradition is the emerging field of indoor microbial ecology. Americans spend about 90% of their time indoors[2], yet most research and policy has focused on the outdoor environment. The Foundation's program supporting research on the indoor microbial environment, led by Program Director Paula Olsiewski, is supporting research focused on accurately characterizing the indoor microbial environment and how it is affected by building attributes, human occupancy, the external environment, and other factors. Initial research results make clear that indoor environments are as complex and interrelated as savannahs, swamps, and rainforests, and support thriving invisible communities of bacteria, fungi, and other microbes that live alongside humans in the buildings where we work, rest, and play. In 2012, the Foundation committed over $3 million in grants for research and community-building to researchers studying the microbiology of built environments, including a project to study how human occupancy changes the microbial profile in hospitals, an investigation into how neonatal care environments influence the development of microbes in the intestines of prematurely-born infants, and a detailed study of how indoor microbial communities differ across cultures.

Initiated with Sloan funds in 2009, the Deep Carbon Observatory (DCO) is an exciting multidisciplinary, decade-long, international scientific research program devoted to revolutionizing our understanding of the abundance, distribution, movement, and properties of carbon under Earth's surface. Grants in this program in 2012 totaled more than $6 million and provided support for a host of initiatives, including funds to support the DCO's international secretariat, funds for the development of the necessary technical infrastructure to house, organize, and share data collected by DCO researchers, seed funding for a DCO consortium on diamond research, and funds for instrument development.

Also in 2012, the Foundation made a major, five-year, ten million dollar commitment to jump-start the fourth phase of the Sloan Digital Sky Survey (SDSS). Over the past thirteen years, utilizing a unique 2.5 meter optical telescope in New Mexico, the SDSS has vastly increased the catalog of stellar objects and has helped transform our understanding of cosmic evolution, galaxy formation, and the structure of the Milky Way. Data collected by the SDSS is published under open access principles—every image ever collected has been released to the public—making it one of most highly-cited and influential telescopic surveys in the world. The Foundation has been a proud supporter of the SDSS since its inception, and we are proud to support its next phase of operation, which will focus on investigating dark energy, the expansion history of the universe, and variations in chemical abundances among galaxies.

Responsible scientific research must incorporate an understanding of both the potential benefits and the potential adverse effects of this research on society. Acceptable research practices should minimize potential risks in ways that are not excessively burdensome on scientific inquiry. The Foundation's program in Synthetic Biology, also led by Dr. Olsiewski, partners with scientists, ethicists, and policymakers to identify and examine the risks and rewards of this rapidly advancing field, aiming to forge a consensus around a series of best practices and institutional frameworks sensitive to the ethical and physical dangers associated with synthetic biology research while allowing and encouraging exciting new discoveries in the field. In 2012, the Foundation committed nearly $1 million in grants to work in this area, including a grant to provide support for a National Academy of Sciences forum on synthetic biology, an initiative to educate and engage religious denominations about the risks and rewards of synthetic biology research, and a project to help implement the best practice recommendations of the Presidential Commission for the Study of Bioethical Issues.

2 The Inside Story: A Guide to Indoor Air Quality. U.S. EPA/ Office of Air and Radiation. Office of Radiation and Indoor Air (6609J) Cosponsored with the Consumer Product Safety Commission, EPA 402-K-93-007. http://www.cpsc.gov/cpscpub/pubs/450.html

The Foundation's oldest continuous initiative is the Sloan Research Fellowship program, which was started by Mr. Sloan himself in 1955 and is now led by Vice President Daniel Goroff. The fellowships aim to stimulate fundamental research by supporting the work of outstanding scholars at early stages of their academic careers. In 2012, the Foundation awarded 126 fellowships to researchers chosen by independent selection committees across eight scientific and technical fields: chemistry, computational and evolutionary molecular biology, computer science, economics, mathematics, neuroscience, ocean sciences and physics. Following the successful completion of the Census of Marine Life, the first fellowships in oceans sciences were awarded in 2012 with fellowships going to eight outstanding young researchers from the U.S. and Canada, including a bio-geochemist who studies the ocean's carbon cycle, a geographer who maps the sea's ever-shifting grasslands, and a deep sea researcher who studies marine life in underwater volcanoes.

STEM Higher Education

Under the new leadership of Dr. Elizabeth S. Boylan, the Foundation commissioned an exhaustive year-long inventory and evaluation of its Minority Ph.D. program, which aims to increase the representation of students from underrepresented groups in STEM Ph.D. programs. Interviewing current and former students, faculty, and university administrators at the more than 50 Ph.D. programs supported by the Foundation, the inventory looked at how alterations to the structure of Foundation grantmaking could better advance our long-term goal of increasing diversity in STEM higher education. A new program strategy is being developed, with results to be announced in 2013.

Also under the guidance of Dr. Boylan, the Foundation renamed and expanded its undergraduate Student Retention program in 2012. Formerly focused on grants that encouraged colleges and universities to collect, share, and use data on undergraduate attrition, retention, and time-to-degree in STEM fields, the new program—The Science of Learning STEM—aims to increase the quality of higher education through the support of original, high-quality, hypothesis-driven research on the factors affecting undergraduate learning and retention in STEM fields. Major grants in this program in 2012 included support for a new edition of Seymour and Hewitt's *Talking About Leaving*, which explores why undergraduate leave the sciences; a partnership with the Bay View Alliance to study how universities can accelerate the adoption of effective teaching techniques; and a project with the Council of Graduate Schools to train new faculty to more effectively assess student learning.

Though the Foundation's support for new Professional Science Master's Degree (PSM) programs was completed in 2010, the Foundation remains committed to institutionalizing the success of its PSM initiative. Accordingly, the Foundation made a major grant to the Keck Graduate Institute to provide it with bridge funding as the new steward of the PSM affiliation process. Serving as a crucial gatekeeper, Keck will work with the Professional Science Master's Association to help maintain the quality of Professional Science Master's programs around the country and share best practices among PSM programs. This will help to ensure PSM degree programs meet the highest curricular standards and continue their proven strategy of working closely with industry to produce highly-trained professional scientists with the skills needed to succeed in private industry.

In 2012, the Foundation made grants totaling more than $9.1 million in support of our programs in STEM Higher Education.

Public Understanding of Science, Technology & Economics

Sloan's multi-faceted Public Understanding program is led by Vice President Doron Weber. With grants in 2012 of nearly $11.8 million, the program supports books, film, radio, television, theater, and new media that promote the public understanding of natural science, technology, engineering, mathematics, economics, and the lives of those who advance knowledge in these areas. The Public Understanding program had many successes in 2012. Four works supported through our Books program were released to positive reviews: Mark Kurlansky's *Birdseye*, about the innovator who created the frozen foods industry; George Church and Ed Regis's *Regenesis*, about the perils and possibilities of synthetic biology; Michael Lemonick's *Mirror Earth*, about the search for extrasolar life; and *The Fractalist,* an autobiography by famed geometer Benoit Mandelbrot.

In Film, the Foundation's partnerships with the Tribeca, Sundance, and Hampton's film festivals continued to provide a valuable platform for supporting filmmakers who explore scientific and technical themes and raising the visibility of films and

scripts that involve science or feature scientists, technologists, or engineers as major characters. Through the festivals, Sloan recognized several exciting films, filmmakers, and screenwriters in 2012, including Musa Syeed's *Valley of Saints*, Jenny Deller's *Future Weather,* Jake Schreier's *Robot & Frank*, and Andrew Bujalski's *Computer Chess*.

In Radio, Foundation grantees continued to receive accolades for excellence in journalism. The Foundation-supported *Studio 360* received the coveted Edward R. Murrow award and *BURN: An Energy Journal* received a 2012 Science Journalism Award from the Kavli Foundation. In Theater, ongoing Sloan partnerships with the Ensemble Studio Theatre, Manhattan Theatre Club, and Playwrights Horizons led to successful, well-reviewed productions of several science and technology themed plays, including Patrick Link's *Headstrong*, Henrik Ibsen's *An Enemy of the People*, and Catherine Trieschmann's *How the World Began*.

Grantmaking in our Public Understanding program also led to several innovative new initiatives in 2012, including support for the Brooklyn Academy of Music's production of Phillip Glass's haunting *Einstein at the Beach*, and support for director James Cameron's highly-publicized deep sea dive to the bottom of the Mariana Trench.

Digital Information Technology

Grantmaking in the Foundation's program in Digital Information Technology—which focuses on leveraging developments in information technology to improve the quality of scientific research and democratize access to knowledge—made several major grants in 2012. Led by Dr. Joshua Greenberg, the Foundation committed more than $11 million in grant funds to a variety of exciting initiatives. Supported projects include an innovative fellowship program that trains postdocs to provide needed data curation and management services to researchers, a partnership with the Mozilla Foundation to train scientists in software development, a project to speed the development and adoption of the iPython computing platform, and a project to help non-profits locate volunteers with technical and computing expertise. Other grants in this area focused on the ways in which digital technology is changing how researchers find, manipulate, and share data. Major grants went to research projects investigating the role of scholarly working papers in the dissemination of knowledge and to study how scientists evaluate the trustworthiness of information sources. Other grants supported projects to develop and launch a webpage annotation system, to develop platforms for archiving and reproducing computational environments, and to help social science journals process and publish more complete data associated with research articles.

The Foundation also provided $1.56 million of support in 2012 for the continued development of the Digital Public Library of America (DPLA), a collaborative project by a diverse collection of libraries, cultural organizations, and technologists to create the first national digital library. Progress on the tremendous technical, legal, and organizational challenges of launching such a library continued to be impressive in 2012, with the DPLA public launch scheduled for early 2013. The DPLA initiative is led by Vice President Doron Weber.

Economic Performance & Quality of Life

The Foundation's program in Economic Institutions, Behavior, and Performance, initiated in 2009, continued in 2012 its grantmaking strategy of supporting high-quality, original, theory-driven research on a series of closely interrelated topics, including the economic implications of the Great Recession, behavioral economics and household finance, the study of labor markets in science and technology, and easing barriers to scientific productivity. Under the leadership of Vice President Daniel Goroff and with additional grants developed by Vice President Gail Pesyna, the Foundation provided support for a wide range of research initiatives. Grant funds supported the creation of a new interdisciplinary research center at UC Berkeley focused on energy efficiency, a project to use records from online auction site eBay to examine consumer behavior, a study of the factors that affect scientific productivity and collaboration, an initiative to ensure that newly created state healthcare insurance exchanges collect data on consumer and vendor behavior and system choice architecture, and an ambitious project to manage systemic risk through accurately modeling the cash-flow implications of financial contracts.

The Foundation's Working Longer program also made major grants in 2012. This program is led by Program Director Kathleen Christensen. The aging of the U.S. population, as well as the populations of most other developed countries, is creating profound social, economic, and political challenges. The Great Recession, the disappearance of traditional defined benefit pension plans, longer life

expectancies, and rapidly rising health care costs have made these challenges even more difficult. It is clear to me that a growing faction of the work force will continue to seek full or part-time work opportunities both for economic reasons and for personal satisfaction. There are many barriers that make it difficult for older workers to continue to find satisfying job opportunities, to ease into retirement gracefully and at their own pace, and to take full advantage of public and private programs that provide financial support for older Americans—Social Security, Medicare, Medicaid, defined contribution pension plans, etc. Projects supported by this program in 2012 include a project to update the original High School and Beyond panel study, an investigation into how the 2008 financial collapse and subsequent recession affected labor market activities of older Americans, an awards program designed to identify and honor New York City employers with innovative, age-friendly workplace policies, and a study of the saving and consumption patterns of older Americans both before and after retirement. Grants in the Working Longer program totaled nearly $12 million in 2012.

Civic Initiatives

The Foundation has been headquartered in New York City since its founding in 1934. Our Civic Initiatives program aims to benefit the New York City metro area in ways consonant with the Foundation's other interests in science, technology, engineering, mathematics, and economics. Dr. Olsiewski leads this program, though all Sloan program directors seek grantmaking opportunities that benefit the New York City metropolitan area. Grantmaking in our Civic program in 2012 was dominated by a major $3 million grant to help found the New York Genome Center. A model of scientific collaboration, the New York Genome Center is a state-of-the-art DNA sequencing and bioinformatics facility that will serve both as an independent research center and as a shared resource by the City's major scientific and cultural institutions. A boon to both the City and to scientists, the Center promises to make New York a major center of the bioinformatics revolution that is transforming medicine and the biological sciences. In addition, 2012 saw the opening in Manhattan of The Museum of Mathematics, an innovative, Foundation-supported children's museum devoted to the wonders of algebra, geometry, and all-things-numbers.

The Foundation continues its partnership with the Fund for the City of New York (FCNY) to make awards each year to outstanding New York City civil servants through the Sloan Public Service Awards. Also in 2012, FCNY issued a third year of awards recognizing outstanding science and math teachers in New York City public high schools.

Select Projects

The Foundation has a long-standing interest in promoting selected research and outreach activities on important developments in energy supply and demand technologies, energy security, and nuclear safety and proliferation issues. Grantmaking in this program in 2012 focused primarily on nuclear issues, with major grants supporting an initiative by the Carnegie Endowment for International Peace to build consensus around what constitutes legitimate nuclear activity, an American Academy Arts & Sciences project to promote best practices and minimize safety concerns associated with the peaceful spread of nuclear energy, and a project to address security risks at nuclear, biological and chemical facilities. Other grants support a project at the University of Colorado to analyze the political coalitions and stakeholders involved in U.S. shale gas development, complementing a pair of 2011 grants the studied the likely economic impacts and environmental risks associated with increased shale gas extraction.

Why Support Basic Research?

The first thing that comes to most people's minds when they hear the word "philanthropy" is not support for basic research. Rather, they are likely to think of charitable donations to alleviate poverty, to support culture and the arts, to improve domestic and global health, to promote social justice and provide services to the disadvantaged, and to support religious and educational institutions.

These are all worthy areas for philanthropic support. The Sloan Foundation's grant portfolio, however, is quite different. The Sloan Research Fellowship Program, for instance, recognizes young scholars for their research accomplishments and potential to contribute significantly to their fields. Our STEM Research, Economics, Working Longer, and Digital Information Technology programs all support basic and applied research, focusing on projects where significant scientific advances can be made with modest funding, where government and private support is not yet available, and where we can catalyze the development of promising new areas of inquiry. Our Public Understanding

of Science, Technology, and Economics program seeks to educate the public both about the accomplishments of scientific research and the men and women who devote their lives to science. Our STEM Higher Education program helps prepare graduate students for careers in science and technology. It is natural to ask why basic research, the human infrastructure that supports it, and the public understanding of science are central to the Sloan Foundation's mission.

An easy and convenient answer would be that we are constrained by the instructions of our founder. Both in his personal philanthropy and during his leadership of the Foundation, Alfred P. Sloan Jr. expressed a clear commitment to supporting basic research in science, technology, economics, and management; recognizing promising young scientists; advancing research and education in these areas at universities and non-profit research institutions; and improving public understanding of science, technology, and economic performance. In addition, Mr. Sloan wrote a letter to the Trustees of the Foundation in 1959 outlining his thoughts and preferences on a number of issues related to grantmaking, foundation management, and investment of the endowment. In that letter, Mr. Sloan recognized that he could not predict the future and that the Foundation's Trustees and officers needed flexibility to adapt the Foundation's programs, management, and investment arrangements to a changing world. Accordingly, Mr. Sloan's historical preferences do not bind the Foundation to a specific grantmaking strategy. And as is the case for many other foundations, our Trustees and officers could have moved the Foundation in different directions in the years since Mr. Sloan's death in 1966.

Yet they did not. The Foundation's Mission Statement and its programs follow very closely the preferences exhibited by Mr. Sloan. Specific programs have, of course, changed over time to adapt to a changing world and new opportunities it has created, but the basic spirit of the Foundation's mission has not changed. As such, I can't take the easy route and simply observe that we are following the donor's intent. I must explain why the Foundation has continued to devote a large fraction of its grantmaking to support basic research, the people who devote their lives to it, and educating the public about why basic and applied research is important.

There are several reasons why the Foundation believes that support for basic research and the human and physical infrastructure that supports it are important philanthropic opportunities.

a. Over the long run, basic research is a key driver of economic growth and prosperity. Numerous empirical studies (of varying quality) have quantified the private and social rates of return to research and development (R&D) spending. While results vary, several general conclusions emerge:

    i. R&D spending makes a significant contribution to aggregate economic growth;

    ii. Spending on basic research has a higher rate of return than the other components of R&D spending;

    iii. Industry studies and patent citation data indicate that basic research ultimately plays a significant role in launching new products, processes, and services.

b. Basic research has spillover effects that broadly advance scientific knowledge and the fruits of this knowledge. The ultimate returns from basic research have many dimensions, including advancing the general state of knowledge; equipping scientists and engineers with state-of-the art education and skills; increasing the rate of scientific advance through creating communities of researchers that exploit network effects; and contributing to the development of new goods, processes, and services. Private firms, however, cannot appropriate all of the societal benefits of basic research, and to the extent they can partially appropriate scientific knowledge by keeping it from being widely disseminated, some societal benefits are likely to be lost. As a result, the long run social rates of return to basic research are significantly higher than private rates of return and the private sector will thus underinvest in basic research from a societal perspective. Indeed, in the U.S., the private sector accounts for less than 20 percent of basic research funding.

c. While the federal government spends about $30 billion on basic research each year and a similar amount on applied research (the line between the two categories is blurry), there are significant opportunities for philanthropic investments in basic research with high poten-

tial societal benefits. First, federal funders tend to be risk averse and move slowly, thus opening opportunities for more agile, risk-tolerant funders to take advantage of promising but risky scientific projects. Second, federal agencies are underinvesting in young scientists, those most in need of research support to launch their careers. Third, fiscal constraints on government spending and the growing dysfunction of American political institutions are adversely affecting federal support for research. Federal funding of basic research grew from .07 percent of GDP in 1953 to .3 percent of GDP in 2004[3] (with ups and downs and changing allocations over this period) but has been slowly declining over the last several years. Many predict that the decline in federal research support in constant dollars will continue in at least the immediate future.

d. Prior to World War II philanthropy accounted for a larger share of basic and applied research than it does today. Funding of basic research by private foundations in particular is now fairly meager compared to total spending on basic and applied research. According to the Foundation Center, private foundations spend about $2 billion per year on research and 75% of this spending goes to biomedical research of various kinds. In 2011, private foundations spent only about $500 million on science and technology research and another $200 million on social science research, including economics.[4] This is a drop in the bucket.

Whether it be through gifts to universities and other non-profit organizations, the founding of new basic research institutions, the creation of new private foundations devoted to basic research, or the expansion of funding for basic research by existing private foundations, there are many exciting high-value opportunities for philanthropic support of basic research in natural and social science.[5] Private philanthropic support of science, already important, will become even more important in the future as federal support stagnates or declines. In order to help to realize the goal of increasing philanthropic support for basic research, the Sloan Foundation has joined with five other founding foundations to create the Science Philanthropy Alliance. The Alliance's primary goals are: "1) To create via a targeted campaign a greater appreciation among thought leaders, philanthropists and foundations (both current and new) of the importance of scientific research to all aspects of society; 2) To substantially increase philanthropic funding for basic research ...; 3) [T]o work with America's world-leading research universities and non-profit research institutions to ensure that the support for basic research remains strong ...; and 4) To partner with industry and company foundations to enhance their support for basic research, conducted both internally and externally."[6] The Foundation proudly honors Mr. Sloan's dedication to supporting basic research, not just by supporting research and education in science and technology but also by working with this new alliance of research funders to encourage other philanthropists to make such investments.

With Many Thanks

In conclusion, I would like to sound a brief note of thanks. 2012 was a successful year for the Foundation and it would be remiss of me not to mention the people who made that year possible.

First, I would like to thank our Trustees. I have served on a number of for-profit and non-profit boards. I know from experience that defining and adopting a proper role for the board of trustees and fostering a productive relationship with the officers of the organization is as difficult as it is essential for good performance. The Sloan Foundation has a truly outstanding Board of Trustees. They are all accomplished people with significant expertise in the areas covered by our mission statement. The Trustees use their expertise to provide effective oversight of our grant programs while at the same time giving me, the officers, and the program direc-

3 GDP figures from Bureau of Economic Analysis, Survey of Current Business, 31 May 2012; R&D figures from National Science Foundation, National Center for Science and Engineering Statistics, National Patterns of R&D Resources (annual series) NSF/NCSES, Business R&D and Innovation Survey; NSF/NCSES, Higher Education R&D Survey; NSF/NCSES, Survey of Federal Funds for R&D; NSF/NCSES, Federally Funded Research and Development Centers R&D Survey; and NSF/NCSES, R&D Funding and Performance by Nonprofit Organizations: FYs 1996–97. All NSF/NCSES reports available at http://www.nsf.gov/statistics/.

4 http://foundationcenter.org/findfunders/statistics/pdf/04_fund_sub/2011/10_11.pdf

5 This is not to say that taking advantage of these opportunities is easy. For detail on the strategies the Foundation pursues to maximize the impact of its grantmaking, please see the President's Letter to the 2011 Alfred P. Sloan Foundation Annual Report. http://www.sloan.org/fileadmin/media/files/annual_reports/2011_Annual_Report_vF.pdf

6 "The Science Philanthropy Alliance: Funding Basic Research for a Better Tomorrow," Robert Conn, et.al, August 2013.

tors significant responsibility and flexibility to pursue Sloan programs. The staff and I are committed to repaying that trust by crafting an open, communicative relationship with the board, freely sharing our goals, and frankly and candidly evaluating the results of our efforts. Despite their busy schedules and the multiple demands on their attention, our Trustees have been very generous with their time and their counsel, and I want to take this opportunity to thank them for their service.

This year marked the retirement of Steve Brown, who served as a Trustee of the Sloan Foundation for more than a quarter of a century, including serving as Chair of the Board since 2007. In a resolution passed by unanimous consent, the Trustees praised Steve for his leadership, expertise, and calm presence at the Board table. I echo those sentiments and thank him for his unparalleled record of service to the Foundation. Steve, you will be missed.

I would also like to express my deep gratitude and appreciation to Sandra O. Moose, the newly elected Chair of the Alfred P. Sloan Foundation Board of Trustees. Sandy has been an active, engaged Trustee and I deeply respect her advice and counsel. I look forward to working with her to help advance the Foundation's mission for many years to come. I would also like to welcome Kevin Burke, Chairman, President and CEO of ConEdison as the Foundation's newest Trustee in 2012.

I am also grateful to the officers and staff of the Sloan Foundation for their hard work in 2012. The administrative demands involved in making and managing the Foundation's grant portfolio are significant, and the Foundation has developed a grant approval process that is demanding on all staff. Unlike many foundations, every program director at Sloan participates in the approval of virtually all grants the Foundation makes in a year, in addition to the responsibilities each program director has developing and making grants in his or her own program. The workload can be overwhelming and there are many, many late nights and working weekends. In addition, we have intentionally endeavored to keep the Foundation's administrative staff small (the Foundation has roughly 30 full time employees) and that means our staff must work together diligently and efficiently to ensure everything gets done. I am proud to say that our staff has risen to the task this year, and they have my thanks for their commitment and hard work.

And last, I would like to thank our grantees. The Sloan Foundation's mission is to support those exceptional men and women who, through their intellect, drive, and creativity, are expanding the boundaries of human knowledge. It was Alfred P. Sloan's conviction that the future of human welfare would ultimately be determined by the labors of the scientist and the engineer, and that it was important that society value and appreciate the men and women engaged in scientific discovery. And so it seems fitting to close with a note of gratitude to the hundreds of scientists, technologists, and educators who are Sloan grantees. I know I speak for the entirety of the Sloan Foundation when I say we are honored to play some small part in what you do.

2012 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

These $50,000 awards go to the most promising early-career scientists and scholars nominated. The purpose is to help them make breakthroughs that significantly advance their fields. In 2012, 126 Sloan Research Fellowships were awarded in eight fields: chemistry (23); computational and evolutionary molecular biology (12); computer science (16); economics (8); mathematics (20); neuroscience (16); ocean sciences (8); and physics (23). Since the program was established in 1955, fellowships totaling over $135 million have been awarded to more than 5,000 early-career researchers. Of these, 39 Sloan Research Fellows have gone on to become Nobel Laureates; 16 were named Fields Medalists in mathematics; 13 recent Fellows have won the John Bates Clark Medal in economics; and 63 have been recipients of the National Medal of Science. Hundreds of others have received notable prizes, awards, and honors in recognition of their major research accomplishments.

2012 Fellows

Boston College
Michelle Meyer, MOLECULAR BIOLOGY
Ying Ran, PHYSICS
Dunwei Wang, CHEMISTRY
Liane Young, NEUROSCIENCE

Boston University
Margaret Beck, MATHEMATICS
Tulika Bose, PHYSICS
Robinson W. Fulweiler, OCEAN SCIENCES

University of British Columbia
Young-Heon Kim, MATHEMATICS
Andrew K. Warfield, COMPUTER SCIENCE

Brown University
Sohini Ramachandran, MOLECULAR BIOLOGY

Bryn Mawr College
James Battat, PHYSICS

California Institute of Technology
Theodor Agapie, CHEMISTRY
John Asher Johnson, PHYSICS
Yi Ni, MATHEMATICS
Christian D. Ott, PHYSICS
Sarah Reisman, CHEMISTRY

University of California, Berkeley
Prasad Raghavendra, COMPUTER SCIENCE
Sylvia Ratnasamy, COMPUTER SCIENCE
Allan Sly, MATHEMATICS

University of California, Davis
Louise A. Berben, CHEMISTRY
James Bremer, MATHEMATICS

University of California, Irvine
Jason Alicea, PHYSICS

University of California, Los Angeles
Leah Platt Boustan, ECONOMICS
Neil K. Garg, CHEMISTRY
John Novembre, MOLECULAR BIOLOGY
Marcus Roper, MATHEMATICS

University of California, San Diego
Nathan C. Gianneschi, CHEMISTRY
Alireza Salehi Golsefidy, MATHEMATICS
Roger Levy, NEUROSCIENCE

University of California, Santa Barbara
M. Scott Shell, CHEMISTRY

The University of Chicago
Jacob L. Bean, PHYSICS
David Allan Drummond, MOLECULAR BIOLOGY
Gregory Engel, CHEMISTRY
William T.M. Irvine, PHYSICS
David I. Schuster, PHYSICS

University of Colorado, Boulder
Robin Dowell, MOLECULAR BIOLOGY
Paul Romatschke, PHYSICS

Columbia University
Xi Chen, COMPUTER SCIENCE
Jonathan Vogel, ECONOMICS
Junfeng Yang, COMPUTER SCIENCE

Cornell University
William R. Dichtel, CHEMISTRY
John Nathan Foster, COMPUTER SCIENCE
Noah Snavely, COMPUTER SCIENCE

University of Delaware
Matthew J. Oliver, OCEAN SCIENCES

Duke University
Nicolas Cassar, OCEAN SCIENCES
Jörg Grandl, NEUROSCIENCE

East Carolina University
Matthew O. Schrenk, OCEAN SCIENCES

Emory University
Eugene Agichtein, COMPUTER SCIENCE

Fred Hutchinson Cancer Research Center
Jesse Bloom, MOLECULAR BIOLOGY

Georgia Institute of Technology
Grigoriy Blekherman, MATHEMATICS
Frank J. Stewart, OCEAN SCIENCES

Harvard Medical School
Christopher Harvey, NEUROSCIENCE
Maria Lehtinen, NEUROSCIENCE

Harvard University
Edoardo Airoldi, MOLECULAR BIOLOGY
Alicia M. Soderberg, PHYSICS
Tomasz Strzalecki, ECONOMICS

University of Illinois, Urbana-Champaign
Neal K. Dalal, PHYSICS
Vera Mikyoung Hur, MATHEMATICS
Sheng Zhong, MOLECULAR BIOLOGY

Johns Hopkins University
Feilim Mac Gabhann, MOLECULAR BIOLOGY
Brice Ménard, PHYSICS

University of Maryland, College Park
Carleton L. Kingsford, MOLECULAR BIOLOGY

Massachusetts Institute of Technology
Nuh Gedik, PHYSICS
Wojciech Matusik, COMPUTER SCIENCE
Parag Pathak, ECONOMICS

University of Massachusetts, Amherst
Gregory M. Grason, PHYSICS

Michigan State University
Thomas W. Hamann, CHEMISTRY

University of Michigan
Mi Hee Lim, CHEMISTRY
Sarah L. Veatch, PHYSICS

University of Minnesota
Anar Akhmedov, MATHEMATICS

New York University
Robert C. Froemke, NEUROSCIENCE
Virgiliu Midrigan, ECONOMICS

Northwestern University
Nicole Immorlica, COMPUTER SCIENCE
Valentino Tosatti, MATHEMATICS

Ohio State University
Matthew Kahle, MATHEMATICS

Oregon State University
Angelicque E. White, OCEAN SCIENCES

University of Oregon
Cristopher M. Niell, NEUROSCIENCE

The Pennsylvania State University
Nathan D. Gemelke, PHYSICS
Scott T. Phillips, CHEMISTRY
Karl Schwede, MATHEMATICS

University of Pennsylvania
Christopher Fang-Yen, NEUROSCIENCE
Benjamin A. Garcia, CHEMISTRY
E. James Petersson, CHEMISTRY
Joseph Subotnik, CHEMISTRY
Benjamin F. Voight, MOLECULAR BIOLOGY

Princeton University
Gaspar Bakos, PHYSICS
Abigail Doyle, CHEMISTRY

Purdue University
Tong Liu, MATHEMATICS

University of Rochester
Benjamin Hayden, NEUROSCIENCE
John D. Kessler, OCEAN SCIENCES

Rockefeller University
Gaby Maimon, NEUROSCIENCE

Rutgers, The State University of New Jersey
David Shih, PHYSICS

Simon Fraser University
Alexandra Fedorova, COMPUTER SCIENCE

Stanford University
Ran Abramitzky, ECONOMICS
Eric M. Dunham, PHYSICS
Pascaline Dupas, ECONOMICS
Jeffrey Heer, COMPUTER SCIENCE
Jin Hyung Lee, NEUROSCIENCE
Jure Leskovec, COMPUTER SCIENCE
Srinivas Raghu, PHYSICS
Xinnan Wang, NEUROSCIENCE

University of Texas, Austin
Laura Colgin, NEUROSCIENCE
Kristen Grauman, COMPUTER SCIENCE
Michael Walfish, COMPUTER SCIENCE
Rachel A. Ward, MATHEMATICS
Lauren Webb, CHEMISTRY

University of Toronto
Florian Herzig, MATHEMATICS
Joel Kamnitzer, MATHEMATICS
Mark Taylor, CHEMISTRY

Toyota Technological Institute
Jinbo Xu, MOLECULAR BIOLOGY

Vanderbilt University
Kirill I. Bolotin, PHYSICS

University of Victoria
Julia Baum, OCEAN SCIENCES

Washington University in St. Louis
Liviu M. Mirica, CHEMISTRY

University of Washington
Munira Khalil, CHEMISTRY
Shwetak N. Patel, COMPUTER SCIENCE
Bo Zhang, CHEMISTRY

University of Wisconsin, Madison
Benjamin Recht, MATHEMATICS
Sebastien Roch, MATHEMATICS
Jordan Schmidt, CHEMISTRY

Yale University
Jessica A. Cardin, NEUROSCIENCE
Tobias Golling, PHYSICS
Seth B. Herzon, CHEMISTRY
Janghoo Lim, NEUROSCIENCE
Nancy Qian, ECONOMICS
Satinder Kaur Singh, NEUROSCIENCE

STEM Research

Deep Carbon Observatory

Program Director: Gail M. Pesyna

This program 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 develops and deploys new instrumentation, collects observations, and performs analyses.

A core grant to the Carnegie Institution of Washington supports the headquarters of the program, which focuses on developing instruments to meet the severe technical challenges associated with probing the high-pressure, high-temperature processes in Earth's deep interior and on operating an organizational infrastructure that sets strategic priorities, engages a network of researchers, and secures funding commitments from institutional partners. Other grants support the design and construction of a pioneering mass spectrometer to measure tiny subterranean volumes of methane; develop the infrastructure necessary to support the possible drilling of a borehole to Earth's mantle; promote efforts to use DNA sequencing to identify and characterize deep life, and fund the development of the Observatory's four directorates. The directorates are organized around deep life, deep energy, reservoirs and fluxes of deep carbon, and the extreme physics and chemistry of carbon in high-pressure, high-temperature environments.

Trustee Grants

Carnegie Institution of Washington
Washington, DC
$2,250,000 over 24 months to support the Deep Carbon Observatory International Secretariat.
Project Director: Robert M. Hazen, Executive Director

This grant provides two years of core operating support to the Deep Carbon Observatory (DCO), headquartered at the Carnegie Institution of Washington. Funds will support the continued operation and activities of the DCO's governing secretariat and international steering committee, which is responsible for coordinating and synthesizing the individual initiatives pursued by the DCO's four scientific directorates. Though this grant, the Secretariat will pursue a diverse array of important goals, including further development of the organizational infrastructure of the DCO, strengthening the network of collaborating DCO institutions, overseeing the production of a "baseline report" that quantifies the current state of knowledge of deep earth carbon, managing a "launch" of the project aimed at major media and the public, securing matching gifts and other sources of funding for DCO activities, and developing a detailed vision for the final six years of the project.

Deep carbon may reach Earth's surface as a hot liquid, such as flowing lava that solidifies into rock. The Oldoinyo Lengai volcano in Tanzania actively produces exotic carbonatite rocks. PHOTO BY TOBIAS FISCHER, U. OF NEW MEXICO. PUBLISHED UNDER CC 3.0 (BY-NC-ND) LICENSE.

Carnegie Institution of Washington

WASHINGTON, DC

$1,000,000 over 27 months to continue to spur development of instruments needed for the success of the Deep Carbon Observatory.

Project Director: Robert M. Hazen, Executive Director

The cooperative, international Deep Carbon Observatory (DCO) aims to examine the forms, volumes, and movements of carbon deep in Earth at an unprecedented scale as well as in unprecedented detail. Success within this decade requires not only new samples, but also new ways of sampling and instruments variously more sensitive, smaller, larger, more robust, and less susceptible to contamination. This grant to the Deep Carbon Observatory headquarters at the Carnegie Institution of Washington provides funds to help develop four pioneering instruments and to conduct three "sandpit" exercises to spur development of several more. "Sandpit" is a term popularized in recent years to describe team-oriented workshops with a specific, collective problem-solving goal and some funds to follow through.

The four proposed instruments are the following: a combined instrument for molecular imaging in geochemistry to measure trace amounts of carbon in lower mantle or core mineral phases and transform our estimates of the global carbon budget; a quantum cascade laser-infrared absorption spectrometer for clumped methane isotope thermometry to explore methane formation temperatures; a large-volume diamond anvil cell to explore material properties at very high pressure that have been examined before only in tiny volumes; and an ultrafast laser spectrometer to assess thermodynamic properties, reaction mechanisms, and kinetics of carbon processes at conditions of deep pressure and high temperature. The three sandpit exercises would address high-pressure, high-temperature bioreactors; use of remote sensing (for example, to measure outgassing from volcanoes); and computational resources and software.

Carnegie Institution of Washington

WASHINGTON, DC

$250,000 over 12 months to provide seed funds to create an international consortium on diamond research as part of the Deep Carbon Observatory.

Project Director: Steve Shirey, Research Staff Member, Geochemistry

Diamonds are the dense quintessence of carbon. Carried near the surface in eruptions of rock from the mantle from below 100 km, diamonds are scientifically significant because they prove the existence of Earth's deep carbon. They also matter because the bubbles or inclusions in them hold precious evidence about Earth at depths that are otherwise inaccessible. This grant funds an initiative led by Steven Shirey of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington to form an international group of diamond researchers that aspires to take diamond research in new directions beyond the traditional bounds of geology, physics, and chemistry. Tapping a group of more than 30 researchers from a dozen nations, the consortium aims to forge a new understanding of the conditions of diamond formation in the deep mantle, how carbon is transported and stored in the mantle now and in the past, and whether a significant reservoir of mantle carbon is primordial or recycled. Grant funds will support the development of consortium organizational infrastructure; the assembly of an internationally accessible diamond reference collection for collaborative research; outreach activities to potential partners in government, academia, and industry; and the creation of information sharing technologies to facilitate cooperation between members. The consortium has the potential to revolutionize our understanding of diamonds and the role they play in the deep mantle and to augment and inform the scientific agenda of the Deep Carbon Observatory.

Rensselaer Polytechnic Institute

TROY, NY

$750,000 over 18 months to develop the data science and management dimensions of the Deep Carbon Observatory.

Project Director: Peter A. Fox, Tetherless World Constellation Chair

Funds from this grant support the Rensselaer Polytechnic Institute (RPI) in its efforts to provide data science support to the Deep Carbon Observatory (DCO). The RPI team will establish a Deep Carbon Virtual Observatory for community data holdings; provide robust data infrastructure for DCO instrumentation, secretariat, and engagement activities; enable scientific discovery via visualization and analysis; and advance educational aspects of data science among all DCO participants. Planned tasks range from creating tools to capture streams of data from sensors to storing simulation results to creating a DCO-wide bibliographic infrastructure. To maximize the value of the funded activities, the RPI team will look beyond the specific needs of DCO researchers to the larger scientific community and will work closely with the U.S. Geological Survey, National Science Foundation, and counterpart agencies around the world to guide global earth science data infrastructure developments.

University of Rhode Island

KINGSTON, RI

$749,381 over 18 months to build a Deep Carbon Observatory Engagement Team and launch and support a suite of community-building, engagement, and communications strategies on behalf of the Deep Carbon Observatory.

Project Director: Sara C. Hickox, Director

By the time it culminates in 2020, the Foundation expects that the Deep Carbon Observatory will involve nearly 1,000 researchers from scores of research and educational institutions, across dozens of countries, spanning a tremendous number of scientific disciplines, including geology, physics, chemistry, chemical engineering, mechanical engineering, and microbiology. Creating and maintaining a coherent, consistent identity for such a distributed, heterogeneous group and facilitating communications within it is crucial if the DCO is to achieve its goals quickly and efficiently. Funds from this grant support efforts by a team led by Sara Hickox at the University of Rhode Island to manage community-building, communication, education, and outreach activities for the DCO. Informed by experience managing education and outreach for the Census of Marine Life, Hickox and her team will facilitate interaction, knowledge-sharing, and coordination among DCO researchers; communicate common goals, methods, plans, and research agendas; produce educational materials; and coordinate the dissemination of DCO research to media outlets and the public.

Rockefeller University
NEW YORK, NY
$1,000,000 over 36 months to manage the Foundation's Deep Carbon Observatory program, oversee the completion of the of the Foundation's programs in biodiversity sciences, and assist in the conduct and management of the Foundation's program on the Microbiology of the Built Environment.
Project Director: Jesse H. Ausubel, Director

Funds from this grant provide support to Rockefeller University to provide expert assistance for the effective management of several of the Foundation's programs in basic science. Administered by Jesse H. Ausubel, Director of Rockefeller's Program for the Living Environment, the grant provides funds for assistance in managing the Foundation's Deep Carbon Observatory program, the Barcode of Life program, and the Encyclopedia of Life program. Grant monies support a variety of activities, including cultivating new proposals, overseeing the proposal review process, managing active grants, and reporting to the Foundation on grant progress. Additional activities supported through this grant include providing advice, counsel and other programmatic support to the Director of the Foundation's Microbiology of the Built Environment program.

Officer Grants

Columbia University
NEW YORK, NY
$40,000 over 12 months to develop DiamondDB, a community data infrastructure for diamond research within the Deep Carbon Observatory.
Project Director: Kristen Lehnert, Senior Research Scientist

Columbia University
NEW YORK, NY
$30,000 over 5 months to support a planning and proposal development workshop for a drilling project about ophiolite rocks important for the Deep Carbon Observatory.
Project Director: Peter B. Kelemen, Arthur D. Storke Professor

Ezus Lyon
VILLEURBANNE, FRANCE
$50,000 over 12 months for partial support of a workshop on serpentinization, a process crucial in understanding Earth's deep carbon cycle.
Project Director: Isabelle Daniel, Lecturer

University of Rhode Island
KINGSTON, RI
$101,876 over 5 months for internal infrastructure and actions for implementing engagement and communications strategies on behalf of the Deep Carbon Observatory.
Project Director: Sara C. Hickox, Director

University College London
LONDON, UNITED KINGDOM
$80,000 over 24 months to plan and conduct the inaugural Summer School for graduate students and postdoctoral associates of the Deep Carbon Observatory.
Project Director: Adrian Jones, Professor

Encyclopedia of Life

Program Director: Gail M. Pesyna

The goal of this program is to help build a reliable online encyclopedia with a webpage for each of the named 1.9 million species of plants, animals, and fungi. A $2.5 million grant from the Alfred P. Sloan Foundation along with a $10 million grant from the John D. and Catherine T. MacArthur Foundation initiated the project in 2007; each foundation repeated its commitment in 2010 after a thorough, favorable independent review. Since its inception, the site has grown to include more than 1.3 million authenticated species-pages, and a version with many new features debuted in September 2011. Content is being generated via an international network of 250 institutional partners, including the Biodiversity Heritage Library, the Consortium for the Barcode of Life, the World Register of Marine Species, and the US National Park Service, as well as by professional and citizen scientists. Wikipedia-style, people worldwide are invited to contribute text, video, images, and other information about a species and have it incorporated, upon review, into the authenticated pages. A 2012 two-year grant supports the EOL's efforts to expand its worldwide institutional base of participants, enhance site features, and move toward achieving self-sufficiency.

Trustee Grants

Smithsonian Institution
Washington, DC
$1,000,000 over 24 months to help the Encyclopedia of Life develop new features and stakeholders.
Project Director: Erick Mata Montero, Executive Director, Encyclopedia of Life

Funds from this grant provide support for the continued development and improvement of the Encyclopedia of Life (EOL), an ambitious collaboration of scientists, taxonomists, museum administrators, and technologists to create a publicly accessible website with accurate information on each of the world's 1.9 million named species of plant and animal. Primary activities supported under this grant include outreach and development efforts aimed at ensuring the perpetual operation of the EOL through the creation of institutional partnerships as well as the transformation of EOL data into computable form, allowing researchers or the public to download, manipulate, analyze, and share EOL data.

The Monarch butterfly (***Danaus plexippus***) has become an especially popular page of the Encyclopedia of Life because of rich content, including a 12-minute video http://www.youtube.com/watch?v=uqDwvuleRYc about the epic migration of the butterflies between Mexico and the U.S. made in cooperation with Google Earth and Atlantic Public Media. PHOTO BY WIKIPEDIA AUTHOR LYWASHU. PUBLISHED UNDER A CC BY-SA 3.0 LICENSE.

Microbiology of the Built Environment

Program Director: Paula J. Olsiewski

People average 23 hours a day indoors where we breathe and come in 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 indeed sharing microbes. Historically, environmental research and policy have focused on natural or urban outdoor environments. Little is known about the complex microbial ecosystems found in the built environment. The goal of the Microbiology of the Built Environment program is to grow a new field of scientific inquiry. Sloan's objectives are as follows:

1. To push the research frontier including the development of standardized techniques and protocols, and to educate a small leadership cohort through a multidisciplinary university-based Biology and the Built Environment Center at the University of Oregon.
2. To build a national, multidisciplinary community by establishing a network of scientists, engineers, and architects working on these issues through the Microbiology of the Built Environment Network at the University of California, Davis.
3. To improve the cohesiveness of the community and its ability to communicate internally and externally by developing data visualization and imaging techniques and repositories through a consortium of four institutions: University of Chicago, Marine Biological Laboratory, University of Colorado, and University of California, Riverside.
4. To demonstrate the excitement and value of the field by supporting a small number of research targets of opportunity.
5. To convince U.S. government funding agencies to include research on the built environment in their research plans by developing a compelling, widely accepted research agenda.

Trustee Grants

University of California, Berkeley
Berkeley, CA
$850,000 over 36 months to analyze the neonatal intensive care unit room environment as a source of microorganisms colonizing the gastrointestinal tract of premature infants.
Project Director: Jillian Banfield, Professor

This grant supports efforts by Jill Banfield of the University of California, Berkeley and Michael Morowitz, of the University of Pittsburgh Medical Center 's Children's Hospital of Pittsburgh to study

how premature infants—born sterile, separated from their mothers, and isolated in neonatal intensive care units" (NICUs)—nevertheless develop intestinal microbiota necessary for normal human digestion. Preliminary studies suggest that infants acquire the needed microbes from microbes in the NICU, and Banfield, Morowitz and their team will explore that hypothesis. They will conduct comprehensive, next generation high resolution ecological surveys of hospital air and surfaces to link them with microbial colonization of the infant GI tract. The project will involve building a mathematical model for simulating microbial transport within the NICU, which will be used to interpret collected data and make predictions about the efficacy of future interventions.

The University of Chicago

CHICAGO, IL

$856,900 over 24 months to characterize the surface, air, water and human-associated microbial communities in two hospitals to monitor changes following the introduction of patients and staff.

Project Director: Jack A. Gilbert, Assistant Professor

Funds from this grant support a research project by University of Chicago microbiologist Jack Gilbert and Chicago surgeon John Alverdy to study microbial populations at a newly constructed hospital at the University of Chicago. By studying the characteristics of microbial populations before and after the hospital becomes operational, the project will shed light on how the introduction of doctors, nurses, patients, and visitors change the microbes that live and thrive in hospital environments. Using a multidisciplinary team that includes microbial ecologists architects, building scientists, statisticians, and epidemiologists, Gilbert and Alverdy will take nearly 13,000 microbial samples and analyze them to investigate whether microbial community structure on hospital surfaces can be predicted by human demographics, physical conditions, and/or building materials; how patient-room microbiota is influenced by the current patient, his length of stay, and/or the introduction of a new patient; how the colonization of surfaces by pathogens is sped or impeded by existing microbial communities on those surfaces; and how the rate of change in a microbial community is affected by building materials and human use. The team plans to publish at least three articles on their research in peer-reviewed journals, and their findings may be of use to the health care community, leading to better patient care through crafting a more complete understanding of how microorganisms spread through hospitals.

University of Colorado, Boulder

DENVER, CO

$292,000 over 24 months to examine how and why house-associated microbial communities vary across homes throughout the United States.

Project Director: Noah Fierer, Assistant Professor

This grant supports a team led Noah Fierer, associate professor at the University of Colorado; Rob Dunn, associate professor at North Carolina State; and Shelly Miller, an environmental engineer and associate professor at the University of Colorado to characterize the diversity of microbial communities in homes throughout the United States. Tapping a network of more than 6,500 volunteers across the U.S., Fierer and his team will collect information on volunteer homes and distribute "home sampling kits" which direct volunteers to collect swabs of the microbial populations living in four locations in the home: the outer door frame above the entrance to the residence, a door frame above an interior door, a kitchen countertop where food is prepared, and a pillowcase on a bed. As a complement to the larger study, the team will conduct a detailed study of the microbial populations in 50 homes in the Boulder, Colorado region, collecting microbial samples on multiple occasions and making a variety of building measurements, including humidity, temperature, and levels of carbon monoxide and carbon dioxide. Taken together, the two studies will permit the construction of what promises to be the most complete picture of how residential microbial communities differ across the United States and will provide a huge dataset that can be used to generate and test hypotheses on what factors drive the compositional diversity of microbial communities in the built environment.

University of Colorado, Boulder

DENVER, CO

$187,237 over 12 months to create a 3D map of the "Microbially Visible Home" that includes both architectural components and microbial data.

Project Director: Robert D. Knight, Associate Professor

This grant to architect Rob Van Pelt and biologist Rob Knight will support a one-year project to create a "proof of concept" detailed 3D map of the

"Microbially Visible Home." This map will include both the architectural components and microbial data of a single house and will bring together building scientists, software developers, and microbiologists to create an easily interpretable and visual 3D model. Partnering with Autodesk, a world leader in 3D design software for manufacturing, buildings, construction, engineering, and entertainment, Van Pelt, Knight and their team will conduct dense sampling of homes near Toronto, collecting and analyzing nearly 1,000 samples for bacteria and fungi and using this data to build a biological data layer on top of Autodesk's Building Information Model, a computable representation of a facility that integrates a wide range of building features and functions, including architectural characteristics, materials, relationships, sensor data, and performance metrics. The result will be the creation of a detailed 3D building map with both the architectural components and the microbial data. It will make the invisible microbial world of one home visible. This new tool will help scientists develop exploratory hypotheses about why microbes live in the locations that they do.

Cornell University

ITHACA, NY

$200,000 over 24 months to support a pilot study to characterize changes in indoor airborne microbiota of homes after weatherization.

Project Director: Largus T. Angenent, Associate Professor

To date over 750,000 homes have been weatherized in the U.S. Department of Energy's Weatherization Assistance program to help homeowners make their homes more energy efficient. Some of the energy efficient upgrades—such as sealing ducts and installing more efficient windows—reduce the levels of ventilation in homes, resulting in changes that could influence the size, composition, location, or diversity of microbial communities inside the home. Funds from this grant support a two-year pilot study by Largus Angenent, Associate Professor of Biological and Environmental Engineering at Cornell University to investigate and characterize how weatherization changes in indoor airborne microbiota of homes. Angenent will study fifteen homes in the Finger Lakes region of New York State, sampling the air both inside and outside a home immediately before it is weatherized, directly after weatherization is completed, and again six months later. Analysis of the collected samples will provide preliminary data that suggest how weatherization changes microbial communities and, depending on results, could form the basis for further data collection and research by the U.S. Department of Energy or some other federal agency.

Microbiologists Jessica Green and James Meadow of the University of Oregon's Biology and the Built Environment Center seal a room in preparation for an experiment measuring how human occupancy alters the microbial profile of inhabited spaces. (PHOTO: ANGIE PONSO)

National Academy of Sciences

WASHINGTON, DC

$195,000 over 36 months to provide partial support for the Forum on Microbial Threats.

Project Director: Eileen R. Choffnes, Scholar & Director

The Forum on Microbial Threats (Forum) was created in 1996 to address emerging, re-emerging, and novel infectious diseases and has become one of the leading places to address issues in microbial ecology and microbiology. The Forum gathers experts, develops agendas, conducts three meetings and two symposia per year, and publishes reports. Funds from this grant provide partial support to the Forum over a three-year period. Among the planned

topics for future workshops and symposia is "The Movement of Microorganisms and the Microbial Ecology of the Built Environment", a workshop of interest to the Foundation's Microbiology of the Built Environment Program and one that will help set the stage for future efforts towards a full National Academies' study and report on the microbiology of built environments.

University of Puerto Rico

San Juan, Puerto Rico

$600,000 over 24 months to examine the microbiomes of homes across cultures.

Project Director: Maria Gloria Dominguez-Bello, Chancellor

We know there are microbes in homes. We know there are microbes in and on people. Are the microbes of homes and their inhabitants the same? Funds from this grant support a two-year project by microbiologist Maria Gloria Domínguez-Bello, architect Humberto Cavallin, and colleagues at the University of Puerto Rico to collect and analyze microbial samples from homes and their inhabitants in a variety of cultural settings. The team plans to collect samples from traditional dwellings in remote villages in the Amazon as well as more modern rural and urban homes in New York City and South America. The homes in the Amazon villages are round huts constructed of natural materials without windows, closets, or furniture. The inhabitants of these homes have had very little exposure to modern life. The rural homes are far more advanced. They have two or three bedrooms and electricity, but do not necessarily have running water. Each room has a door and window with modest furniture and natural or forced ventilation using fans but no air conditioning. The urban homes are the most advanced and generally have air conditioning. In each home, the team will collect and analyze samples from the home as well as from the human and animal inhabitants. This project promises to generate important new knowledge about the microbiology of homes across cultures as well as shed some light on the relationship between the microbiomes of the home and its inhabitants.

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 Society for Microbiology

Washington, DC

$81,905 over 10 months to support a colloquium on the microbiology of the drinking water distribution system.

Project Director: Ann Reid, Director

Duke University

Durham, NC

$66,371 over 12 months to support a meeting on the Evolutionary Biology of the Built Environment.

Project Director: Craig R. McClain, Assistant Director of Science

In June 2012, the Board of Trustees authorized the expenditure of up to $1 million to fund a series of high quality research projects investigating aspects of the microbiology of built environments. The following grants were made against this previously authorized fund.

Harvard University

Cambridge, MA

$249,739 over 24 months to examine the transmission of human-associated microbes by public transportation surfaces.

Project Director: Curtis Huttenhower, Assistant Professor

Northern Arizona University

Flagstaff, AZ

$249,877 over 24 months to analyze and model the establishment of microbial communities over time on different office surface materials in different climates.

Project Director: J. Gregory Caporaso, Assistant Professor

University of Toronto
TORONTO, ON
$250,000 over 24 months to design improved testing methods for common building materials.
Project Director: James Scott, Associate Professor

Virginia Polytechnic Institute and State University
BLACKSBURG, VA
$250,000 over 24 months to determine the effects of pipe materials, water flow, and chemistry on the building plumbing microbiome.
Project Director: Amy Pruden, Associate Professor

OFFICER GRANTS

The University of Chicago
CHICAGO, IL
$17,300 over 5 months to develop a sampling strategy for studying microbial and viral communities in a new hospital during the final months of construction and initial phase of operation.
Project Director: Jack A. Gilbert, Assistant Professor

Sloan Digital Sky Survey

Program Direction: Gail M. Pesyna

Supported by the Foundation since 1992 and achieving first light in 1998, the Sloan Digital Sky Survey (SDSS) is a major astronomical research project that aims to revolutionize our understanding of the cosmos and catalog the universe of stellar objects. Using a pioneering 2.5 meter telescope at Apache Point Observatory in New Mexico, the Sloan Digital Sky Survey, in three major phases of operation, has obtained deep, multi-color images covering more than a quarter of the sky from which it has generated three-dimensional maps. The Sloan Digital Sky Survey has taken over 3 million separate spectra of 1.7 million galaxies, 280,000 quasars and 700,000 stars. In addi-

BOSS Survey Scientist Kyle Dawson poses in front of a 1,000-fiber spectrograph cartridge. The Baryon Oscillation Spectroscopic Survey (BOSS) is just one of four major astronomical surveys conducted as part of the third phase of the Sloan Digital Sky Survey. By mapping the spatial distribution of red galaxies and quasars, BOSS scientists aim to shed light on the formation and evolution of the universe. (PHOTO COURTESY OF SLOAN DIGITAL SKY SURVEY.)

tion to its groundbreaking scientific discoveries, SDSS has been a pioneer of open access research in astronomy. Every image ever collected by the telescope has been released for use by the astronomy community at large, allowing SDSS data to inform the research of astronomers, astrophysicists, and interested amateurs around the globe. The fourth phase of operation, scheduled to begin observations in July, 2014 is now being planned.

Trustee Grants

Astrophysical Research Consortium
Seattle, WA
$10,000,000 over 72 months to support the Sloan Digital Sky Survey IV, which will study the history of the Milky Way, the evolution of galaxies, and the expansion of the Universe and dark energy over the last 12 billion years.
Project Director: Michael Blanton, AS3 Director/NYU Associate Professor

This grant funds a fourth phase of the Sloan Digital Sky Survey (SDSS IV), a pioneering astronomical survey that utilizes a 2.5 meter optical telescope at Apache Point Observatory near Cloudcroft, New Mexico. Over the next six years, SDSS IV will pursue three innovative projects that seek to answer key questions in astronomy and astrophysics. The first project, APOGEE-2, will decipher the history of the growth of the Milky Way's stellar halo; precisely measure the mass of the Milky Way; determine the stellar structure around the galactic center; find stellar companions such as planets, white dwarfs and neutrons stars; and determine stellar masses, ages, and elemental abundances with unprecedented precision. The second, MaNGA will study 6,700 nearby galaxies and measure their dynamics, growth histories, and chemical abundances as a function of their mass, type, environment, and other controlling variables. The third, eBOSS, will measure the expansion of the universe over the past 12 billion years using baryonic acoustic oscillation, the most accurate absolute distance measurement technique known, and filling a gap in current measurements of galaxies between about 6.5 and 11 billion light-years away. eBOSS will provide the fullest understanding yet of the so-called "dark energy" that is causing the expansion of the universe to accelerate.

As in previous phases of the projects, all SDSS data will be publically released through the internet, enabling astronomers and astrophysicists all over the world to use the data for their own research.

Synthetic Biology

Program Director: Paula J. Olsiewski

The goal of Sloan's Synthetic Biology initiative is to identify risks associated with research in and applications of synthetic biology, and to assess the ethical, regulatory, and public policy implications of these risks. 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.

Trustee Grants

Council on Foreign Relations

New York, NY

$117,692 over 6 months to support a series of four workshops on dual-use research of concern.

Project Director: Laurie Garrett, Senior Fellow for Global Health

This grant funds a project by award-winning author Laurie Garrett, Senior Fellow for Global Health at the Council on Foreign Relations (CFR) for a series of four workshops to discuss a broad range of issues related to life science research of concern. The workshops, tentatively scheduled to take place in early 2013, propose to address the following topics:

1. Assessing and surveying the risk
2. Who decides a dual-use for research exists, and then what happens?
3. H5N1, viruses, trade, and international relations
4. Law, regulation, the Biological Weapons Convention, codes of ethics, and professional agreements

Each workshop will have three speakers and approximately 40 expert participants. Garrett and her team plan to produce two immediate products: a 1,500-word policy innovation memorandum written with policymakers in mind, and a CFR working paper that will provide in-depth assessments and analyses of major policy issues. Garrett will also provide briefings to government officials and circulate findings through blogs and opinion pieces. The workshops and the work products promise to help inform discussion on a broad range of issues associated with life science research of concern.

Fred Hutchinson Cancer Research Center

Seattle, WA

$197,672 over 24 months to engage major U.S. religious denominations in conversations about synthetic biology.

Project Director: Gaymon Bennett, Staff Scientist

Funds from this grant support a project by Gaymon Bennett and colleagues at the University of Washington to engage individuals from major U.S. religious denominations in conversations about synthetic biology in order to advance work on the ethics and governance of the discipline. The team will identify and engage people within religious denominations, policy centers, and research organizations; facilitate conversations with these individuals and the synthetic biology community; and identify and prioritize problems and opportunities to advance the conversations within these communities. Focus will be on the religious traditions

of Christianity, Judaism, and Islam in the United States with targeted discussion of biofuels, environmental release of engineered products, engineering the human microbiome, and the do-it-yourself biology movement. At the end of the project, Bennett, in collaboration with the SynBio Project at the Woodrow Wilson International Center for Scholars, will host a workshop in Washington, D.C. to present and discuss outcomes and findings.

National Academy of Sciences

WASHINGTON, DC

$350,000 over 36 months to provide partial support for a Forum on Synthetic Biology.

Project Director: Anne-Marie Mazza, Director

This grant provides partial support to the National Academy of Sciences (NAS) for an ongoing Forum on Synthetic Biology. Partnering with the Defense Advanced Research Projects Agency (DARPA), NAS will gather experts, develop agendas, conduct three meetings per year, and publish reports on various societal aspects of synthetic biology. Potential topics for discussion through the Forum include risk assessment models for synthetic biology products that require release into the environment; strategies for engaging the public and promoting public understanding of synthetic biology; actions needed to advance and oversee the field of synthetic biology; and models for stimulating international cooperation. Forum membership will include scientists and engineers from academia, industry, government, and NGOs; science and technology policy experts; security experts; ethicists; and lawyers.

Officer Grants

University of Edinburgh

EDINBURGH, UNITED KINGDOM

$14,824 over 3 months to conduct planning activities to develop the International Synthetic Biology fellowship program.

Project Director: David Castle, Professor

iGEM Foundation

CAMBRIDGE, MA

$60,000 over 6 months to improve the quality of societal aspects of iGEM projects by developing a curated collection of excellent examples and by supporting iGEM judges with expertise in societal issues.

Project Director: Randy Rettberg, President

International Council for the Life Sciences

MCLEAN, VA

$65,000 over 12 months to support the implementation of Codes of Conduct for Synthetic Biology.

Project Director: Terence Taylor, President

National Academy of Sciences

WASHINGTON, DC

$65,000 over 5 months to support a one-day public workshop on controversial H5N1 Flu research.

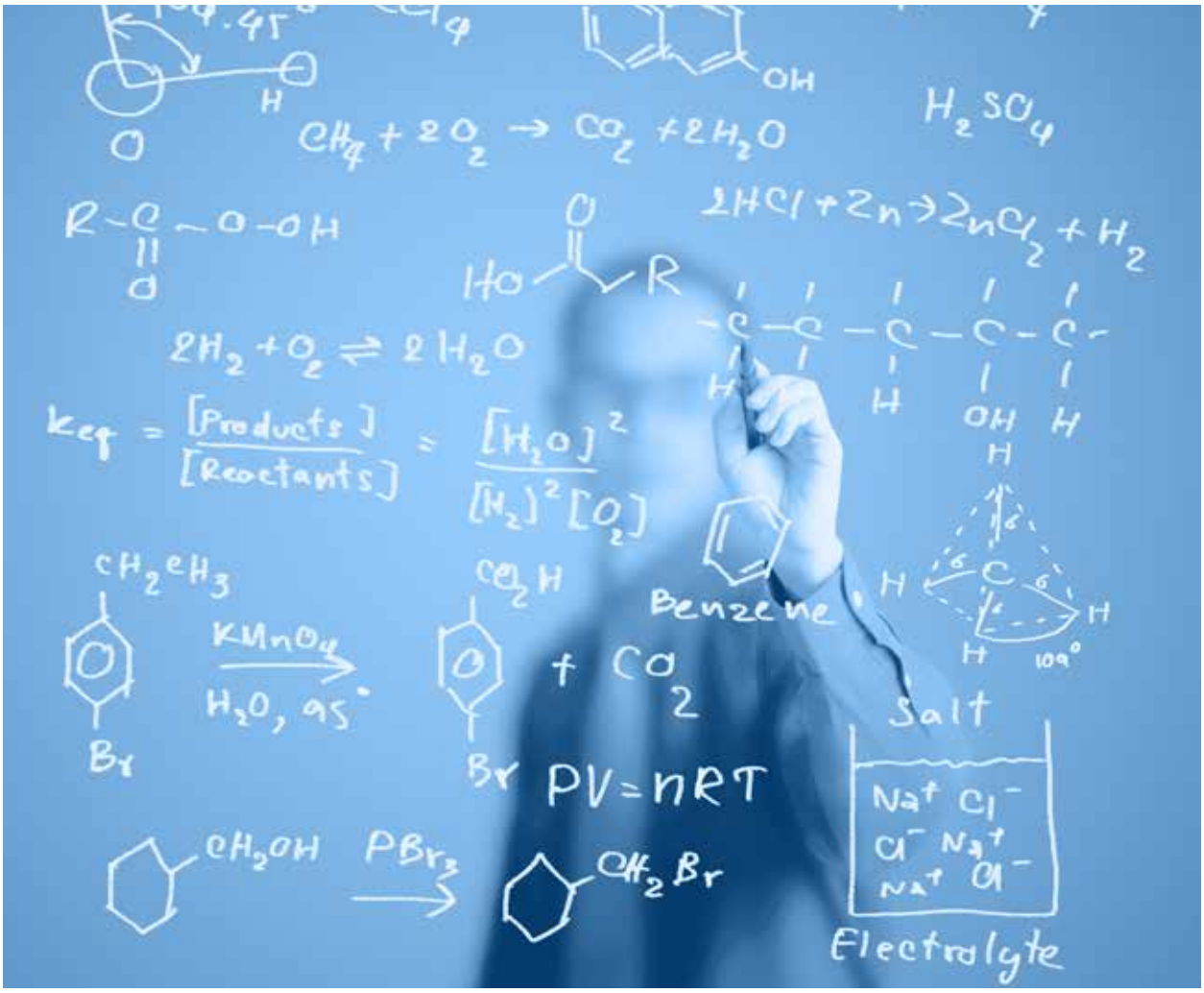
Project Director: Anne-Marie Mazza, Director

Stanford University

STANFORD, CA

$98,716 over 11 months to support a pilot leadership development course for early career synthetic biology researchers.

Project Director: Megan J. Palmer, Staff Scientist, Dep. Dir. Synberc Practices



STEM Higher Education

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 British Columbia

Vancouver, British Columbia

$803,943 over 48 months to enable the Bay View Alliance to accelerate the rate of adaptation, exploration, and effective integration of methods of instruction that better support improved student learning, targeting key STEM gateway courses.

Project Director: Lorne Whitehead, Professor and NSERC/3M Chair

Though studies indicate that pedagogy that incorporates "active learning" results in significantly higher student outcomes, the traditional "professors lecture, students listen" teaching format remains stubbornly predominant in STEM higher education. This grant funds a project by the Bay View Alliance (BVA), a consortium of seven large public flagship universities in the U.S. and Canada, to jointly study the features of institutional and faculty culture that inhibit the spread of new pedagogical techniques and approaches inside colleges and universities. The BVA will design, implement, and then evaluate a series of small interventions at member colleges aimed at increasing our understanding of how university administrators can best support improvements in student learning. Grant funds support the development of the administrative and organizational infrastructure necessary to manage the project; the creation of shared protocols for the conduct of research; the design, implementation and analysis of interventions; and the dissemination of results and findings.

Business-Higher Education Forum

WASHINGTON, DC

$397,858 over 36 months to launch and scale new curricular and pedagogical models of industry-higher education collaboration aimed at increasing the recruitment and persistence of STEM students.

Project Director: Stephen A. Barkanic, Senior Director

Funds from this grant support a project by the Business-Higher Education Forum, an innovative regional partnership between industry and academia in the state of Maryland, to further develop and expand an undergraduate cybersecurity curriculum across the University of Maryland system that provides students with the skills and training sought by regional employers. A pioneering exercise in collaborative curriculum development, the project has the potential to serve as a model for how educators and private industry can effectively collaborate to maximize the value of university education for students. Funds from Sloan will support the creation of the USM Undergraduate Cybersecurity Network to coordinate curricula, internships, advanced degrees, and job opportunities in the Washington, D.C.-Maryland region. Joint efforts will allow the collection and analysis of student academic performance, demographic, and employment data from all institutions with respect to initial enrollment, early stage persistence, transfer and articulation, declared majors, graduates, and number of job offers; data on number and involvement of industry professionals in curriculum development and internship responsibilities; and the use of the data to inform curriculum and pedagogy. It is expected that program capacity will be expanded so that 585 additional undergraduates enroll in cybersecurity programs by 2015 and 20 percent more bachelor's degrees are earned in cyber-related fields by 2018. In addition, the program will be designed with a focus on increasing the recruitment and retention of women and underrepresented minorities into the cybersecurity program.

University of Colorado, Boulder

DENVER, CO

$666,956 over 60 months to expand the scholarly understanding of effective teaching and learning in STEM fields, and of undergraduate student persistence in STEM majors, by a combination of surveys, interviews, and classroom observations of students and faculty at seven colleges.

Project Director: Anne-Barrie Hunter, Co-Director, Senior Professional Researcher

In the 1990s, the Foundation supported a project by Elaine Seymour and Nancy Hewitt of the University of Colorado, Boulder and Mark Connolly at the University of Wisconsin, Madison to conduct extensive ethnographies of students at seven selective colleges and universities to determine why majors in STEM fields switch majors for other areas. The results of their work, *Talking About Leaving: Why Undergraduates Leave the Sciences*, provides one of the most interesting, comprehensive accounts of what factors drive retention and attrition among undergraduates in STEM fields. Fifteen years later, Seymour endeavors to return to this issue, updating the findings original reported in *Talking About Leaving* and expanding her analysis to include examination of efforts by professors, departments, and school administrators to shrink attrition in STEM fields. Funds from this grant provide partial support to Seymour, her colleague Mark R. Connolly, and their team to conduct a series of new interviews at the same seven institutions sampled in *Talking About Leaving* and to support their subsequent analysis of the data they collect. Their efforts promise to provide new insights into what has changed and what has stayed the same when it comes to why undergraduates pursue or abandon STEM degrees.

Council of Graduate Schools

WASHINGTON, DC

$400,000 over 36 months to enhance the skills of future faculty in the assessment of student learning in STEM fields.

Project Director: Daniel D. Denecke, Assoc. Vice President, Programs & Best Practices

This three-year grant supports the launch of a major initiative by the Council of Graduate Schools (CGS) to help graduate students in the assessment of student learning, both for the improvement of their own course-based teaching and for the reflective analysis of student learning outcomes at the level of a program or major. Partnering with five universities, CGS will develop programs aimed at training graduate students in the best practices for assessing student learning and in implementing these practices in their courses, with special attention paid to large "gateway" science and math courses with high student attrition. Grant funds will also support three annual meetings and two summer workshops where learning assessment will be discussed, and a web-based clearinghouse for resources on the topic.

University of Wisconsin, Madison
MADISON, WI
$633,044 over 60 months to expand the scholarly understanding of effective teaching and learning in STEM fields, and of undergraduate student persistence in STEM majors, by a combination of surveys, interviews, and classroom observations of students and faculty at seven colleges.
Project Director: Mark Connolly, Assistant Scientist

In the 1990s, the Foundation supported a project by Elaine Seymour and Nancy Hewitt of the University of Colorado, Boulder and Mark Connolly at the University of Wisconsin, Madison to conduct extensive ethnographies of students at seven selective colleges and universities to determine why majors in STEM fields switch majors for other areas. The results of their work, *Talking About Leaving: Why Undergraduates Leave the Sciences*, provides one of the most interesting, comprehensive accounts of what factors drive retention and attrition among undergraduates in STEM fields. Fifteen years later, Seymour endeavors to return to this issue, updating the findings original reported in *Talking About Leaving* and expanding her analysis to include examination of efforts by professors, departments, and school administrators to shrink attrition in STEM fields. Funds from this grant provide partial support to Seymour, her colleague Mark R. Connolly, and their team to conduct a series of new interviews at the same seven institutions sampled in *Talking About Leaving* and to support their subsequent analysis of the data they collect. Their efforts promise to provide new insights into what has changed and what has stayed the same when it comes to why undergraduates pursue or abandon STEM degrees.

Officer Grants

American Sociological Association
WASHINGTON, DC
$5,000 over 12 months to establish a common standard for tracking demographic data and measuring the process and outcome of diversity-enhancing programs in the sciences.
Project Director: Sally T. Hillsman, Executive Officer

Association of American Colleges and Universities
WASHINGTON, DC
$93,150 over 25 months to bring about a cultural shift in undergraduate STEM education, toward a norm in which classroom and laboratory practice align fully with what we know about how people learn.
Project Director: Linda L. Slakey, Senior Fellow

University of British Columbia
VANCOUVER, BC
$20,000 over 6 months to accelerate the rate of exploration, adaptation and effective integration of methods of instruction that better support improved student learning, with a focus on undergraduate STEM education.
Project Director: Lorne Whitehead, Professor and NSERC/3M Chair

Council of Graduate Schools
WASHINGTON, DC
$30,000 over 29 months to provide future STEM faculty with strategies to identify when undergraduate students are most at risk of departing from baccalaureate STEM pathways.
Project Director: Daniel D. Denecke, Assoc. Vice President, Programs & Best Practices

National Academy of Sciences
WASHINGTON, DC
$100,000 over 18 months to provide evidence-based guidance to post-secondary faculty in science and engineering on how to improve their instruction and to improve undergraduate science education in order to improve students' learning and increase retention of students in science.
Project Director: Heidi Schweingruber, Deputy Director, Board on Science Foundation

National Academy of Sciences
WASHINGTON, DC
$100,000 over 30 months to provide evidence-based findings and actionable recommendations on the increasingly complex pathways undergraduate students take into and out of STEM degree programs.
Project Director: Martin Storksdieck, Director, Board of Science Foundation

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 increase the diversity of higher education in STEM fields through college and university initiatives to support the education and professional advancement of high-quality scholars from underrepresented groups. Grantmaking is divided into three subprograms, the two largest of which support graduate degree completion scholarships and related recruitment and retention activities.

In the **Sloan Minority Ph.D. program (MPHD),** the Foundation partners with select faculty, departments, and universities with proven track records of successfully recruiting and graduating minority Ph.D. candidates in STEM fields. Funds provide scholarships to minority students, enabling successful degree programs to enroll, train, and eventually graduate more students than would otherwise be possible.

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.

In the **Leadership Diversity program**, the Foundation supports college and university efforts to promote the effective professional development of women and minority faculty for advancement in their own disciplines and for positions of academic leadership.

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.

Trustee Grants

Drexel University

Philadelphia, PA

$572,082 over 60 months to develop replicable models and assessment instruments for professional advancement programs to increase institutional capacity supportive of academic leaders from groups underrepresented in STEM.

Project Director: Diane Magrane, Director

ICELA, the International Center for Executive Leadership in Academics at Drexel University, exists to "increase the number and impact of women in academic leadership positions through two innovative programs: Executive Leadership in Academic Medicine (ELAM) and Executive Leadership in Academic Technology and Engineering (ELATE)." ELAM, begun in 1995, is a one-year leadership program to expand the national pool of women qualified for positions of leadership in academic medicine, dentistry, and public health. Now with over 700 graduates, the ELAM program has made significant progress, with alumnae serving in leadership positions from department chair to president at over 180 U.S. and Canadian academic health centers. Notably, 9 of the 23 women deans of U.S. medical schools are ELAM alumnae. Using the ELAM model, ICELA began ELATE in 2012, focusing on leadership development for senior women faculty in engineering, computer science, and related fields.

Funds from this grant support a thorough evaluation of the outcomes and impact (both individual and institutional) of the ELATE classes finishing in June 2013, 2014, and 2015. Besides analyzing the data from the pre- and post-program surveys, the deliverables of the new project will include: 1) a system by which the fellows' institutional action projects will be categorized and tracked to determine whether the original aims for impact have been met; 2) a nationwide survey facilitated by the American Society of Engineering Education (ASEE) of deans and provosts to ascertain views on the skills and practices necessary for effective leadership and mentoring; and 3) surveys of the deans who nominated the fellows to ascertain their views on the progress and outcomes of the program and to engage them about further development of institutional support for women leaders in CS&E.

National Action Council for Minorities in Engineering, Inc.

White Plains, NY

$3,458,800 over 60 months to fund obligations in the Minority Ph.D. program and the Sloan Indigenous Graduate Partnership for the cohort named from July 1, 2012 to July 1, 2013.

Project Director: Aileen Walter, Vice President

The National Action Council for Minorities in Engineering (NACME) has been the Foundation's longtime partner in its grantmaking in the Education and Advancement for Underrepresented Groups program, administering both the Sloan Minority Ph.D. program and the Sloan Indigenous Graduate Partnership. NACME receives applications from 53 departments at the 34 universities participating in these programs, selects students for scholarships, administers awards, and supports recruitment efforts by faculty. The grant funds new obligations in these programs for the 2012-2013 academic year, including scholarships, recruiting support, and administrative costs.

National Opinion Research Center

Chicago, IL

$666,440 over 12 months to conduct an inventory of the university programs associated with the Alfred P. Sloan Foundation's Minority Ph.D. program for underrepresented minority graduate students, and to survey program participants.

Project Director: Raymond Lodato, Senior Survey Director

This grant will fund a project by the National Opinion Research Center (NORC) to evaluate the impact of the Foundation's Minority Ph.D. program. NORC will survey faculty at all 53 departments participating in the Minority Ph.D. program as well as all currently-enrolled graduate students supported through the program, and will attempt to track down and survey every former participant of these departments (whether with Ph.D. in hand or not) to determine what they did after their first job and where they are now. NORC will also track and survey Sloan-funded Ph.D. recipients from departments that once but no longer participate in the Minority Ph.D. program. NORC will then analyze these surveys to provide a complete picture of the career outcomes of all Ph.D. graduates who had received some part of their fellowship funding from Sloan. The output of this project will contribute to the evaluation of and improvements to the structure and performance of the Minority Ph.D. program.

Dr. Pamela Hallock-Miller (left) of the University of South Florida's College of Marine Science stands with her student, Michael Martinez-Colon and Dr. Elizabeth Boylan, Director of Sloan's Minority Ph.D. program at the 2012 Institute on Teaching and Mentoring. Hallock-Miller was honored at the Institute for her work advising and mentoring minority graduate students. (PHOTO REPRINTED COURTESY OF DENISE ELLIS)

Southern Regional Education Board

ATLANTA, GA

$860,000 over 36 months to increase the award of doctoral degrees to members of underrepresented minorities in STEM fields, with a special focus on the preparation of graduate students for careers in higher education.

Project Director: Ansley A. Abraham, Director, SREB Doctoral Scholars Program

Funds from this grant support the Institute on Teaching and Mentoring, an annual conference hosted by the Board of Control for Southern Regional Education, a 3.5-day professional development conference aimed at providing training, mentoring, career advice, and networking opportunities to African-American and Hispanic Ph.D. students. Funds will be used to support the organization of the conference for each of the next three years and to defray the costs of attendance by program directors, faculty, and students involved in the Foundation's Minority Ph.D. program.

Officer Grants

University of Arizona

TUCSON, AZ

$20,000 over 8 months to increase the FTE of the program coordinator of the Sloan Indigenous Graduate Partnership at the U of Arizona from 0.43 to 0.71, to continue the exemplary support she provides for the recruitment and retention of Native American graduate students.

Project Director: Maria Teresa Velez, Associate Dean

Association for Computing Machinery

NEW YORK, NY

$19,920 over 12 months to support the 7th biennial Richard Tapia Celebration of Diversity in Computing Conference.

Project Director: Matthias Heinkenschloss, Professor

Brown University

PROVIDENCE, RI

$30,000 over 6 months to hold a conference that will provide a venue in which mathematicians and computer scientists can interact over several days in an environment designed to foster collaboration and create meaningful connections for the promotion of mathematical excellence.

Project Director: Jill C. Pipher, Director

George Washington University

WASHINGTON, DC

$19,972 over 3 months to identify key data sources and plan two conferences on a future research agenda for student learning, persistence, and success, with a special focus on underrepresented minorities and women, in STEM postsecondary education.

Project Director: Michael J. Feuer, Dean

Long Island University

GREENVALE, NY

$19,600 over 4 months to provide an opportunity for various groups (faculty program directors, researchers, evaluators, sponsors, graduate students, and postdoctorates) to interact on issues in theory, methodology, policy, and approaches for increasing participation in STEM.

Project Director: Anthony L. DePass, AVP, Faculty Research & Development

Public Understanding of Science, Technology & Economics

Books

Program Director: Doron Weber

Books are critical for the understanding of science and technology, allowing us to delve deeply and thoroughly into difficult or complicated subjects. 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.

Recent grants were made to support a scholarly book about the origin of zero; a popular account of the engineering challenges of rust; an historical account of the Founding Fathers and their interest in science; and a book on the Spanish Civil War and the intersection of art and technology. Recently published books supported by the Foundation include: *The Age of Insight* by Eric Kandel; *Time Machines* by Stanley Greenberg; *Ignorance* by Stuart Firestein; *Birdseye* by Mark Kurlansky; and *Hedy's Folly* by Richard Rhodes.

Grants Made Against Prior Authorizations

In October 2008, the Board of Trustees authorized the expenditure of up to 450,000 to provide small grants for promising new books on science, technology, engineering, and mathematics. In June, 2012, the Board of Trustees authorized the expenditure of an additional $400,000 for the same purpose. The following grants were made against this previously authorized fund.

Amir D. Aczel
Brookline, MA
$15,408 over 12 months to support the research of a book about scholar Georges Coedes' discovery of the origin of the concept of zero in Cambodia and its effect on our modern number system.
Project Director: Amir D. Aczel, Author

Jonathan Waldman
Boulder, CO
$50,000 over 12 months to support the research and writing of a book about rust and the engineering efforts required to combat it.
Project Director: Jonathan Waldman, Author

Henry Petroski
Durham, NC
$50,000 over 12 months to research and write an illustrated book with photographs about the design and construction of a house, including discussion of its environmental, social, and cultural context.
Project Director: Henry Petroski, Author & Professor of Civil Engineering

Richard Rhodes

HALF MOON BAY, CA

$125,000 over 24 months to research and write a book about the development of medical and military technologies during the Spanish Civil War and the interconnections between art and technology.

Project Director: Richard Rhodes, Author

Tom Shachtman

SALISBURY, CT

$30,000 over 12 months for research support for a book, The Science of the Founding Fathers*, on the role of science and technology in early America.*

Project Director: Tom Shachtman, Author

Sloan Foundation grants supported the publication of the Lost Notebooks of Srinivasa Ramanujan, the brilliant Indian mathematician who, despite having no formal training, made extraordinary contributions to mathematical analysis, number theory, and continued fractions. (SOURCE: WIKIMEDIA COMMONS)

Film

Program Director: Doron Weber

The Foundation has developed a nationwide film program that includes support of film schools, film festivals, and film development and distribution platforms. The goals of this program are 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 develop new scripts about science and technology that can be produced and released theatrically. The program has created a film development pipeline of multiple program partners through whom Sloan nurtures and develops individual projects with different grants until they are successfully launched.

In 2012 four feature film projects developed over many years through our multiple partners were completed and had their debuts at festivals and cinemas across the country, making this a banner year for the Sloan Film Program. *Robot and Frank,* originally a $20,000 student production grant at NYU, debuted at Sundance where it won the Alfred P. Sloan Prize and was bought by Sony and Samuel Goldwyn and opened in theatres nationwide. *Valley of Saints,* largely financed by three Sloan development grants won the Audience Award at Sundance and received attention at major film festivals around the world. *Here,* recipient of a Sloan commissioning grant at Sundance opened at the IFC theatre in New York and a handful of select theatres across the country. *Future Weather,* developed through multiple Sloan grants, debuted at the Tribeca Film Festival and won the Sloan Prize at the Hamptons Film Festival. Three of these four completed features were nominated for Independent Spirit Awards, the most prestigious awards in the independent film community, and the success of all four films demonstrates the effectiveness of the pioneering Sloan film development pipeline which currently has half-a-dozen or so additional projects in development.

The Student Grand Jury Prize, awarded by the Tribeca Film Institute to the best-of-the-best winning film script from the foundation's six film school partners, was awarded to Grainger David's *Penny Stock*—this script also won the NYU-Sloan 100K first feature prize in 2012. *Reality Clock,* the Sloan animation prize winning film at USC won the prestigious Student Academy Award, a first for the program. Sloan

Gulzah Bhat (left) and Neelofar Hamid in a scene from Musa Syeed's *Valley of Saints*, winner of the 2012 Sundance-Sloan Prize. Set in the Kashmir region of India, *Valley of Saints* tells the story of a boatman torn between the allure of a new life and the needs of the community that raised him. (PHOTO BY YONI BROOK)

further enhanced the impact of its science and film program with a second grant to the Coolidge Corner Theatre to expand its Science on Screen program to 40 theatres nationwide, each of which have to screen at least one Sloan-winning film per year, offering a unique distribution channel to filmmakers. In March, 2012 blockbuster filmmaker James Cameron successfully completed his Sloan-supported deep sea dive into the Marianna Trench, becoming the first solo diver ever to reach the bottom and return, and Sloan approved a major grant for three films about the dive (see Television).

Trustee Grants

American Film Institute

Los Angeles, CA

$288,000 over 31 months to encourage the next generation of storytellers to create more realistic and dramatic stories about science and technology, and to challenge stereotypes about scientists and engineers through film.

Project Director: Joe Petricca, Executive Vice Dean

This grant to the American Film Institute (AFI), one of the Foundation's six film school partners, supports continued efforts to encourage the next generation of filmmakers to incorporate scientific themes and characters in their work, and to challenge stereotypes about scientists and engineers through film. AFI provides a yearly $10,000 prize awarded to the best science or technology-themed screenplay written by an AFI student; an annual $25,000 production award to a science-themed film to help defray production costs; and an annual $35,000 tuition scholarship to a filmmaker with a

background in science and a passion for pursuing science-themed filmmaking as a career. Additional funds provide students with expert science advisors to ensure the accuracy of scientific content, and a seminar series where practicing scientists discuss the latest research and discoveries and the potential they hold for narrative filmmaking.

University of California, Los Angeles

Los Angeles, CA

$309,600 over 32 months for screenwriting and production of science and technology films by top film students.

Project Director: Hal Ackerman, Faculty Director

This grant provides three years of support to the University of California, Los Angeles' School of Theater, Film and Television, one of the Foundation's six film school partners, for its continuing efforts to encourage the next generation of filmmakers to incorporate scientific themes and characters in their work, and to challenge stereotypes about scientists and engineers through film. UCLA sponsors a number of initiatives to expose film students to the narrative possibilities of exploring science and technology in their work. Grant funds support an annual, full-day colloquium brings together top UCLA science faculty from a wide range of disciplinary backgrounds to lecture on interesting new developments in science and technology; two annual $10,000 screenwriting prizes to be awarded to the best science-themed scripts, an annual $30,000 directing fellowship awarded to the best science themed film project; and funds providing science mentors to ensure the accuracy of science-themed film content and to mentor students as they research and write scripts. The program promises to continue to build on the UCLA program's success in building a cadre of talented young filmmakers eager to explore scientific themes and characters in their careers.

National Academy of Sciences

Washington, DC

$200,000 over 24 months to sustain and strengthen the role of the Science and Entertainment Exchange—and of science and technology—in Hollywood.

Project Director: Barbara Kline Pope, Executive Director

Launched in 2009 by the National Academy of Sciences, the Science and Entertainment Exchange is a program that seeks to enhance and improve the scientific content of film and television through connecting writers, producers, directors, and other entertainment industry professionals with top research scientists and engineers. To date the Exchange has consulted on over 400 film and television projects, including big-budget film productions like *Apollo 18*, *Battleship*, *Iron Man 2*, and *Green Lantern* and hit television programs like *Castle*, *House*, *The Good Wife*, and *Covert Affairs*. It also sponsors salons and panel discussions, bringing together industry insiders and scientists.

Funds from this two-year grant provide core support for the Science and Entertainment Exchange, allowing it to reach out to more individuals, studios, networks, and guilds; to target television more aggressively; to expand its database of current science experts and add new scientific fields that are not currently represented; to improve publicity around major releases of films and TV; and to expand its presence and impact on the web and in social media.

New York University

New York, NY

$473,567 over 36 months for screenwriting and production of science and technology films by top film students.

Project Director: Sheril Antonio, Associate Dean

This grant provides three years of support to New York University's Maurice Kanbar Institute of Film & TV for its continuing efforts to provide opportunities for emerging filmmakers to work with practicing scientists, to incentivize these filmmakers to produce high-quality scripts that engage with scientific themes or topics, and to facilitate the development of those scripts into completed films. Grant funds will support an annual colloquium that brings together film students and working scientists, expert advisors to ensure the accuracy of scientific content, and a yearly awards program that provides development funds to student screenwriters and filmmakers who submit the most engaging, entertaining, and accurate scripts on scientific topics.

University of Southern California

Los Angeles, CA

$358,350 over 36 months for screenwriting and production of science and technology films by top film students.

Project Director: Alan Baker, Associate Dean for Admin & International Programs

Funds from this grant support three innovative annual awards programs at the University of Southern California's School of Cinematic Arts that urge students to write, direct, produce, and animate scripts that touch on scientific themes or feature scientists, mathematicians, or engineers as major characters. The first, aimed at student screenwriters, awards $15,000 to the best science-themed script submitted. The second provides $22,500 in production support to turn two compelling, accurate, science-themed scripts into completed films. The third, aimed at animators, awards $15,000 in production support to a high-quality science themed animation project. Other grant funds support stipends for science advisors for student film projects to ensure the accuracy of scientific content, and for an annual science colloquium that educates students on exciting new scientific advances. Taken together, the USC program provides a rising generation of filmmakers with a powerful introduction to the narrative possibilities of merging science and film.

Tribeca Film Institute

New York, NY

$216,689 over 29 months to award the annual Sloan Student Grand Jury Prize to the best-of-the-best student film from all film school partners and to develop each winning screenplay toward production.

Project Director: Natalie Mooallem, Manager, Feature Programming

Instituted two years ago to reward the most promising student screenwriters, the Sloan Student Grand Jury Prize is awarded annually to the single best student screenplay from among the Foundation's six film school partners: American Film Institute, Columbia University, Carnegie Mellon University, New York University, UCLA, and USC. Winning scripts demonstrate how scientific content can become the basis for an entertaining and marketable film, and previous winners—Robert Cohen's *Bystande*r and Grainger David's *Penny Stock*—have gone on to garner significant media and industry attention. Selected by an independent panel of scientists, actors, and industry insiders, winners of the award receive a $30,000 production grant to help turn the script into a completed film; support from a noted industry mentor to guide the project; a committed science advisor; and marketing (meetings, readings, events), distribution, and networking support to maximize the screenplay's chances of production and distribution. This grant provides continued support for the Sloan Student Grand Jury Prize for two years.

WGBH Educational Foundation

Boston, MA

$1,500,000 over 36 months for co-production of a feature-length dramatic film on Lise Meitner for worldwide theatrical release and for prime time television broadcast as a two-hour special on NOVA.

Project Director: Paula S. Apsell, Senior Executive Producer

This three-year grant provides production support for a feature-length dramatic film about the life and work of Lise Meitner, a brilliant and pioneering female physicist who, despite the endemic sexism of her time, played a pivotal role in the discovery and development of controlled nuclear fission. Funds provide partial production support for a feature length film with guaranteed distribution on PBS's popular science series, *NOVA*.

Officer Grants

Coolidge Corner Theatre Foundation

Brookline, MA

$20,000 over 1 month to support Coolidge Corner Theatre, which leads the Foundation's Science on Screen initiative, in their transition to digital projection.

Project Director: Denise Kasell, Executive Director

National Geographic Society

Washington, DC

$125,000 over 12 months to design a digital and media outreach plan around James Cameron's deep dive to the Marianna Trenches.

Project Director: Terry Garcia, Executive Vice President

Radio

Program Director: Doron Weber

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,* and *Planet Money.* The Foundation also supports *LA Theatre Works* in recording full-length science plays 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 2012 Sloan made a new grant to *PRX,* an award-winning public media company, to begin working with a younger generation of digital radio innovators, and made a large trustee grant to *BURN: An Energy Journal,* an ambitious multimedia series on the nation's energy choices which then was awarded the prestigious Kavli Award for Science Journalism. *Studio 360* received the National Edward R. Murrow Award in 2012 for a Sloan-supported segment. *Radiolab* took their show on the road selling out their live performance *In the Dark* at theatres across the country within hours of being advertised. In 2012 *LA Theatre Works* recorded two EST-Sloan plays, *Photograph 51* and *Tooth N Claw*, as well as the MTC and Playwrights Horizons Sloan play *Completeness,* bringing the total number of science plays in the *Relativity* series to twenty four.

Trustee Grants

L.A. Theatre Works
Venice, CA
$450,848 over 24 months to record four new Sloan-commissioned or supported science plays for broadcast on public radio and distributed to schools, libraries, online retail partners and regional theatres, and for development of "Relativity" apps, eBooks, and website material.
Project Director: Vicki Pearlson, Managing Director

This grant to L.A. Theatre Works supports its continuing efforts to produce and disseminate high-quality recordings of science-themed plays. Grants funds will support the recording and public radio broadcast of four science-themed plays produced or commissioned through the Foundation's Theater program, the addition of these recordings to L.A. Theatre Works online library collection, the distribution of two recordings to 3,000 schools nationwide along with the production of teachers' guides and other supplementary educational material, and the design and production of ten eBooks

and ten smartphone apps adapted from existing science-themed plays in the L.A. Theatre Works corpus. This ambitious series of projects promises to significantly extend the reach of grantmaking in the Foundation's Theater program.

National Public Radio, Inc.

WASHINGTON, DC

$890,000 over 36 months to enhance business and economics coverage on Planet Money and to fund a one-year pilot to expand multimedia storytelling at the Science Desk.

Project Director: Kinsey Wilson, SVP & GM for Digital Media

Funds from this grant to National Public Radio will support the expansion and improvement of business and economics coverage on Planet Money. Supported activities include the hiring of new Planet Money staff, production of twice monthly segments on economic issues for both Morning Edition and All Things Considered, two of NPR's most popular shows, and the creation of a set of "explainers" that explicate key economic concepts like inflation and GDP. Additional monies will support the expansion of Planet Money's online activities and outreach, funding the creation of a Planet Money iPhone and iPad app, and allowing the creation of a multimedia content team that will focus on bringing Planet Money stories to an online audience. Additional funds from this grant provide core support to the NPR science desk.

PRX Incorporated

CAMBRIDGE, MA

$172,328 over 12 months to experiment with new, diverse voices outside the radio mainstream and with new approaches to presenting STEM content for a new generation.

Project Director: Jake Shapiro, CEO

This grant funds a project by PRX Incorporated, public radio's largest distribution marketplace, to experiment with new ways to bring high-quality, science-themed audio programming to new, younger audiences through the radio and the web. PRX

Radiolab hosts Jad Abumrad (left) and Robert Krulwich (PHOTO COURTESY OF MARCANTONIO.COM)

will improve the sound, production, and general appeal of its hour-long science programming, while promoting these shows as specials and excerpting segments for short-term use on podcasts, remixes, blogs, web, and social media sites. In addition, PRX will create three new science podcasts for 99% Invisible, a short-form podcast that addresses creativity and innovation. PRX will also begin integrating existing science content into Public Radio Remix: an edgy, experimental mash-up that creates "a new flow of listening" aimed at younger listeners. Finally, working closely with science advisors, PRX will issue an "open call" for STEM programs and proposals-either identifying exciting new shows that may be off the traditional radar screen and helping them with enhanced production techniques to improve distribution, or taking previously aired or archival work that can be revised, edited, updated, or annotated to make it more timely and accessible for broadcast or streaming. This wide range of PRX initiatives aims to engage an entirely new community and to learn from them while advancing public understanding of science.

SoundVision Productions

BERKELEY, CA

$1,098,883 over 19 months For support for BURN: An Energy Journal to expand the public's energy literacy through public radio specials, monthly stories broadcast on Marketplace, and shared productions with National Geographic, as well as online content and outreach.

Project Director: Bari Scott, Executive Producer

Funds from this grant support a project by SoundVision Productions to produce an ambitious, multimedia series titled *BURN: An Energy Journal*. Joined by two major media partners—Marketplace and National Geographic—BURN will focus on energy literacy and teaching the public about our energy future, which will result in two in-depth, one-hour programs on public radio about energy efficiency and future directions in energy. Additional funds will support the creation of a new BURN desk on the popular Marketplace program that will air, for one year, a monthly series of five- to seven-minute pieces on energy-related topics. Partner National Geographic will also distribute BURN content across its many platforms. BURN will include a website that will include four one-hour specials on energy along with a series of podcasts, source lists, and resource links, blogs, and video science explainers from the series' popular host, Alex Chadwick. A partnership with the University of Texas will produce weekly blog entries by top scientists, policymakers, industry leaders, researchers, and other opinion leaders. Additional grant monies will support outreach efforts to minority and ethnic audiences through targeting media channels that serve ethnic and minority constituencies.

The BURN project promises to improve the public's basic energy literacy, to take a level-headed look at our energy future, and to stimulate a more realistic and informed public discussion on this critical subject.

Television

Program Director: Doron Weber

The Foundation continues to develop various television projects, mainly through PBS, to help integrate science and technology, along with profiles of scientists, engineers, and mathematicians, into the nation's regular programming.

In 2012 Sloan made a grant to support three films—a *National Geographic* documentary, 3D feature film, and an IMAX film—about James Cameron's historic dive to the bottom of the Mariana Trench. Over three billion people tuned in to the dive and the first film is expected in 2013. In January 2012 *Frontline* broadcast the Sloan-supported show *Nuclear Aftershocks,* focusing on Fukushima and its aftermath, to several million viewers. NOVA aired the Sloan-supported *Hunting the Elements* about the periodic table hosted by *New York Times* reporter David Pogue, and developed an iPad App that proved extremely popular being named *The New Yorker's* Digital Pick and a "must have" for back to school kids by Apple. *Brains on Trial,* a two-part PBS series hosted by Alan Alda that explores the science behind brain scans finished shooting in 2012 and is set to premiere in fall 2013. The Foundation continues to support *American Experience* and its production of science and technology-themed documentaries, most recently *Grand Coulee Dam* which premiered to excellent reviews and a big audience, and Paul Solman's Emmy-winning on-air and online coverage of economic and financial literacy on the *PBS NewsHour*.

A Foundation grant to the award-winning documentary series *American Experience,* produced by Boston's WGBH, enabled the production and airing of *Grand Coulee Dam*, a detailed account of the Depression-era construction of what would be the largest dam in America and its surprising social, political, economic, and environmental consequences.
(IMAGE COURTESY OF WGBH.)

Trustee Grants

Catticus Corporation
Berkeley, CA
$1,500,000 over 24 months for production support for a three-hour series tracing the history of Silicon Valley to be aired on PBS primetime, along with development of a public education and community outreach campaign.
Project Director: Michael Schwarz, Director/Producer

Funds from this grant support a project by award-winning producer Michael Schwarz to develop, produce, and air a three-hour PBS special on the intellectual, cultural, and technological history of

Silicon Valley from its origins in the 1870s to today. The film will explore how and why Silicon Valley has, decade after decade for nearly 100 years, produced world-changing innovation—not just new products but whole new industries: vacuum tubes, radio, radar, integrated circuits, venture capital, PCs, printers, genetic engineering, software, networking hardware, the internet, social media, cloud computing, mobile. Guided by a distinguished group of scholars, historians of technology, and other experts, the program will examine how the Valley has managed to stay on the cutting edge of technology even as that edge has shifted and pivoted dramatically, and why its success has been so difficult to emulate. By casting a longer and more informed historical lens on Silicon Valley, the proposed show promises to stimulate a deeper understanding of how government, academia, and the private sector can collaborate successfully and also provide new insights on innovation and entrepreneurship, especially as applied to technology.

In addition to the three-hour film for broadcast, funds from this grant support a public engagement and educational campaign targeted at middle and high school students, a website, a multiplatform digital media strategy including a social media campaign, short-form videos and interactive maps for web tablets and phones, and a strong publicity and promotion effort that should significantly expand both the audience for the show and discussion of the issues raised.

National Geographic Society

WASHINGTON, DC

$1,500,000 over 24 months to provide partial funding for a television documentary, 3D feature film, 3D Giant Screen film, educational resources, and digital outreach focused on James Cameron's historic dive and scientific expedition to the deepest part of the ocean.

Project Director: Terry Garcia, Executive Vice President

In March of 2003, director and longtime diving enthusiast James Cameron piloted a specially designed submarine, the Deepsea Challenger, to the bottom of the Mariana Trench—the deepest point in the ocean—becoming only the second man in history to make the journey. Spending some nine hours at the bottom of the ocean, Cameron captured the entire incredible journey on film, including never before seen images the trench floor. Funds from this grant will support the production of three separate media projects related to Cameron's pioneering dive, a 90-minute 3D feature film, a two-hour television documentary, and a 40-minute 3D film designed for oversized screens. Additional funds will support the production of educational resources to complement the film's scientific content, as well as digital and media outreach activities.

WGBH Educational Foundation

BOSTON, MA

$1,000,000 over 37 months For production and broadcast of a three-hour NOVA special on the geological history of North America with enhanced digital content, outreach, education, and promotion.

Project Director: Paula S. Apsell, Senior Executive Producer

This grant supports the production of a three-hour *NOVA* special, *Making of North America*, which takes a unique "biographical" approach to communicating facts about the geological and geographic history of the continent.

Making of North America will put to use the work of two new graphics projects, Defense Advanced Research Projects Agency's Transparent Earth and Time Tunnel, to take the audience on a three-billion year adventure and "detective story." Scientists on the program will try to solve mysteries such as what is raising the Rockies and what is fueling the "hot spot" in the middle of the continent while taking a fresh look at landmarks like the Grand Canyon. The three hours will include a first program, *Primeval Forces*; a second hour, *The Birth of North America*; and a final show, *The Human Landscape*. The series will be augmented with enhanced digital content, most notably a mobile interactive map available on multiple platforms and a Google Earth tour. Funds will also support the development of a suite of teaching resources and a science café toolkit to attract younger audiences.

Officer Grants

Catticus Corporation

BERKELEY, CA

$59,600 over 2 months as a planning grant to support research and development of a three-hour documentary series tracing the history of Silicon Valley.

Project Director: Michael Schwarz, Director/Producer

Theater

Program Director: Doron Weber

Over the past fifteen years, the Sloan Foundation has developed a nationwide theater program with participants in many regions anchored by two main New York City partners—Ensemble Studio Theatre and Manhattan Theatre Club. The aim of this program is to encourage leading theater artists to explore scientific or technological themes, to write works featuring scientists, mathematicians, or engineers as major characters, and to stage plays with dramatically engaging high-quality science content. To date the theater program has received over 2000 submissions for new plays, and of those it 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, helping to establish a new genre of science theater.

2012 was a banner year for the Theatre program with several major Sloan-supported productions premiering at the Manhattan Theatre Club, including a Broadway opening of Ibsen's *An Enemy of the People.* MTC also began rehearsals for a second Sloan-supported Broadway play, *The Other Place,* and Sloan approved a production grant for a third MTC play, *The Explorers Club,* to premiere at MTC's Stage 1 theatre. The program has also supported New York-based Playwrights Horizons to develop and stage new works, and in 2012 they staged a successful production of the Sloan-supported evolution play *How the World Began*, which also opened in London. EST continued its strong string of success with a mainstage production of *Headstrong,* about the deleterious effects of football concussions now being adapted into a television series by the producer of *Friday Night Lights. Photograph 51,* a previous mainstage production, was produced in DC, Seattle, Boston, and Berlin, and other mainstage shows including *End Days, Serendib,* and *Lucy* continued to be produced at theatres across the country with a total of more than 20, a record for the program.

Nedra McClyde and Ron Canada star in the 2012 production of Patrick Link's *Headstrong* at New York's Ensemble Studio Theatre. *Headstrong* tells the story of a father and daughter who struggle with their own culpability in the aftermath of a family member's death. (PHOTO BY GERRY GOODSTEIN. REPRINTED COURTESY OF THE ENSEMBLE STUDIO THEATRE.)

Trustee Grants

Manhattan Theatre Club

New York, NY

$550,000 over 36 months to commission, develop, and produce science and technology plays.

Project Director: Annie MacRae, Sloan Project Manager

This grant provides continuing support to an initiative at New York City's Manhattan Theatre Club to commission, produce, and promote new science-themed plays from emerging, midlevel, and established playwrights. Grant funds support a series of interrelated activities, including the commissioning of four new science-themed plays per year, public and private readings of scripts in progress, and an annual workshop.

Grants Made Against Prior Authorizations

In December 2012, the Board of Trustees authorized the expenditure of up to $425,000 for a series of small grants designed to incentivize the production of science and technology plays at New York City's 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

$50,000 over 2 months for a final installment of production support for "The Other Place," a science play being produced at Manhattan Theatre Club's Broadway space.

Project Director: Annie MacRae, Sloan Project Manager

New Media

Program Director: Doron Weber

The Foundation is committed to using all media and other platforms to advance the public's understanding of science, and has sponsored many influential cultural institutions as part of its ongoing conversation with the public about the value of science, technology, engineering, and mathematics.

Recent grants resulted in the fifth annual World Science Festival, of which Sloan is a founding sponsor, which in 2012 included Foundation-related programs such as: a screening of *Robot and Frank;* a multimedia opera performance of *Icarus at the Edge of Time,* about a boy who travels too close to a black hole based on Brian Greene's book set to music composed by Philip Glass; and *Hedy and George,* a special event about Hedy Lamarr and George Antheil. Other 2012 grants include one to BAM for a documentary film about the renowned avant garde opera *Einstein on the Beach.* The program also awarded funds to the New York Hall of Science to create an interactive ebook for iPad on the science of DNA and the Innocence Project, which has exonerated over 300 death-row inmates through DNA evidence. *The Secret Lives of Scientists*, a spin-off from the Sloan-supported NOVA ScienceNow commissioned and funded exclusively by Sloan as a web-based experiment, continued to attract enthusiastic audiences and many fan letters from students and educators.

Massachusetts Institute of Technology
CAMBRIDGE, MA
$399,545 over 24 months to provide seed grants to launch twelve new science festival initiatives in communities with small resource bases.
Project Director: John Durant, Executive Director

This two-year grant funds a project by John Durant and the MIT Museum, leaders in the Science Festival Alliance, to launch 12 new science festival initiatives in communities with "relatively small resource bases," supporting festivals in communities that would otherwise lack the budget or experience to launch their own. The Science Festival Alliance has identified four lead festivals—in Wisconsin, Florida, Colorado, and Missouri—to act as models. Harnessing experienced mentors, the Science Festival Alliance will use modest challenge grants and how-to resources to help local science festival efforts get off the ground. Additionally, they will strengthen connections within the science festival community while establishing methods expanding festivals to under-resourced communities.

This grant is a promising way to expand the science festival experience to communities across the country and, if successful, would represent a 33 percent increase in the 36 local science festivals that currently exist in America.

New York Hall of Science

CORONA, NY

$320,514 over 8 months to create an interactive eBook for iPad that incorporates compelling narratives from the Innocence Project with scientific themes of DNA used as evidence and cognitive and perception biases.

Project Director: Eric Siegel, Director & Chief Content Officer

This grant funds the production of an interactive new eBook, *Innocence, Guilt and Science*. Authored by New York Times reporter Jim Dwyer and produced in conjunction with the Innocent Project, the book will detail some of the more than 250 death row convictions and life sentences the Innocent Project has helped overturn through the use of DNA evidence. The book will explore how cutting edge advances in genomics are affecting the judicial system, including how they shed light on the subjective distortions of more traditional forensic "science" based on perception and memory. *Innocence, Guilt and Science* will also push the envelope of eBook technology, integrating traditional written narrative with photos and court documents, in-depth video clips, links to online resources, and interactive games that will allow readers to explore scientific themes. *Innocence, Guilt and Science* will provide the public with a deeper understanding of the science of DNA testing and how it is used to identify individuals; and will provide an engaging window into the science of perception, cognition, and the many distortions that our memories introduce.

A young explorer discovers the wonders of space at the 2012 World Science Festival's action-packed Ultimate Science Street Fair. The Festival, a celebration of all that's fun and fascinating about science, has been supported by the Foundation since its inception in 2008. (PHOTO BY ROBERT LESLIE. REPRINTED COURTESY OF THE SCIENCE FESTIVAL FOUNDATION.)

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.

Grantmaking is 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; 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; insurance 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 Institutes for Research

Washington, DC

$795,553 over 24 months to study scientific collaboration and productivity at the project team level.

Project Director: Julia I. Lane, Senior Vice President and Director, Economics, Labor and Population

Evidence suggests that cooperation among scientists is a growing and important factor determining the productivity of research. The longitudinal data needed for a comprehensive understanding of this trend and its implications, however, are only just becoming available. This grant funds research by a team composed of economist Paula Stephan, econometrician Jacques Mairesse, and engineer Lee Fleming to model the dynamics and productivity of scientific teams. Funds will support data collection and analysis as well as a major conference to discuss research findings and examine the implications for science policy.

The Brookings Institution

Washington, DC

$225,000 over 36 months to demonstrate new ways an economics journal can help curate, visualize, and update the empirical data linked to its articles.

Project Director: Karen Dynan, Vice President & Co-Director

Funds from this grant support a series of data-oriented improvements to the influential Brookings Papers on Economic Activity (BPEA) that will make its papers as replicable, interactive, and technologically empowered as those at the forefront of innovation in other fields. Planned improvements include adding the capacity to include new data as they arrive, thus keeping the analyses and conclusions in a paper up-to-date for years after publication. Also planned are upgrades that will enable papers to come with embedded code and interactive data visualizations that allow readers to test alternative regression specifications, change parameter settings, or adjust the time frame analyzed, all within the paper. Funds would primarily support the requisite technical updates to the BPEA website, with additional monies for user support and for incentive funds for authors who commit to making periodic updates to their data and findings.

University of California, Berkeley

Berkeley, CA

$855,763 over 24 months to plan, coordinate, and facilitate interdisciplinary research on energy efficiency.

Project Director: Catherine Wolfram, Associate Professor

The "Energy Efficiency Paradox" refers to the stubborn fact that energy efficiency improvements judged cost effective in theory nevertheless fail to find wide adoption in practice. Surprisingly few people, for example, weatherize their homes even when given all sorts of information and incentives. Though many researchers have studied aspects of the paradox, no serious, concerted research initiative to understand it has been conducted. Funds from this grant support the efforts of Cathering Wolfram, Elizabeth Bailey and a team at the University of California, Berkeley to convene a working group to recruit and resource coordinated research projects that can help resolve the Energy Efficiency Paradox. Funded activities include efforts to build an active community of economists, engineers, and behavioral scientists to conduct coordinated research in cooperation with business owners, investors, consumers, utility officials, energy entrepreneurs, and public policymakers. The Bailey-Wolfram working group will seek financial support for energy efficiency research and provide support resources to associated researchers, including setting methodological and metadata standards, facilitating data access, and supporting archiving infrastructure.

Corporation for National Research Initiatives

RESTON, VA

$497,103 over 18 months to develop and demonstrate an open-source software platform that facilitates interoperability among disparate information systems.

Project Director: Laurence Lannom, Director of Information Management Technology

The Center for National Research Initiatives (CNRI) is the lead developer of the "Handle System," an open-source, publicly licensed, and popular technology specification for identifying and tracking digital objects. Used by over a thousand different organizations in more than 50 countries, the system deploys identifiers called "handles," that can be used to identify and track everything from scholarly publications to datasets to songs to movies. Unlike URLs, which specify the location where a particular instance of a set of digital information can be found, handles are independent of where the digital object is hosted, allowing users of system to locate a digital object wherever it may be located.

Funds from this grant support the continued development and expansion of the Handle System, with a focus on expanding the system so that it works seamlessly across multiple digital object registries, incorporating disparate data types not previously considered and demonstrating the system's effectiveness through the development of use cases.

Dartmouth College

HANOVER, NH

$132,458 over 26 months to measure the spread of open access in academic publishing and to test the impact of open access on citation counts and other indicators of research quality.

Project Director: Christopher Snyder, Joel Z. & Susan Hyatt Professor of Economics

Funds from this grant support the work of Dartmouth's Chris Snyder as he studies the spread of open access publishing in academia and the impact this spread has had on scientific publication. Snyder's research is divided into three related projects. The first is to construct novel ways to measure the spread of open-access publication that take into account both the quality and quantity of the papers published. The second is to evaluate how open access affects a paper's citation rate. The third is to examine whether open access journals exhibit less "publication bias," that is, the tendency to search for, cook up, and release only findings that significantly support the hypothesis under investigation.

Most open access journals depend on the willingness of authors to pay publication fees. Precise impact measures for the thousands of new open access journals, together with careful estimates of the relationship between open access and journal quality, could therefore have significant impact on publishers, policymakers, academics, and their funders.

Harvard University

CAMBRIDGE, MA

$277,661 over 18 months to develop, refine, and promulgate an agenda for energy efficiency research.

Project Director: Robert Stavins, Albert Pratt Professor of Business & Government

The "Energy Efficiency Paradox" refers to the stubborn fact that energy efficiency improvements judged cost effective in theory nevertheless fail to find wide adoption in practice. Surprisingly few people, for example, weatherize their homes even when given all sorts of information and incentives. Though many researchers have studied aspects of the paradox, no serious, concerted research initiative to understand it has been conducted. This grant supports a project by economists Robert Stavins and Richard Newell to lay the groundwork for such a comprehensive initiative. Stavins and Newell will conduct a review of the relevant economic literature on the Energy Efficiency Paradox, hold a conference, publish a monograph, and provide other scholarly infrastructure, including a shared, online, and annotated bibliographic database of relevant research.

International Association for Research in Income and Wealth

OTTAWA, OTTAWA

$140,000 over 4 months to study and share improvements for estimating gross domestic product.

Project Director: Andrew Sharpe, Executive Director

Gross domestic product (GDP) is the most important statistic in macroeconomics. As a measure of the value of goods and services produced within a country, GDP announcements can swing stock markets, political sentiments, business plans, and much else. Yet despite its importance, GDP figures—calculated in the U.S. by the Bureau of Economic Analysis (BEA)—are merely estimates and often

subject to substantial subsequent revision. With businesses, politicians, and consumers making choices based on GDP data, however, such revisions can be costly. With so much at stake, the methodology for estimating GDP and similar statistics is the subject of constant scrutiny.

(Left to right) David Romer, Ben Bernanke, Paul Volcker, Stan Fischer, Christina Romer, Anil Kashyap, Jacob Frankel, and Martin Feldstein gather at the National Bureau of Economic Research's conference marking the hundred year anniversary of the U.S. Federal Reserve. PHOTO COURTESY OF NBER.

This grant supports a major international conference about macroeconomic statistics to be held in August 2012. Conference participants will include a host of venerable research and government institutions, including the BEA, the International Monetary Fund, the U.S. Census Bureau, the U.S. Bureau of Labor Statistics, and the National Bureau of Economic Research. Grant funds will offset conference costs, support the commissioning of papers for conference sessions on GDP revisions and new GDP data sources, and enable the publication of a selection of peer-reviewed papers from the conference.

University of Michigan

ANN ARBOR, MI

$342,213 over 24 months to develop and promote data-sharing standards in the social sciences.

Project Director: George Alter, Director of Interuniversity Consortium for Political and Social Research

Founded 50 years ago, the Inter-University Consortium for Political and Social Research (ICPSR) provides leadership and training in data access, curation, and methods of analysis for the social science research community. Over 700 institutions from all over the world belong to this consortium based at the University of Michigan, and its archives contain over 500,000 data files. This grant funds a project led by economic historian and ICPSR Director George Alter to help set standards and address challenges common to social science researchers who work with "big data." Grant funds will support three workshops that will aim to (1) develop consensus among social science journal editors about how to review, publish, and cite data; (2) develop common standards in a variety of scientific fields about how to archive data files and the "metadata" that describes them; and (3) develop a consensus among scientific grantmaking organizations about what data management standards should be imposed on grantees. Additional monies from this grant support a project to investigate the nondisclosure agreements (NDA) many social scientists sign in order to gain access to proprietary information and to explore the possibility of developing a common non-disclosure agreement on the model of the popular license developed by Creative Commons.

National Academy of Sciences

WASHINGTON, DC

$200,000 over 12 months to enhance, disseminate, and implement the findings of a study about improving postdoctoral training and career prospects.

Project Director: Kevin Finneran, Director

Much research in the United States depends on the labor of postdoctoral fellows. The system for hiring, training, and compensating postdocs, however, is far from healthy. There were more than 50,000 postdocs in the United States in 2003. Their median salary was just $38,000, a meager amount considering that many are aged 30 or above and have

devoted years to specialized training. Many have no health insurance and receive no career training.

This grant provides support for a report by the National Academy of Science's Committee on Science, Engineering, and Public Policy (COSEPUP) that examines the strengths and weaknesses of the postdoctoral system in the United States and makes recommendations for its improvement. Grant funds will support data collection and analysis as well as two workshops to engage academic leaders, research funders, and postdoctoral fellows about the committee's findings. Additional funds will support a project to compile and analyze comprehensive data on U.S. postdoctoral fellows' immigration status and career outcomes.

New York University

NEW YORK, NY

$401,624 over 36 months to analyze the economics of labor markets for information technology workers using administrative datasets.

Project Director: Prasanna Tambe, Assistant Professor

Funds from this grant support the research of Prasanna Tambe of New York University, who proposes to exploit new sources of administrative data to shed light on the labor market economics of the IT workforce. Using millions of administrative records collected by popular job-related social media sites LinkedIn and CareerBuilder, Tambe will examine variations in the labor market behaviors of IT workers and firms, examining how the acquisition of IT skills by employees in a firm affect the firm's productivity, how firms value the acquisition of new IT skills, and how employee migration between firms affects the rate of adoption of new technology.

University of Pennsylvania

PHILADELPHIA, PA

$281,029 over 24 months to facilitate research on household decision-making by systematically documenting data, including choice architecture information, about state Health Insurance Exchanges.

Project Director: Thomas E. Baker, Professor of Law & Health Sciences

The Affordable Care Act presents a special opportunity to research how different choice architectures affect consumer choice in a comprehensive manner. At least 15 states plan to design their own exchanges, which are expected to vary significantly. Even exchanges that adopt the federal template will operate with different participating insurers, plans offered, and price controls or other state regulations. Thousands of individuals will purchase plans off the exchanges, opting for one of a set of plans offered.

Funds from this grant support a project by Tom Baker at the University of Pennsylvania to ensure that comprehensive data on all these exchanges will be documented and made easily available to researchers. In cooperation with regulators and other officials, Baker and his team will collect and compile details on each exchange's choice architecture, product menu, relevant regulations, and much more. Such data should be useful for behavioral economics and beyond, including studies of adverse selection, market design, and price distortions. Additional funds will support a preliminary workshop for a broad spectrum of fellow researchers to discuss suggestions and build consensus about data collection specifics.

Rutgers, The State University of New Jersey

NEW BRUNSWICK, NJ

$399,448 over 36 months to study pathways and patterns of course-taking and career development in science and technology.

Project Director: Harold Salzman, Professor

Casual discussions of the scientific and technical workforce often rely on a pipeline metaphor. In this picture, there is an ample supply of student interest to begin with, but leakage at critical junctures leaves only a trickle of graduates who actually pursue careers in STEM. The obvious remedy is to plug the leaks.

But perhaps the "pipeline" theory is an easy but misleading oversimplification. This grant supports a project by Hal Salzman of Rutgers to investigate how various pathways can lead through the educational system to STEM careers. Using the Baccalaureate and Beyond Longitudinal Study (B&B) compiled by the National Center for Education Statistics, Salzman and his team will analyze the complex ways that course-taking patterns relate to decisions about STEM majors and careers, including how students (a) use college as a period of exploration; (b) may benefit from majoring in STEM without pursuing a traditional STEM career; (c) can major in a non-STEM field but still do lots of science in classes or at work; (d) make choices that are influenced by both supply and demand variables; and

(e) can thereby end up in scientific careers by way of nonlinear and nontraditional routes. The resulting picture, complemented by a series of interviews with students and site views to universities, promises to help build a more robust, nuanced account of the myriad ways in which students may end up in scientific careers.

Stanford University

STANFORD, CA

$386,574 over 36 months to study internet markets using detailed data about consumer and firm behavior from eBay.

Project Director: Jonathan Levin, Professor

Funds from this grant support the work of Stanford economists Jonathan Levin and Liran Einay, who have obtained unprecedented access to a massive dataset on consumer behavior data collected by the internet retailing giant and auction site eBay. The eBay data is a goldmine of information containing records of hundreds of millions of transactions over ten years, including the histories of every seller, details on every item ever listed on the site, and records of every click made by site users. Grant monies will support Levin and Einay's work analyzing this data, which will initially focus on three distinct issues: how buyer and seller behavior have changed over time particularly with regard to auctions; how to model seller learning; and the impact of changes in online sales taxes on buyer and seller behavior. The depth and richness of the dataset they will be analyzing promises to shed new light on our understanding of what happens when people go shopping.

Stevens Institute of Technology

HOBOKEN, NJ

$390,584 over 12 months to prototype and test algorithms for accurately approximating the state-contingent cash flows of financial contract types.

Project Director: Khaldoun Khashanah, Director, Financial Engineering

What should financial regulators do about systemic risk? Ideally, many would like to describe, track, and aggregate the implications of nearly every significant financial contract around the world. Though daunting in scope, doing so would be technically quite feasible. The coordination necessary to make such a system work would be much more challenging than building it. Indeed, at smaller scales, professional risk managers already describe, track, and aggregate contract implications every day. Their data systems, however, are ad hoc and proprietary. Both the inputs and outputs of their risk calculations may be totally incomparable across different organizations—or even within the same institution. What's needed is a way to standardize the characterization of financial contracts.

An international team led by the Stevens Institute of Technology is already working on the open-source software needed. They claim that the cash flow implications of nearly any financial agreement can be accurately approximated using just 30 standardized "contract types." Like Lego blocks, these can fit together to model quite complicated and comprehensive structures. Their widespread use would give both regulators and financial institutions the ability to "put all the pieces together" and model financial risk in ways that are impossible now.

This grant provides funds to support the development and deployment of a pilot open-source "contract typing" software system with the ability to accurately model the cash flow implications of a wide range of financial contracts. Funds will support software development, testing, refinement, infrastructure, and outreach in an attempt to demonstrate the feasibility of such a software system.

The Urban Institute

WASHINGTON, DC

$270,000 over 24 months to improve the detail and utility of the Internal Revenue Service's public use files.

Project Director: James Nunns, Senior Fellow

One of the few advantages of our complex tax code is that the information gathered can, in principle, provide researchers with accurate estimates of wages, investments, retirement savings, and many other economic variables. In practice, however, it is very hard for researchers to gain access to that information.

Recognizing the demand for such data, the Internal Revenue Service has begun making more of its information available in aggregated tables and in de-identified compilations known as "Public Use Files." This two-year grant funds a project by the Tax Policy Center (TPC), a joint venture of the Urban Institute and the Brookings Institution, to help make IRS data more useful to researchers, policymakers, and the public. Over the course of the next two

years, researchers at the Tax Policy Center propose to add new information to existing IRS data offerings, including data about age, gender, and how joint earnings are split between couples. They will also develop new methodologies for estimating the characteristics of those who do not file taxes, allowing more robust conclusions to be drawn from IRS data. New data and methodologies will be developed and added in ways that protect taxpayer anonymity and privacy.

Grants Made Against Prior Authorizations

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 grants were made against this previously authorized fund.

Carnegie Mellon University
Pittsburgh, PA
$124,000 over 12 months to develop techniques for discovering intercompany relationships by performing text analysis and natural language processing on unstructured text in SEC disclosure reports.
Project Director: Noah A. Smith, Associate Professor

Chrinon Limited
London,
$116,048 over 12 months to demonstrate methods for identifying ownership and other relationships among corporate legal entities.
Project Director: Chris Taggart, Co-Founder & CEO

Dartmouth College
Hanover, NH
$103,500 over 36 months to study the ownership structures multinational firms establish, including documentation of their types, frequencies, and relative advantages.
Project Director: Leslie Robinson, Associate Professor of Business Administration

Loughborough University
Loughborough, United Kingdom
$104,212 over 8 months to study how a global system of legal entity identifiers can help financial regulators monitor counterparty risks, conduct orderly resolutions, and enhance financial stability.
Project Director: Alistair Milne, Professor of Financial Economics

In June of 2009 the Board of Trustees authorized the expenditure of up to $900,000 over two years to fund joint or exploratory small grants in economics, in particular to fund grants resulting from a joint effort with the Russell Sage Foundation to identify unique research opportunities in behavioral economics. In June of 2010, the Board of Trustees authorized the expenditure of an additional $1 million for continued work with the Russell Sage Foundation and for other small grants that advance the programmatic objectives of the Economic Institutions, Behavior and Performance program. The following grants were made against these previously authorized funds.

Duke University
Durham, NC
$16,080 over 6 months Conference on the history of the MIT Economics Department and its transformative role in post WWII Economics.
Project Director: E. Roy Weintraub, Professor

Industrial Organizational Society, Inc.
East Lansing, MI
$20,000 over 24 months to support graduate student presentations at the International Industrial Organization Conference.
Project Director: Joseph Harrington, Professor

Institute for New Economic Thinking
New York, NY
$24,300 over 3 months to support the participation of students in a major international conference on new economic thinking.
Project Director: Robert Johnson, Executive Director

Officer Grants

University of California, San Diego
La Jolla, CA
$113,940 over 12 months to study training and innovation in the science and engineering workforce.
Project Director: John Skrentny, Professor

George Washington University
Washington, DC
$15,000 over 3 months to provide partial support for a conference to increase awareness about potential uses of new economic data sources available from federal, commercial, university, and non-profit data providers.
Project Director: Andrew Reamer, Research Professor of the Institute of Public Policy

Polytechnic Institute of New York University
Brooklyn, NY
$20,000 over 3 months to launch and document an international seminar series on finance engineering and regulation.
Project Director: Charles S. Tapiero, Chair

Working Longer

Program Director: Kathleen E. Christensen

Americans are working later in life, delaying retirement for a variety of reasons. While some continue working by choice, others need to remain in the workforce for financial reasons. Regardless of their motivation, the result is that people in the United States are working beyond what conventionally is thought of as retirement age. While most studies related to this issue have focused on how individually-based factors such as health status, pension plans, and financial incentives influence the decision to retire, relatively little is known about employment patterns, obstacles to employment, or the ensuing economic impact.

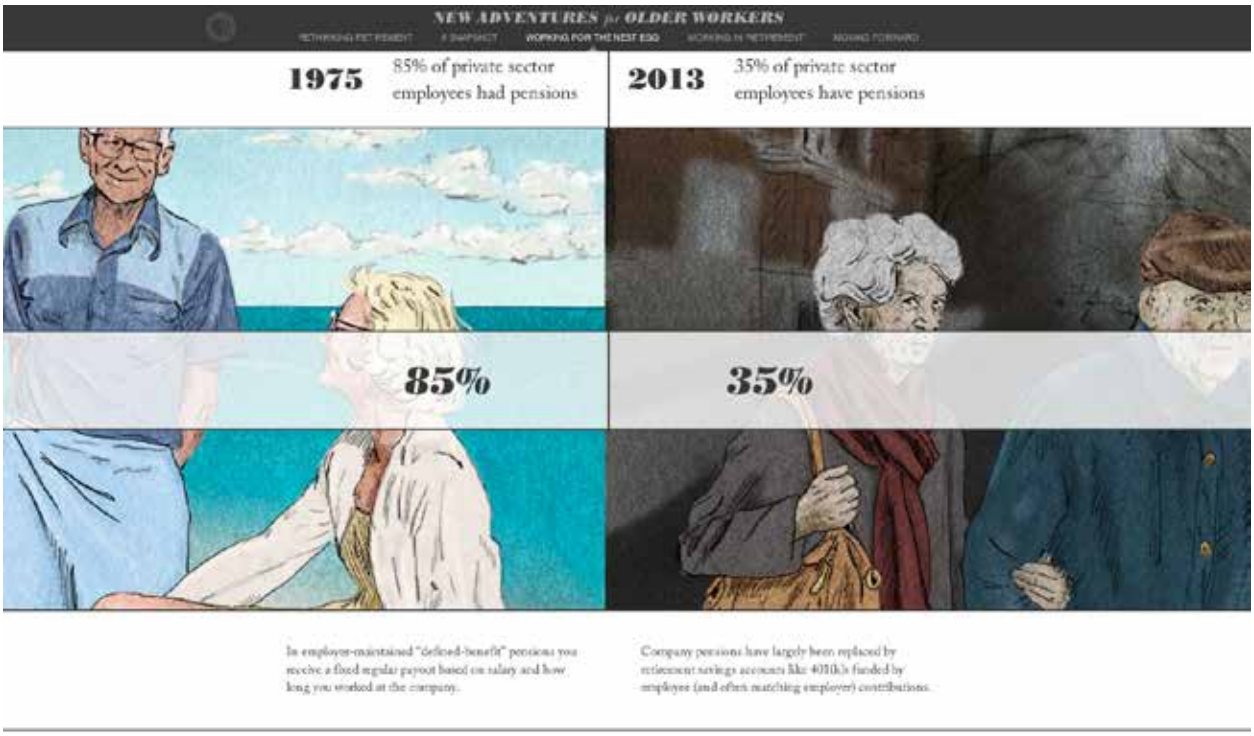
The Foundation's Working Longer program began grant making in 2010 to expand and deepen our understanding of aging Americans' work patterns. The goal is to understand a) employer practices by industry and sector; b) obstacles to continued employment of older Americans; and c) the economic consequences for both individuals and for the federal budget.

Trustee Grants

Dartmouth College
Hanover, NH
$1,199,471 over 48 months to increase understanding of how recessions, including the Great Recession, affect the labor market activities and retirement of older Americans.
Project Director: Alan Gustman, Loren Berry Professor of Economics

How do recessions in general, and the Great Recession in particular, impact older workers? Are older workers more or less likely to be laid off in recessions? If they are laid off, how long are they out of the labor force and are they eventually able to find new jobs? If they find new jobs, are they at the same or substantially lower pay? To what extent are unemployed older Americans effectively forced into early retirement? These are important questions that have real economic consequences for a significant portion of the labor market. This grant to Dartmouth College supports a project by Alan Gustman, Tom Steinmeier, and Nahid Tabatabai, to specify and estimate a structural retirement model to answer questions about how recessions, including the Great Recession of 2007-2009, affect the labor market activities and retirement of the older population, aged 50 and above.

Working with data from the highly-regarded, longitudinal Health and Retirement Study, Gustman and his team will analyze the direct effects of recessions on work responses to layoffs and reduced market activities, as well as indirect effects from wealth losses and induced changes in health and disability status. Factors to be included in their analysis include changes in wealth, incentives from pensions and Social Security, spousal behavior, and the influence of key regulatory policies, including unemployment insurance, disability insurance, and the early claiming of Social Security benefits.



A screenshot from the PBS Newshour website. An ongoing Sloan Foundation partnership with the PBS Newshour promotes enhanced coverage of issues related to older workers.

University of Michigan

ANN ARBOR, MI

$584,817 over 24 months to advance measurement of income, spending, assets and debt by creating and analyzing a new database of high-quality, daily data on actual transactions and account balances of individuals.

Project Director: Matthew Shapiro, Research Professor

The grants funds a project by a team led by University of Michigan economist Matthew Shapiro, who will analyze an exciting new dataset to glean insights about the economic behavior of older Americans. Shapiro and his team will analyze member data provided by Pageonce, a firm that has developed a mobile phone app that lets users pay bills online as well as integrate disparate bank accounts, credit card balances, and investment accounts all in one place. Analyzing the Pageonce data, the team will focus on what it can tell us about how older workers spend and save, how they handle debt, and how saving and consumption decisions change after retirement.

University of Michigan

ANN ARBOR, MI

$25,872 over 24 months to generate experimental evidence about the obstacles that older workers face as they seek reemployment after long periods of unemployment.

Project Director: Daniel Silverman, Rondthaler Professor of Economics

Fewer than a quarter of workers age 50 and older who lost their jobs between mid-2008 and the end of 2009 found work within 12 months, a rate much lower than for younger workers in similar circumstances. What explains this? Is it age discrimination? Bias against time spent unemployed? Local labor market conditions? This grant supports efforts by three labor economists, Daniel Silverman of the University of Michigan, Henry Farber of Princeton, and Till von Wachter of Columbia, to partly answer these questions by conducting a unique experiment that may advance our understanding of how the prospects of older worker re-employment are affected by time unemployed, tightness of local labor markets, and differences in job history.

Silverman and the rest of the team will send out to employers some 12,000 pairs of job applications

for a mythical unemployed older worker. The faux applications will be identical except for the length of time the applicant has been unemployed, and Silverman and his team will subsequently record the rate at which the applications receive a positive callback from employers, allowing them to estimate how the duration of unemployment affects the possibility of being re-hired. The team will field applications in a number of different labor markets, and will vary the job histories of applicants, which should yield additional insights into how labor market conditions and prior work experience affect the re-employment prospects of workers over 50.

National Academy of Social Insurance

WASHINGTON, DC

$450,000 over 18 months to help Americans understand how they can enhance their long-term retirement security by working longer and delaying Social Security benefits.

Project Director: Virginia P. Reno, Vice President for Income Security Policy

Lack of confidence about the future of Social Security has led many Americans mistakenly to believe that they had better file for Social Security benefits as soon as they are eligible (typically when they turn 62), so they can lock in their benefits before Social Security "is gone." Yet Social Security's finances are more secure than most Americans think, and analysis shows that for the typical American it is economically advantageous to start taking benefits no earlier than full retirement age (now 66) and in many cases to delay taking benefits until age 70. To help American workers make retirement decisions based on accurate information, it is imperative to both clarify the future of Social Security's finances and its capacity to meet future benefit commitments and to communicate the advantages of delaying benefits.

Funds from this grant support a project by the National Academy of Social Insurance (NASI) to design and execute an integrated public education initiative aimed at helping middle- and lower-income Americans understand how they can enhance their long-term retirement security by working longer and delaying receipt of Social Security benefits. NASI will produce a series of accurate, high-quality written, visual, and graphic materials accessible to the public that will lay out the economic advantages of working longer and delaying Social Security and combat commonly held misconceptions about the economics of retirement. Based on the most up-to-date research, the materials will then be disseminated to the public through financial planners, HR professionals, journalists, and non-profit community-based grassroots organizations.

National Opinion Research Center

CHICAGO, IL

$481,975 over 12 months to improve public understanding of aging and work, by increasing quality and quantity of coverage of the economics of the aging workforce.

Project Director: Trevor Tompson, Principal Research Scientist & Director

This two-year grant supports a project by the National Opinion Research Center (NORC) to enhance public understanding of the economic issues surrounding the older workforce. NORC will field a high-quality, nationally representative survey of older adults about the strategies they use when claiming Social Security benefits and distribute the results nationwide through a partnership with the Associated Press (AP). Survey reporting will be supplemented with reporting on new economic research about optimal retirement asset drawdown strategies and survey data will be made freely available to researchers in a public-use dataset. Additional funds from this grant will provide one year of salary support to a NORC-AP fellow who will cover the older workforce beat, producing thoughtful, high-quality articles on a variety of issues, including aging and work, retirement, flexible work arrangements for older workers, productivity, and the economic impact of an aging workforce on businesses, pensions, and government programs like Social Security.

The New York Academy of Medicine

NEW YORK, NY

$594,898 over 18 months to experiment with the design and implement the Sloan Awards for an Age-Friendly Workplace in New York City.

Project Director: Ruth Finkelstein, Senior Vice President for Policy & Planning

Funds from this grant will support an initiative by the New York Academy of Medicine to design and launch an Age-Friendly Workplaces Award aimed at recognizing New York City employers with innovative hiring, employment, and retirement practices that maximize the potential of older workers.

Employers from each of the city's five boroughs will be eligible, and winners will be selected by an independent panel of high profile business leaders. Grant funds will support awards for between five and ten New York City businesses from a diverse array of industries and sectors, a dedicated website that will describe the awards and allow businesses to share information about best workplace practices, a series of case studies that highlight specific strategies for tapping the potential of older workers, and a published Guide for Age-Friendly Employers that will summarize current findings on best older worker policies and practices. Additional funds will support a robust outreach and public relations efforts, and a public ceremony honoring the winners. The awards aim to raise the visibility of older workers as active and productive members of the workforce and to engage the business community in issues related to the older workforce through identifying best practices and local champions.

New York University

NEW YORK, NY

$487,109 over 36 months to improve measurement and modeling of the evolving labor market behaviors, expectations, and preferences of middle and upper-middle income households headed by older Americans.

Project Director: Andrew Caplin, Professor of Economics

The most popularly used survey of older Americans—the National Institute on Aging's (NIA) Health and Retirement Study (HRS)—has a limited number of questions that address with any specificity the ways that Americans work into their 60s and 70s as they transition from full-time employment to full-time retirement. What is needed is an opportunity to devise and test questions that will better capture the aspirations, expectations, and work patterns of aging Americans so as to improve the measurement and modeling of older Americans' evolving labor market behaviors. This grant to fund the work of New York University economist Andrew Caplin provides such an opportunity.

Caplin has formed a partnership with NIA and Vanguard, one of the world's largest investment management companies, to create a panel of older Americans, entitled, the MINYVan panel. This MINYVan panel will allow Caplin and colleagues to experiment with questions that will better measure labor market preferences and opportunities of an aging population. They will also pose questions concerning expectations of future work and pay and questions concerning hypothetical behavior in various possible future contingencies. For example, they will investigate whether or not an individual who chooses to stop work believes that they would be able to return to work for high pay at some point in the future. By studying panel responses Caplin and colleagues will begin to develop appropriate structural models of labor market behavior and design a complementary survey that will focus on labor market preferences and behaviors. This work will not only yield interesting insights, but will be useful to future discussions about how labor-market activities questions on the HRS can be made more robust.

RAND Corporation

SANTA MONICA, CA

$544,638 over 30 months to improve our understanding of the role of local labor demand in affecting the work and retirement patterns of older Americans.

Project Director: Nicole Maestas, Economist

Funds from this grant support the work of Nicole Maestas of the Rand Corporation, who is studying how changes in labor demand affect the employment outcomes of older workers. In earlier work, Maestas has catalogued how older workers often "unretire," re-entering the workforce after a previous exit. Some 60 percent of such workers who unretire end up changing occupations, moving from managerial and professional work to positions in sales, administration, and service provision, positions that are often part-time or offer more flexible scheduling opportunities. Maestas will look at existing datasets to understand the extent to which this phenomenon can be explained by changes in the labor demand for such positions, looking at how growth in industries with large proportions of sales, administrative or service jobs, and the subsequent increase in the demand for workers to fill these jobs, explains employment outcomes for older workers.

RAND Corporation

SANTA MONICA, CA

$498,059 over 36 months to obtain a comprehensive characterization of the role of firms in labor force transitions of older workers in the United States with comparative analyses to the role of firms in Germany.

Project Director: Till von Wachter, Associate Professor

This grant funds research investigating demand for older workers in labor markets and how the behavior of firms affects older workers' decisions to work beyond conventional retirement age. Led by Till Von Wachter, previously of Columbia and now at UCLA and RAND, David Card of UC Berkeley, and Lars Vilhuber of the U.S. Census Bureau, the research team will analyze the role of firms in labor force transitions of older workers in the United States, with a comparative analysis to firm behaviors in Germany. Their research addresses four critical questions. "First, do common firm-level events, such as mass layoffs and plant closings, contribute significantly to observed retirement rates? Second, is there a significant difference in the rate of early retirement among firms (net of worker characteristics)? Third, do differences in firm-specific retirement rates correlate with more commonly studied firm-level differences in wages and productivity, and what do the results imply for the sources of firm-level differences in retirement rates? Fourth, is the role of firms in retirement similar in Germany?"

In addition to providing valuable insights, the effort promise to draw scholarly attention to the need for additional research on the demand side of the older worker labor market.

University of Texas, Austin

AUSTIN, TX

$3,200,145 over 37 months to follow up the original nationally representative High School and Beyond (HSB) study to produce a valuable new data infrastructure and research findings about the foundation for working longer.

Project Director: Chandra Muller, Professor

This grant funds a project by sociologist Chandra Muller and economist Sandra Black at the University of Texas to re-contact and survey the nationally representative High School and Beyond (HSB) sophomore class cohort, a sample of nearly 15,000 individuals, just before most turn 50 years old. The original HSB surveyed this cohort every two years from 1980 to 1986, and again in 1992. Data collected include metrics on cognitive and noncognitive skills, parent and teacher evaluations, high school transcripts, student financial aid records, utilization patterns of public entitlement programs, college transcripts, early-life work experiences, and answers to detailed student questionnaires. Resurveying this cohort now, more than 30 years after the initial survey, will create a uniquely rich and robust public use dataset that will enable scholars from diverse disciplines to study in previously unavailable detail the relationship between early-life human capital and later-life outcomes.

The Urban Institute

WASHINGTON, DC

$423,824 over 24 months to support research on employment prospects for less-educated older workers.

Project Director: Richard W. Johnson, Senior Fellow

Men born between 1940 and 1944 who have no more than high school diplomas are nearly 50 percent more likely than college graduates to claim Social Security benefits at age 62. There are many reasons why less-educated older adults retire early. Workers with limited education have greater incidences of poor health and histories of physically demanding work and are more apt to be employed in the public sector and unionized workplaces, where defined benefit pension plans often discourage work at older ages. But little is known about which of these or other factors are most important in the decision of older Americans with limited educations to end work early. Even less is known about the nature of the work trajectories of those with limited educations who go on to work after 62.

This grant supports research by The Urban Institute's Richard Johnson to investigate these questions. Combining data on detailed job characteristics from the U.S. Department of Labor's Occupational Information Network (O*Net) with household survey data from the Health and Retirement Study, American Community Survey, and the 1980, 1990, and 2000 decennial censuses, Johnson will investigate how job characteristics and employment and earnings patterns vary by education and how those patterns have changed over the last 30 years. In addition to the research, additional grant funds will support an expert roundtable to discuss the findings and their potential implications for the future course of public policy.

Grants Made Against Prior Authorizations

In June 2010, the Board of Trustees authorized the expenditure of up to $1.5 million to be disbursed to the winners of the *Alfred P. Sloan Awards for Best Practices in Faculty Retirement Transitions*, an awards program that honors U.S. universities with effective, innovative faculty retirement policies. The following grants were made against these previously authorized funds.

Albright College
Reading, PA
$100,000 over 12 months in recognition of the institution's 2012 Alfred P. Sloan Award for Best Practices for Faculty Retirement Transitions.
Project Director: Andrea Chapdelaine, Provost and VP for Academic Affairs

University of Baltimore
Baltimore, MD
$100,000 over 12 months in recognition of the institution's 2012 Alfred P. Sloan Award for Best Practices for Faculty Retirement Transitions.
Project Director: Margarita M. Cardona, Director, Sponsored Research & Faculty Development

Bentley University
Waltham, MA
$100,000 over 12 months in recognition of the institution's 2012 Alfred P. Sloan Award for Best Practices for Faculty Retirement Transitions.
Project Director: Stacy Bradbury, Director of HR Consulting & Compliance

University of California, Davis
Davis, CA
$100,000 over 12 months in recognition of the institution's 2012 Alfred P. Sloan Award for Best Practices for Faculty Retirement Transitions.
Project Director: Maureen Stanton, Vice Provost, Academic Affairs

Carleton College
Northfield, MN
$100,000 over 12 months in recognition of the institution's 2012 Alfred P. Sloan Award for Best Practices for Faculty Retirement Transitions.
Project Director: Beverly Nagel, Dean

George Mason University
Fairfax, VA
$100,000 over 12 months in recognition of the institution's 2012 Alfred P. Sloan Award for Best Practices for Faculty Retirement Transitions.
Project Director: Linda Harber, Associate Vice President

Georgia Institute of Technology
Atlanta, GA
$100,000 over 12 months in recognition of the institution's 2012 Alfred P. Sloan Award for Best Practices for Faculty Retirement Transitions.
Project Director: Rosario A. Gerhardt, Executive Director for Institute Research and Collaborations

Mount Holyoke College
South Hadley, MA
$100,000 over 12 months in recognition of the institution's 2012 Alfred P. Sloan Award for Best Practices for Faculty Retirement Transitions.
Project Director: Lynn Pasquerella, President

Princeton University
Princeton, NJ
$100,000 over 12 months in recognition of the institution's 2012 Alfred P. Sloan Award for Best Practices for Faculty Retirement Transitions.
Project Director: Joan Gingas, Professor

San Jose State University
San Jose, CA
$100,000 over 12 months in recognition of the institution's 2012 Alfred P. Sloan Award for Best Practices for Faculty Retirement Transitions.
Project Director: Pamela Stacks, Associate Vice President

Skidmore College
SARATOGA SPRINGS, NY
$100,000 over 12 months in recognition of the institution's 2012 Alfred P. Sloan Award for Best Practices for Faculty Retirement Transitions.
Project Director: Beau Breslin, Vice President for Academic Affairs

University of Southern California
LOS ANGELES, CA
$100,000 over 12 months in recognition of the institution's 2012 Alfred P. Sloan Award for Best Practices for Faculty Retirement Transitions.
Project Director: Marty Levine, Vice Provost

University of Washington
SEATTLE, WA
$100,000 over 12 months in recognition of the institution's 2012 Alfred P. Sloan Award for Best Practices for Faculty Retirement Transitions.
Project Director: Cheryl Cameron, Vice Provost for Academic Personnel

Wellesley College
WELLESLEY, MA
$100,000 over 12 months in recognition of the institution's 2012 Alfred P. Sloan Award for Best Practices for Faculty Retirement Transitions.
Project Director: Kathryn Lynch, Dean of Faculty Affairs

Xavier University
CINCINNATI, OH
$100,000 over 12 months in recognition of the institution's 2012 Alfred P. Sloan Award for Best Practices for Faculty Retirement Transitions.
Project Director: Mary Kochlefl, Executive Director

In June 2010, the Board of Trustees authorized the expenditure of up to $1.3 million to be disbursed to the winners of the Alfred P. Sloan Award for Faculty Career Flexibility in Medical Schools, an awards program meant to recognize U.S. medical schools with effective, innovative policies that promote faculty career flexibility. The following grants were made against these previously authorized funds.

Boston University
BOSTON, MA
$250,000 over 24 months to further accelerate the school's progress in achieving faculty career flexibility. Funds granted to institution as a winner of the 2012 Alfred P. Sloan Award for Faculty Career Flexibility in Medical Schools.
Project Director: Emelia Benjamin, Professor of Medicine & Epidemiology

University of California, Davis
DAVIS, CA
$25,000 over 24 months to further accelerate the school's progress in achieving faculty career flexibility. Funds granted to institution as a winner of the 2012 Alfred P. Sloan Award for Faculty Career Flexibility in Medical Schools.
Project Director: Lydia Pleotis Howell, Professor & Chair

Indiana University
BLOOMINGTON, IN
$250,000 over 24 months to further accelerate progress in achieving faculty career flexibility. Funds granted to institution as a winner of the 2012 Alfred P. Sloan Award for Faculty Career Flexibility in Medical Schools.
Project Director: Craig Brater, Dean

Stanford University
STANFORD, CA
$250,000 over 24 months to further accelerate the school's progress in achieving faculty career flexibility. Funds granted to institution as a winner of the 2012 Alfred P. Sloan Award for Faculty Career Flexibility in Medical Schools.
Project Director: Jennifer L. Raymond, Associate Professor

University of Massachusetts Medical School
WORCHESTER, MA
$250,000 over 24 months to further accelerate the school's progress in achieving faculty career flexibility. Funds granted to institution as a winner of the 2012 Alfred P. Sloan Award for Faculty Career Flexibility in Medical Schools.
Project Director: Luanne E. Thorndyke, Vice Provost for Faculty Affairs

Upstate Medical University
SYRACUSE, NY
$25,000 over 24 months to further accelerate the school's progress in achieving faculty career flexibility. Funds granted to institution as a winner of the 2012 Alfred P. Sloan Award for Faculty Career Flexibility in Medical Schools.
Project Director: Paula M. Trief, Senior Associate Dean

Washington University in St. Louis
ST. LOUIS, MO
$250,000 over 24 months to further accelerate the school's progress in achieving faculty career flexibility. Funds granted to institution as a winner of the 2012 Alfred P. Sloan Award for Faculty Career Flexibility in Medical Schools.
Project Director: Diana L. Gray, Associate Dean for Faculty Affairs

An older worker is interviewed about why she likes working for her employer, Brooklyn Swirl. Brooklyn Swirl is just one of many New York City employers participating in the New York Academy of Medicine's Age-Friendly Local Business Initiative.
(PHOTO: NEW YORK ACADEMY OF MEDICINE)

OFFICER GRANTS

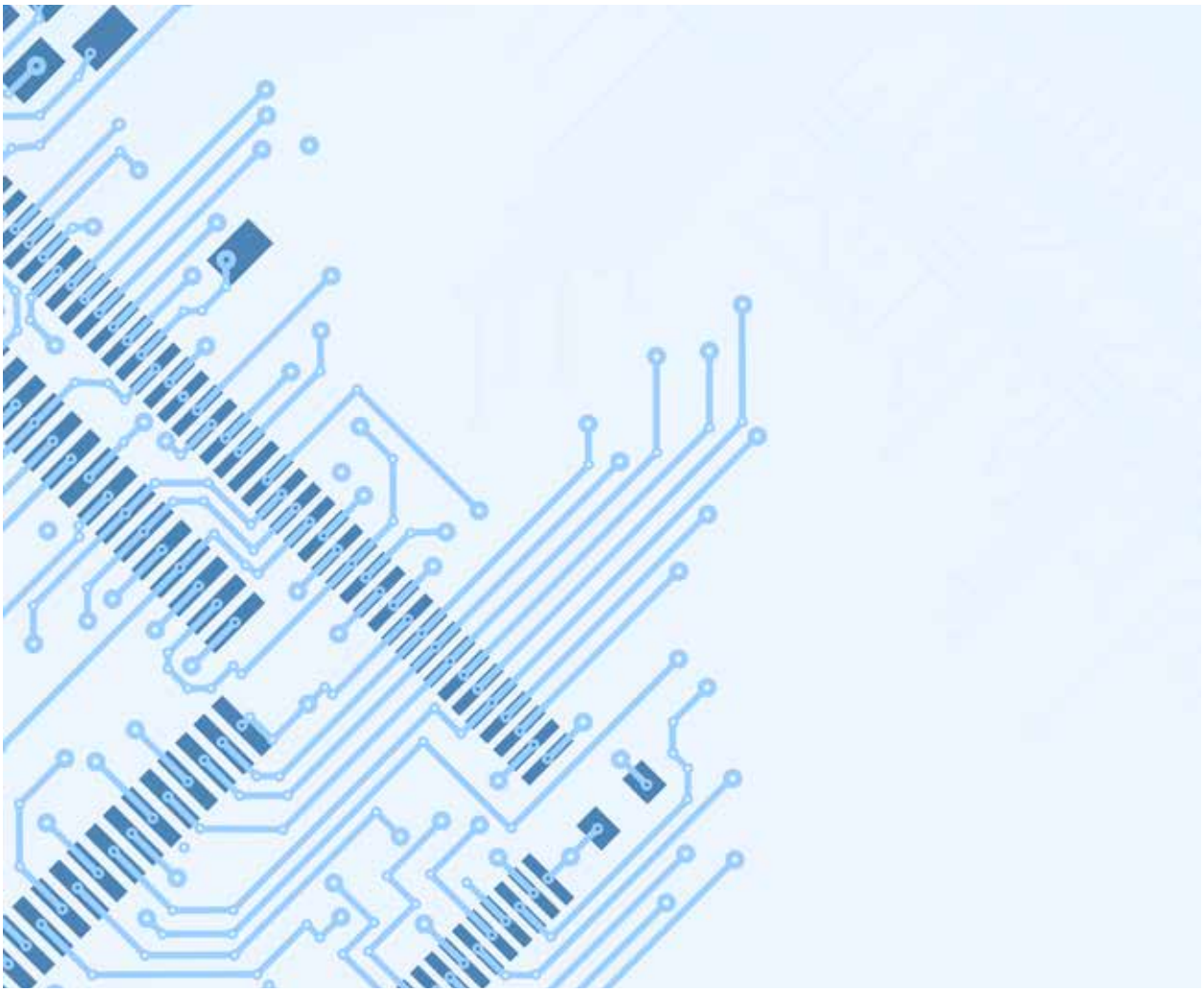
Greater Washington Educational Telecommunications Association Inc.
ARLINGTON, VA
$125,000 over 12 months to enhance public understanding of the issues raised by an aging U.S. workforce.
Project Director: Linda Winslow, Executive Producer

Stanford University
STANFORD, CA
$101,491 over 12 months to hold a two-day conference at Stanford University on aspects of the institutional adjustments needed to accommodate longer lifetimes, particularly related to working longer and retirement.
Project Director: John B. Shoven, Director, SIEPR

Texas A&M University
COLLEGE STATION, TX
$116,201 over 12 months to support a pilot laboratory experimental study using MBA, MPA, and business students to assess the magnitude of age discrimination in the labor market at the resume stage of hiring.
Project Director: Joanna N. Lahey, Assistant Professor

Washington University in St. Louis
ST. LOUIS, MO
$124,999 over 36 months to develop and analyze theoretical models of the labor supply of married older workers.
Project Director: Robert A. Pollak, Hernreich Distinguished Professor of Economics, Olin Business School and Faculty of Arts & Sciences

Yale University
NEW HAVEN, CT
$20,000 over 3 months to diagnose the pressure points along the academic pipeline for women by developing an assessment tool.
Project Director: Priyamvada Natarajan, Chair, Women Faculty Forum



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 sub-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 with an eye toward greater replication of computational research, and that investigate the new training and career paths necessitated by the increasingly central role played by data management and curation.

Trustee Grants

University of California, Berkeley
Berkeley, CA
$1,156,626 over 24 months to support the development of interactive exploration, collaboration, and publication capabilities within the IPython Notebook software platform.
Project Director: Fernando Perez, Associate Researcher

Many researchers fail to appropriately capture, log, and version their work as it moves through the research process from data collection through multiple stages of cleaning and preparation to analysis. In part, this failure is due to the difficulty of logging changes in data as it moves from one software platform or set of scripts to another, each of which might be ideal for a particular part of the research process, but none of which are tied together by a common platform that can track the provenance of data as it moves from one system to the next.

For decades, experimental scientists captured their research activities in lab notebooks. What is needed is a revitalization of that old idea: a lab notebook for the modern era of computational science. This two-year grant funds the development of just such an electronic lab notebook environment, called the IPython Notebook. Built on top of Python, R, and other widely used software languages in the data science community, the IPython Notebook is an early prototype computational platform that allows researchers to run a wide variety of high-powered data cleaning, modeling, and analysis algorithms inside a common computational environment. Grant funds will help IPython developers make the leap from early adoption to mainstream usage, focusing particularly on the development and scaling of features in three key areas: interactive exploration of data, collaborative authoring, and dissemination/sharing. Additional grant funds cover the salary of a full-time outreach coordinator to give presentations and tutorials at

universities and professional society meetings, and funds to support the development of a set of live "notebooks" for use in introductory statistics classes, to better introduce students to the platform.

University of California, Office of the President

OAKLAND, CA

$591,611 over 12 months to support the further technical and community development of the Data Management Plan Tool.

Project Director: Patricia Cruse, Director of Digital Preservation (UC3)

Shortly after the National Science Foundation began requiring all grant applications include a data management plan, a team based out of the California Digital Library developed and launched an online system to help researchers in the University of California system meet the new requirement. Named the "DMP Tool," the system contains information on funder data management requirements and on the data management resources available at participating universities, enabling researchers to quickly sketch a basic data management plan tailored to their particular proposal and institution. The system was a success. Within its first year, the DMP Tool was used to generate thousands of data management plans and has become an important resource for researchers.

Because the DMP Tool was built under significant time constraints, however, the technical architecture that powers it was not developed with an eye towards expansion. As designed, the system is not prepared to accommodate the rapidly expanding number of funding agencies who have data management requirements, the increasing complexity of those requirements, or the quickly changing data management capabilities of member universities. The DMP Tool needs a core code re-write to build in the flexibility needed to meet rising demand. Funds from this grant provide support for a substantial rewriting of the DMP Tool software with an eye toward flexibility and facilitating the effective use of the DMP Tool at a larger number of research institutions. The resulting website will better structure the metadata about research encoded in data management plans and offer broad analytics about research data management across funders by capturing data management plans upstream of submission. Suitably rewritten, the DMP Tool has the opportunity to become the standard U.S. facilitator of data management plan creation.

Carnegie Mellon University

PITTSBURGH, PA

$576,039 over 32 months to study the role of transparent development environments in the production of scientific software.

Project Director: James D. Herbsleb, Professor

Github is a new online service that helps programmers track and share their work. Based on "Git," a protocol for version tracking and the coordination of distributed contributions to software development, Github has become an extremely popular home for software projects both large and small, and has seen increasing use by scientists who develop software as part of their research. One notable feature of Github is its business model. There's no charge to set up an account and start posting, but there's a fee to keep your work private.

This grant funds a research project by Jim Herbsleb of Carnegie Mellon's Institute for Software Research to evaluate how transparent "opt-out" development environments like Github affect the development of scientific software. Conducting case studies and analyzing archival data from Github, Herbsleb will investigate several key theses about the relationship between transparency and scientific software development, including how software developers use transparency to accomplish technical tasks, the role transparency plays in relationships between developers and the scientific community, and the difficulties transparent development environments pose for effective software development. Herbsleb's research has the potential to form the basis for policy recommendations on how transparency can be used most effectively to foster the development of scientific research.

Council on Library and Information Resources

WASHINGTON, DC

$672,697 over 27 months to support the extension of the existing Council on Library and Information Resources (CLIR) postdoctoral program into digital curation in the sciences and social sciences.

Project Director: Charles Henry, President

Alongside data scientists trained in the statistical and computational methods that are integral to analysis of data at scale, there is a growing need for "digital curators," professional staff who can steward data, code, and other research products from the lab into more durable archives. Such digital curation is often discussed as one function of the

future academic research library. Unfortunately, while many university libraries want to explore this new function, institutional inertia, tight budgets, and existing organizational structures have inhibited rapid change.

Funds from this grant support a project by the Council on Library and Information Resources to expand its existing postdoctoral program to prepare recent science and social science Ph.D.s for positions in data curation. Grant monies will provide partial support for the development and training of a cohort of six postdoctoral fellows over two years. Supported fellows will be placed at university libraries where they will contribute to efforts to expand the institution's digital curation capabilities. Training activities funded under this grant include an initial "boot camp" that exposes participants to the current best practices in data curation, monthly professional development webinars, and an annual retreat.

Fund for the City of New York

NEW YORK, NY

$731,554 over 24 months to launch DataKind, an organization to better connect data scientists with volunteer opportunities and encourage best data practices among nonprofits.

Project Director: Jake Porway, Director

A "data scientist" is someone who combines mathematical and statistical sophistication, the computational skills necessary to perform hands-on analysis of data at large scale, and the communication abilities to convey results meaningfully through visualizations and narrative. This combination of skills is still quite rare and highly in demand: an oft-cited McKinsey report published in 2011 estimates that the United States will need an additional 140,000 to 190,000 data scientists by 2018.

Nonprofit organizations lag industry in the use of data scientists. Even when an organization sees how data science could improve their understanding of their clients or improve the efficacy of their work, they often lack the internal expertise and resources to take action. DataKind is a new organization founded to bridge exactly this gap. Inspired by the Teach for America model, DataKind aims to connect mission-driven organizations with designers, programmers, and statisticians from the burgeoning data science community who are looking for personally fulfilling opportunities to volunteer their time and expertise. Funds from this grant will provide two years of pilot support to DataKind to provide a consistent revenue stream while it builds a client base of organizations and volunteers, develops a sustainable business model, and cultivates long-term funding sources.

Johns Hopkins University

BALTIMORE, MD

$425,000 over 24 months to develop a hosted platform for managing and linking scientific data by combining and extending tools that were developed within the context of the Sloan Digital Sky Survey Archive and the Virtual Astronomical Observatory.

Project Director: Sandor Alexander Szalay, Alumni Centennial Professor of Physics & Astronomy

Originally funded with the help of the Sloan Foundation in 1992, the Sloan Digital Sky Survey was the first major telescopic survey to publish its data under open principles. Every single image ever collected by the Survey's 2.5 meter optical telescope is available for download by astronomers, astrophysicists and other researchers. The sheer size of the data collected, however, presented its own problems. The Sloan Digital Sky Survey corpus was simply too large for every researcher to download a full copy. In response, Johns Hopkins astronomer Alex Szalay and others developed a data infrastructure that allowed astronomers to selectively query the SDSS database, extracting only those slices that were of interest to them, and which logged every database query for later documentation. To increase the usefulness of SDSS data, Szalay also built a system that allowed astronomers to upload their own datasets which could then be easily linked with the SDSS data "in the cloud" for individual analyses and for sharing with small groups of colleagues or the broader public.

Funds from this grant support efforts by Szalay to improve and expand the SDSS data infrastructure in a number of key dimensions, revamping the data uploading process to make it more user-friendly, enabling the server to extrapolate metadata as a way to reduce time-intensive data entry, and customizing the database in ways that would make it friendlier to researchers working in other data-intensive fields, like genomics or climatology.

Scientists participate in a Software Carpentry Bootcamp at the University of Texas at Austin. Run by the Mozilla Foundation, the Software Carpentry program aims to provide the core software skills needed to work productively in a small research team, including basic programming, version control, and working with relational databases. PHOTO COURTESY OF THE MOZILLA FOUNDATION

Mozilla Foundation

MOUNTAIN VIEW, CA

$685,950 over 24 months to improve the quality of software produced by scientists, and to drive the development of tools, practices, and diverse community around digitally networked science.

Project Director: Gregory V. Wilson, Software Carpentry Lead

This grant supports the continued development and expansion of "Software Carpentry", an initiative launched by the Mozilla Foundation to train scientists in best practices for how to use and develop software. Starting with immersive workshops, and following up with online resources and tutorials, the Software Carpentry project provides intensive, hands-on training that allows scientists to thrive in a research environment that is increasingly software-driven. Funds support Mozilla's efforts to expand the Software Carpentry program, conducting workshops and training scientists to design and lead workshops of their own. Additional funds will support the development and launch of a "Webmaking Science Lab", an online portal and set of complementary resources aimed at facilitating the open-source, collaborative, researcher-driven development of scientific software.

National Academy of Sciences

WASHINGTON, DC

$160,000 over 18 months to support a study on the Future Career Opportunities and Educational Requirements for Digital Curation.

Project Director: Paul F. Uhlir, Director, Board on Research Data & Information

This grant provides partial support for data collection, production, and distribution of a study by the National Research Council on the training of professionals in data curation. Convening a high caliber group of scientists, technologists, educators, and university administrators, the Academy will study a handful of pioneering programs around the country that have developed curricula for training students in data curation and synthesize these curricula into a set of best practices with an eye toward preparing students for the specific data

curation needs of researchers in the natural and social sciences. In addition, the report will focus on quantifying future need for data curation as a profession. The report promises to provide a blueprint for other U.S. colleges and universities who wish to begin their own programs to meet the growing need for qualified, well-trained professionals with expertise in stewarding, archiving, and maintaining data.

University of Oxford

OXFORD, UNITED KINGDOM

$479,241 over 20 months to document the ways in which Big Data is made available from its public and private origins through open and closed pathways for social science research.

Project Director: Eric T. Meyer, Research Fellow

Though few deny that administrative and other large, linked datasets represent new frontiers for social science research, there have been surprisingly few formal studies that survey and document how so-called "big data" in all its forms is actually changing social science research. This grant supports a project by a team led by Eric T. Meyer at Oxford's Internet Institute (OII) to empirically document the ways social scientists are getting access to data at scale and the tools they use to work with it. Meyer and his team will conduct a series of in-depth interviews with 125 researchers and technologists in academia, industry, and government to look at a series of interrelated questions about how big data is changing research, including how data flows between data sources and scientists, what questions big data is being used to address, how the openness of a dataset affects its use, and how public and private data are used differently by researchers.

Grants Made Against Prior Authorizations

In March 2011, 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. In March 2012, the Board of Trustees authorized the expenditure of an additional $500,000 for the same purpose. The following grants were made against these previously authorized funds.

Azavea, Inc.

PHILADELPHIA, PA

$49,976 over 4 months to assess the strengths and weaknesses of existing systems and design a scalable technology platform for citizen science data collection.

Project Director: Robert Cheetham, President & CEO

Tufts University

MEDFORD, MA

$124,906 over 12 months to support the technical and organizational development of the Open Geoportal Cloud.

Project Director: Patrick Florance, Manager, Geospatial Technology Services

Officer Grants

Cold Spring Harbor Laboratory

COLD SPRING HARBOR, NY

$20,000 over 1 month to create a model of the future scientific research library based on discussions of researcher needs and best practices of libraries throughout the world.

Project Director: Ludmila Pollock, Executive Director of Library & Archives

Kansas University Endowment Association

LAWRENCE, KS

$6,500 over 2 months to partially support the 2013 North American DDI conference.

Project Director: Larry Hoyle, Senior Scientist

University of Michigan
ANN ARBOR, MI
$19,475 over 12 months to partially support a workshop on the academic study of knowledge infrastructures.
Project Director: Paul N. Edwards, Professor of Information and History

University of Minnesota
MINNEAPOLIS, MN
$19,500 over 3 months to support a meeting on citizen science and citizen-generated data.
Project Director: Amy Kircher, Associate Director

Mozilla Foundation
MOUNTAIN VIEW, CA
$124,625 over 6 months to prototype online resources to teach software engineering best practices to scientists, and to explore and develop models for training within academic institutions.
Project Director: Matthew Thompson, Learning Program Officer

Open Knowledge Foundation
CAMBRIDGE, UNITED KINGDOM
$79,350 over 6 months to prototype interoperability between citizen science platforms.
Project Director: Rufus Pollock, Director

Polytechnic Institute of New York University
BROOKLYN, NY
$74,398 over 12 months to support a workshop and requirements gathering meetings on software infrastructure for reproducibility in science.
Project Director: Juliana Freire, Professor

Princeton University
PRINCETON, NJ
$6,000 over 2 months to support a full-day workshop aimed at producing an outline for a Digital Science and Technology Studies Handbook.
Project Director: Janet Vertesi, Postdoctoral Fellow

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.

Grants in this program aim to ease this transition by supporting the development of new models of filtering and curating online scholarly materials and by engaging the emerging community of stakeholders and practitioners tackling similar issues in widely divergent disciplinary contexts.

Trustee Grants

University of California, San Diego
La Jolla, CA
$214,720 over 12 months to support a network of practitioners working to transform scholarly communication via online community-building and a "Beyond the PDF 2" workshop.
Project Director: Philip E. Bourne, Professor

In early 2011, computational biologist Phil Bourne hosted a meeting at the University of California, San Diego (UCSD) titled "Beyond the PDF," which brought together the emerging community of researchers, librarians, publishers, and developers who are rethinking scholarly communication in the sciences. The primary focus of the agenda was a discussion of the future shape of scientific articles. Presentations ranged from models for data or software publication to so-called "executable" papers, in which results are not simply described but are actually computed on the fly in live, adjustable figures. The initial "Beyond the PDF" meeting was unusually productive, bringing together a group of stakeholders to think creatively about scientific communication, and forming a nascent community that has continued to develop through a series of international conversations throughout the year. Funds from this grant support a second "Beyond the PDF" workshop, to be held in the summer of 2012. Support includes funds for agenda development and planning, as well as monies to hire a full-year staff member to focus on providing services to the growing community of scientists and technologists focused on thinking seriously and imaginatively about the future of scholarly communication.

Carnegie Mellon University

PITTSBURGH, PA

$400,000 over 24 months to support the technical development of a platform for archiving executable content and the environment in which it runs, as well as a plan for the institutionalization and ongoing sustainability of such an archive.

Project Director: Mahadev Satyanarayanan, Carnegie Systems Professor of Computer Science

Reproducing computational research requires more than having access to lines of code or compiled software. Reproducibility often requires running computations on an identical processor, or using a now defunct operating system. But computer hardware and software become obsolete surprisingly quickly, making the replication of old computational environments difficult or impossible.

The advent of cloud computing and virtualization technology has opened a promising opportunity to address this problem. A researcher could preserve not only data and the computational algorithms used to analyze it, but the entire computational environment in which his research was conducted. Future researchers could then use virtualization to precisely replicate that environment, whatever hardware changes the future brings. The power of virtualization makes it not implausible to envision a library of virtual machines simulating every physical computer across the history of computing.

This grant supports a project led by Carnegie Mellon computer scientist Mahadev Satyanarayanan and university librarian Gloriana St. Clair to build just such a library, called the "Open Virtual Machine Image Library", known as OLIVE. Funds will support the technical development of the OLIVE platform, initiatives to reduce the resources required to run archived virtual machines, and the development of a business plan and long-term sustainability strategy.

Columbia University

NEW YORK, NY

$420,640 over 16 months to further develop RunMyCode, a platform that links data and code for real-time reproduction of published studies.

Project Director: Victoria Stodden, Assistant Professor

In March of 2012, Christophe Pérignon and Christophe Hurlin unveiled RunMyCode (runmycode.org), a pilot platform for linking research datasets and code with scholarly articles. The site links published papers with a RunMyCode "companion website" that provides a real-time environment where researchers can rerun the computations reported in the paper and reproduce the experimental findings reported. Initially launched with 40 econometrics and finance papers, the platform is an innovative attempt to use the web to enhance the reproducibility and verifiability—and thus the reliability—of scientific research.

Funds from this grant support a project by Columbia University's Victoria Stodden, Chief Science Officer of RunMyCode, to expand and enhance the platform. Over 16 months, Stodden will test the RunMyCode model in a number of additional fields, including computational mathematics, statistics, and biostatistics. Stodden will also pilot integration with existing scholarly platforms, enabling researchers to discover relevant RunMyCode companion websites when looking at online articles, code repositories, or data archives. Additional funds support the development of a comprehensive business plan and funding strategy for RunMyCode.

Harvard University

CAMBRIDGE, MA

$1,058,994 over 24 months to help social science journals process and publish the data associated with research articles.

Project Director: Gary King, University Professor, Director

According to a 2011 survey by Philip Glandon, only 35 percent of the 20 most cited journals in the field of economics have policies requiring as a condition of publication that authors make the data they use in their papers available to others. This is worrying, since empirical research requires quality control and lots of checking. Without access to the primary data a researcher works with, the larger economic community is unable to replicate her results, evaluate her faithfulness to her methodology, or re-use her data for other projects.

What's worse, compliance is spotty even at those journals that do require authors post their research data, with fewer than half of all authors publishing the required datafiles. And when authors do make their data available, the files they post are often useless, since there are no discipline-wide standards governing what should be posted, what metadata should be included, or how programming code, procedural records, or explanations should appear.

Funds from this grant support a project by Peter King to develop a software platform that has the potential to ameliorate some of these difficulties. King has developed the Dataverse Network, a platform specifically for publishing, sharing, referencing and analyzing social science datasets. With Sloan support, King will create a pilot platform that will allow participating journal editors to use the Dataverse Network in their article evaluation process, giving authors a uniform, standards-based capacity to upload and store research data which can then be used both by editors and reviewers as an article moves through the publication process and which will subsequently be available to the wider scientific community post-publication. The project represents a promising avenue in which information technology may help transform scholarly communication for the better.

Massachusetts Institute of Technology

CAMBRIDGE, MA

$385,328 over 23 months to examine the impacts of online working paper repositories on the diffusion of scholarly ideas.

Project Director: Erik Brynjolfsson, Schussel Family Fund Professor

Though working paper repositories have become integral to a number of fields, including high-energy physics and economics, the impact of working paper circulation on the actual practice and production of research is relatively unexplored. For example, does circulation of working papers on digital platforms actually improve the quality of the work, whether in revised drafts or in final published form? How do researchers decide what to spend time reading, given the lack of a referee system? Can usage data from working paper repositories predict ultimate publication in refereed journals and citation counts of articles after formal publication?

Funds from this grant support a research project by Erik Brynjolfsson of MIT and his Ph.D. student Heekyung Kim that explores these and other questions using the Social Science Research Network (SSRN) as a case study. In order to isolate the impact of the circulation of research in working form, they will draw on SSRN's logs of web server traffic, working paper citation data, and full-text analysis of individual papers to compare the usage and citation of papers posted in bulk by departments as they join SSRN (which are often already published elsewhere) with that of papers that have evolved as working papers on SSRN in advance of publication. SSRN will also perform a randomized experiment of different search algorithms on the live site in order to better understand user discovery and filtering behavior.

In addition to this research, grant funds will support a workshop to bring together publishers and platform developers with economists and other social scientists studying scholarly communication to discuss existing research findings and potential future collaborations in this area.

Planetwork NGO, Inc.

SAN FRANCISCO, CA

$525,800 over 12 months to develop and launch a system for web-scale annotation and review of online documents.

Project Director: Dan Whaley, President, Co-Founder

In a conventional journal, the mechanisms for feedback on published articles are limited to a letter to the editor or direct correspondence with the author. As an increasing quantity and diversity of scholarly products are disseminated on the web, one could imagine much more efficient and constructively visible commenting mechanisms. Initial experiments in so-called "post-publication review," however, have fallen flat. Comment boxes on online articles and other research materials overwhelmingly lie empty. Perhaps comment boxes are the wrong tool. Rather than asking a reader to comment on a full article, a much more granular approach might fare better, allowing readers to comment on a particular point, equation, or assumption in a published work.

Funds from this grant support the development of hypothes.is, a particularly promising effort to build precisely such a granular web annotation system. This one-year grant to Planetwork NGO will support the design, testing, and launch of hypothes.is, bringing an innovative new pilot platform to fruition that has the potential to reshape how researchers communicate and interact with one another and with online scholarly resources.

University of Tennessee
KNOXVILLE, TN
$273,130 over 14 months to study assessments by academic researchers of the trustworthiness of diverse scholarly information sources and channels.
Project Director: Carol Tenopir, Chancellor's Professor

We know from server log analysis that a substantial and growing percentage of the readers of any online academic article arrive not because they are browsing a given journal or author, but through the results of a search query using a search engine like Google or Bing or Proquest. We know little, however, about how researchers decide which items in search results are worth reading or citing or about how changing information discovery and consumption patterns influence the choice of where one publishes one's work.

This grant supports work by David Nicholas and Carol Tenopir of the University of Tennessee to better understand the behavior of academics as both producers and consumers of scholarly literature, in particular the role that judgments of trust and quality play in choices of publication channel, citation, and time investment in reading new material. Nicholas and Tenopir have built a unique corpus of web usage data from a number of major publishers' online platforms, which they will mine for insights into user behavior. Patterns of behavior in that usage data will inform the design of a series of focus groups and a broad survey to investigate reading and dissemination channel choices, and a series of "critical incident reports" will drill deeply into the underlying motivations for citation by asking select authors to walk through the discovery of and rationale for each citation in their most recent paper's bibliography.

Grants Made Against Prior Authorizations

In March 2011, 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. In March 2012, the Board of Trustees authorized the expenditure of an additional $500,000 for the same purpose. The following grants were made against these previously authorized funds.

Duke University
DURHAM, NC
$125,000 over 12 months to support the technical and organizational development of an altmetrics platform: TotalImpact.
Project Director: Heather Piwowar, Co-Founder

Hunter College of the City University of New York
NEW YORK, NY
$57,708 over 19 months to develop a model for ScienceBetter, a network of domain-specific websites to support informal information dissemination about the innovative approaches to scholarly practice.
Project Director: Kelle Cruz, Assistant Professor

Sage Bionetworks
SEATTLE, WA
$124,959 over 6 months to prototype interfaces for scholarly communication on top of the existing Synapse computational research management platform.
Project Director: Erich Huang, Director, Cancer Research

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.

The Wolfram Foundation
CHAMPAIGN, IL
$123,453 over 12 months to prototype part of a Mathematical Heritage Library by constructing and demonstrating a computable database concerned with continued fractions.
Project Director: Michael Trott, Content Manager for Physics

Officer Grants

University of Oklahoma
NORMAN, OK
$13,162 over 6 months to support a meeting to explore digital models for the Isis history of science bibliography.
Project Director: Stephen P. Weldon, Assistant Professor

Universal Access to Knowledge

Program Director: Doron Weber

Grants in this program support the digitization of scientific and cultural knowledge and aim to preserve the openness and accessibility of all such knowledge for the widest public benefit. Major grants have gone to the Internet Archive, with its huge scanning and storage capacity; the Library of Congress for the first ever mass digitization project; and Wikipedia, the largest encyclopedia in history, the fifth largest website in the world, and a model of collaborative open source knowledge on the web.

The Digital Public Library of America, which aspires to be the nation's repository for knowledge that is free and open for all to use, made great strides in 2012 and met all Sloan milestones as it prepared for the official April, 2013 launch. It held major plenary meetings, workstream meetings, and several hackathons for developers, and launched a demonstration exhibit with Europeanna and raised major funds from the NEH, Knight, and IMLS. The Foundation made the first grant to the new entity, DPLA, Inc., for two years of funding for an executive director and two staff members to begin operations. The Berkeley Law Center, whose research comprises the legal workstream of DPLA, advanced in its efforts to develop solutions to copyright obstacles facing digital libraries and in 2012 held a major meeting on orphan works keynoted by the Registrar of Copyrights, resulting in three white papers and a major paper on fair use. In 2012 Wikipedia approached the 500 million monthly visitors mark and broke its fundraising records.

Trustee Grants

American University
Washington, DC
$189,802 over 12 months to support the development of best practices for orphan works that will empower libraries, archives, and other organizations in their digitization efforts.
Project Director: Peter Jaszi, Professor

Orphan works are those works whose copyright owners are either unknown or un-locatable after a diligent search. They comprise a significant percentage of all in-copyright works. (For example, about 50 percent of Haathi Trust's 10 million volumes are estimated to be orphan works.) Because libraries and archives are wary of running afoul of copyright restrictions on orphan works, they often avoid digitizing them or making them available online, thus vastly limiting public access to millions of important books and documents. This grant funds a project by American University law professor Peter Jaszi to develop best practice guidelines for the legal digitization and distribution of orphan works. Funds will support an initial paper explaining the legal obstacles to the dissemination of orphan works, 10 focus group sessions to discuss orphan

work issues and policies with relevant stakeholders around the country, a paper outlying best practices, and dissemination activities to publicize those practices to libraries, universities, museums, and other stakeholders.

Digital Public Library of America, Inc.

CAMBRIDGE, MA

$1,200,000 over 24 months to launch Digital Public Library of America (DPLA) as an independent, national organization and to support its executive director and two key staff to begin operations and scale up for the first two years.

Project Director: Daniel Cohen, Executive Director

This grant provides two years of continued support for the development, launch, and operation of the Digital Public Library of America (DPLA). Scheduled to launch in April 2013, the DPLA aims to create an open, distributed network of comprehensive online resources that will make the nation's scientific and cultural heritage universally accessible to the public. Funds from this grant support the continued development of the DPLA platform architecture and interface, community-building efforts and technical support to expand and strengthen the growing network of content providers, and administrative funds for the hiring of an executive director and two full-time staff members.

Officer Grants

Benbough Operating Foundation

SAN DIEGO, CA

$20,000 over 12 months to support a branded DPLA reception and a keynote address that will expose the community of digital cultural heritage professionals to the DPLA project at the WebWise conference.

Project Director: Rich Cherry, Director

Library Foundation of Los Angeles

LOS ANGELES, CA

$100,000 over 12 months to develop a pilot residency program for newly credentialed librarians into a national model for sustaining public libraries in the digital age.

Project Director: Kenneth Brecher, President

Tides Foundation

SAN FRANCISCO, CA

$55,000 over 8 months for a planning grant to identify and expand the availability of content from libraries in developing countries into DPLA.

Project Director: Rima Kupryte, Director

Select Issues

Energy

Program Director: Gail M. Pesyna

Grantmaking in this small interdisciplinary program looks for unique opportunities to expand our understanding of the economic, technological, organizational, regulatory, national security, and environmental consequences of energy production and consumption.

Past grantmaking in this program has led to the publication of the influential MIT reports, *The Future of Nuclear Power* (2003), and *The Future of Coal* (2007) and the Foundation is currently supporting a similar project which focuses on economic, technological, and institutional issues associated with the use of solar energy. Other recent Foundation grants in this area support the exploration of strategies for the safe, responsible expansion of nuclear power around the world, a project to examine the feasibility of extending the life of existing nuclear plants; a project to disseminate safety guidelines for the responsible use of radioactive materials at academic, industrial, and medical institutions; a project examining a variety of questions related to energy security, and five projects on natural gas produced from deep shale deposits: one examining the economics of state-of-the-art natural gas extraction based on detailed analyses of the geological and economic attributes of four important U.S. shale gas deposits; one examining environmental and regulatory issues surrounding shale gas exploration and extraction; one examining the politics associated with the development of public policies toward shale gas exploration and development; one examining the effects on natural gas supplies and prices of various potential regulatory constraints on shale gas extraction; and one to develop consensus guidelines among a variety of stakeholders on effective ways to address high-priority risks in shale gas development. The Foundation has also made several grants focused on issues associated with the promotion of energy efficiency. The Foundation's most recent large grant in the energy efficiency area provides start-up funds to create a research center to study the impacts of government and utility programs to promote energy efficiency.

Due to the significant funding available from both public and private sources for energy research, the Foundation is very selective in the grants it makes in this area, supporting only projects for which non-partisan fund-

Well pads dot the Jonah natural gas field in Wyoming. The Foundation has supported a series of grants related to natural gas, including support for a multidisciplinary study of how much gas is likely to be produced from Texas' Barnett Shale under a variety of economic assumptions, an initiative to identify the environmental risks of natural gas extraction, and a project mapping the political coalitions involved in natural gas development. (PHOTO COURTESY OF FLICKR USER SKYTRUTH CC BY-NC-SA 2.0)

ing 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

American Academy of Arts and Sciences

Cambridge, MA

$250,000 over 30 months to provide further funding for the Global Nuclear Future Initiative.

Project Director: Steven Miller, Director, International Security Program

This grant supports activities in support of the American Academy of Arts and Sciences' (AAAS) Global Nuclear Future Initiative, an international effort that focuses on increasing the security of nuclear materials, strengthening the global nuclear regime, and solving the unresolved problem of what to do with spent nuclear reactor fuel. Led by Stephen Miller, Director of Harvard University's International Security Program, the project aims to build international consensus around a series of prescriptions for strengthening nuclear security, including principles governing the development of regional nuclear storage facilities; best practices governing contracts between suppliers, customers, and government entities; and the proper arrangements connecting nuclear fuel storage and disposal.

Supported activities under this grant include the convening of regional meetings of key stakeholders in government, industry, and non-governmental organizations and the commissioning of conference presentations and publishable research papers by respected experts, academics, and practitioners in the field.

Carnegie Endowment for International Peace
WASHINGTON, DC

$400,000 over 24 months to encourage and facilitate understanding of how to distinguish between legitimate and illegitimate nuclear activity.

Project Director: George Perkovich, Vice President & Director, Nuclear Policy Program

The foundational treaty of the global nuclear order, the Nuclear Non-Proliferation Treaty (NPT), does not define what constitutes a nuclear weapon and therefore what activities, technologies, and materials should be regarded as evidence that a state is seeking to acquire nuclear weapons. This lack of definition exacerbates the nonproliferation challenge of distinguishing between legitimate nuclear activities (be they peaceful or military applications such as naval propulsion) and illegitimate ones (namely, those oriented toward nuclear weapons). This challenge, in turn, exacerbates the difficulty of promoting the peaceful spread of nuclear energy while, at the same time, preventing weapons proliferation.

This grant supports an initiative by the Carnegie Endowment for International Peace to build an international consensus around how to distinguish between legitimate and illegitimate nuclear activity. The Carnegie team will convene policymakers, regulators, and technical personnel from the five permanent member countries of the UN Security Council—China, France, Russia, the United Kingdom, and the United States—for a series of non-political meetings to discuss national perspectives on what constitutes illegitimate nuclear activity, weigh the costs and benefits of potential frameworks, and identify areas for further technical analysis.

University of Colorado, Denver
DENVER, CO

$325,900 over 36 months to analyze the political coalitions seeking to influence shale gas development in the United States.

Project Director: Tanya Heikkila, Associate Professor

This grant to the University of Colorado at Denver supports efforts by Tanya Heikkila and Christopher Weible to study the politics of shale gas development in the United States. Using a wide-ranging series of interviews, Heikkila, Wieble and their team will construct a map of the political actors and influencers active in the recent development of the Marcellus, Barnett, and Mancos shale formations with the aim of understanding the politics of shale gas development. Issues to be addressed include how different interest groups frame the issue of shale gas development, how they use and deploy scientific information, what media and engagement strategies they use, and how they interact with other interest groups and with policymakers and to what effect. If successful, Hikkila and Weible's work could potentially lead to a deeper understanding of how the politics of shale gas development is evolving both nationally and regionally, an understanding that will be of value to all parties involved in shale gas development: industry, advocacy groups, regulators, policymakers, and the public.

Officer Grants

Carnegie Endowment for International Peace
WASHINGTON, DC

$48,000 over 36 months to ensure that the Nuclear Power Plant Exporters' Principles of Conduct process has sustained access to independent expertise.

Project Director: George Perkovich, Vice President & Director, Nuclear Policy Program

Center for a New American Security, Inc.
WASHINGTON, DC

$124,838 over 5 months to address security risks from nuclear, biological, and chemical facilities.

Project Director: Richard J. Danzig, Chairman of the Board

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.

Trustee Grants

Foundation Center

New York, NY

$140,000 over 21 months to support the development of web interfaces and an application programming interface to the Foundation Center's rich store of philanthropic data.

Project Director: R. Nancy Albilal, Vice President for Development

Funds from this grant support a project by the Foundation Center, a nonprofit organization that aggregates records from hundreds of foundations, to enhance the usefulness and accessibility of its data. Supported activities include the development of an application programming interface (API) to allow direct computational access to the Foundation Center's database, enabling third party developers to create apps or other programs that usefully access Foundation Center data. Also supported are efforts to enhance the Foundation Center's website, promoting more sophisticated database queries and the visualization of data showing grantmaking trends.

This project is jointly supported by grants from the Knight Foundation and the Commonwealth Fund

New York Genome Center, Inc.

New York, NY

$3,000,000 over 36 months to provide partial support for the New York Genome Center.

Project Director: Robert B. Darnell, President and Scientific Director

Funds from this grant provide operational support for the launch of the New York Genome Center, a pioneering New York City-based research facility that will conduct both its own genomic research as well as provide genetic sequencing, analysis, and other services to research institutions in the New York metropolitan area. A model in collaborative research, the center will allow participating institutions to have access to first class genomic analysis capabilities without having to buy and maintain their own equipment, rent lab space, and retain expensive staff. Eleven of the City's most prominent research institutions have signed on to the effort, including Cold Spring Harbor Laboratory; Columbia, Cornell, and NYU; Memorial Sloan Kettering, New York Presbyterian, and Mount Sinai School of Medicine among others.

The development of a major new research center promises to catapult New York to the forefront of the dynamic and rapidly growing field of genomics.

New York University

New York, NY

$494,896 over 36 months to provide summer experiences for a diverse set of young women in high school that will bolster their enthusiasm and aptitude for studying mathematics in college.

Project Director: Matthew Leingang, Clinical Associate Professor

According to the Computing Research Association, the percentage of women earning degrees in computer science peaked in 1984 at just over 37 percent, and has recently fallen to less than 12

percent. The Courant Institute of Mathematical Sciences at NYU wants to show what can be done about it. Courant has specifically designed a new program for this purpose called the G-STEM (Girl's Science, Technology, Engineering, and Mathematics) Summer Camp. Targeting high-aptitude girls in New York City area high schools, it features intensive classes, practical internships, one-on-one adult mentoring, positive peer support, and lots of follow-up activities. The goal is to strengthen the perseverance of young women interested in STEM careers as they transition from high school to college. Funds from this grant provide support for the G-STEM program for three years.

Grants Made Against Prior Authorizations

In March 2011, the Board of Trustees authorized the expenditure of up to $300,000 for small grants to support philanthropic affinity groups and other charitable organizations that provide services to the Foundation community. In March 2012, The Board of Trustees authorized the expenditure of an additional $210,000 for the same purpose. The following grants were made against these previously authorized funds.

GuideStar USA, Inc.
Williamsburg, VA
$7,500 over 12 months to support work on behalf of the nonprofit and charitable community.
Project Director: Lauren Walinsky, Membership Director

Independent Sector
Washington, DC
$17,500 over 9 months for general support.
Project Director: Diana Aviv, President and Chief Executive Officer

Philanthropy New York
New York, NY
$28,000 over 9 months for general support in 2012.
Project Director: Ronna D. Brown, President

Philanthropy New York
New York, NY
$28,000 over 12 months to support work in 2013 on behalf of the nonprofit and charitable community.
Project Director: Ronna D. Brown, President

Technology Affinity Group
Wayne, PA
$5,000 over 8 months For 2012 Membership Dues.
Project Director: Lisa Dill Pool, Executive Director

Officer Grants

Algebra Project, Inc.
Cambridge, MA
$120,324 over 12 months to develop a new method of evaluating students' understanding of mathematics and conduct a pilot evaluation of the pedagogical strategies used in the Center for Mathematical Talent materials.
Project Director: Benjamin Moynihan, Director of Operations

American Association for the Advancement of Science
Washington, DC
$124,996 over 12 months to recruit, train, and celebrate US teams to compete in the Pan-African and Ibero-American Mathematics Olympiads.
Project Director: Florence Fasanelli, Project Director

Cell Motion Laboratories, Inc.
New York, NY
$20,000 over 12 months to support the BioBus, a state-of-the-art, fully mobile, research science lab, to visit K-12 schools and public science events in New York City.
Project Director: Benjamin J. Dubin-Thaler, President

Cold Spring Harbor Laboratory
Cold Spring Harbor, NY
$20,000 over 12 months to run a regional conference that helps new research and teaching faculty obtain federal funding for their scientific projects.
Project Director: Walter L. Goldschmidts, Executive Director Sponsored Programs

University of Pittsburgh
PITTSBURGH, PA
$117,185 over 18 months to support research and a book on the role of social and human capital in mathematics teaching and achievement in NYC public schools.
Project Director: Frits K. Pil, Professor

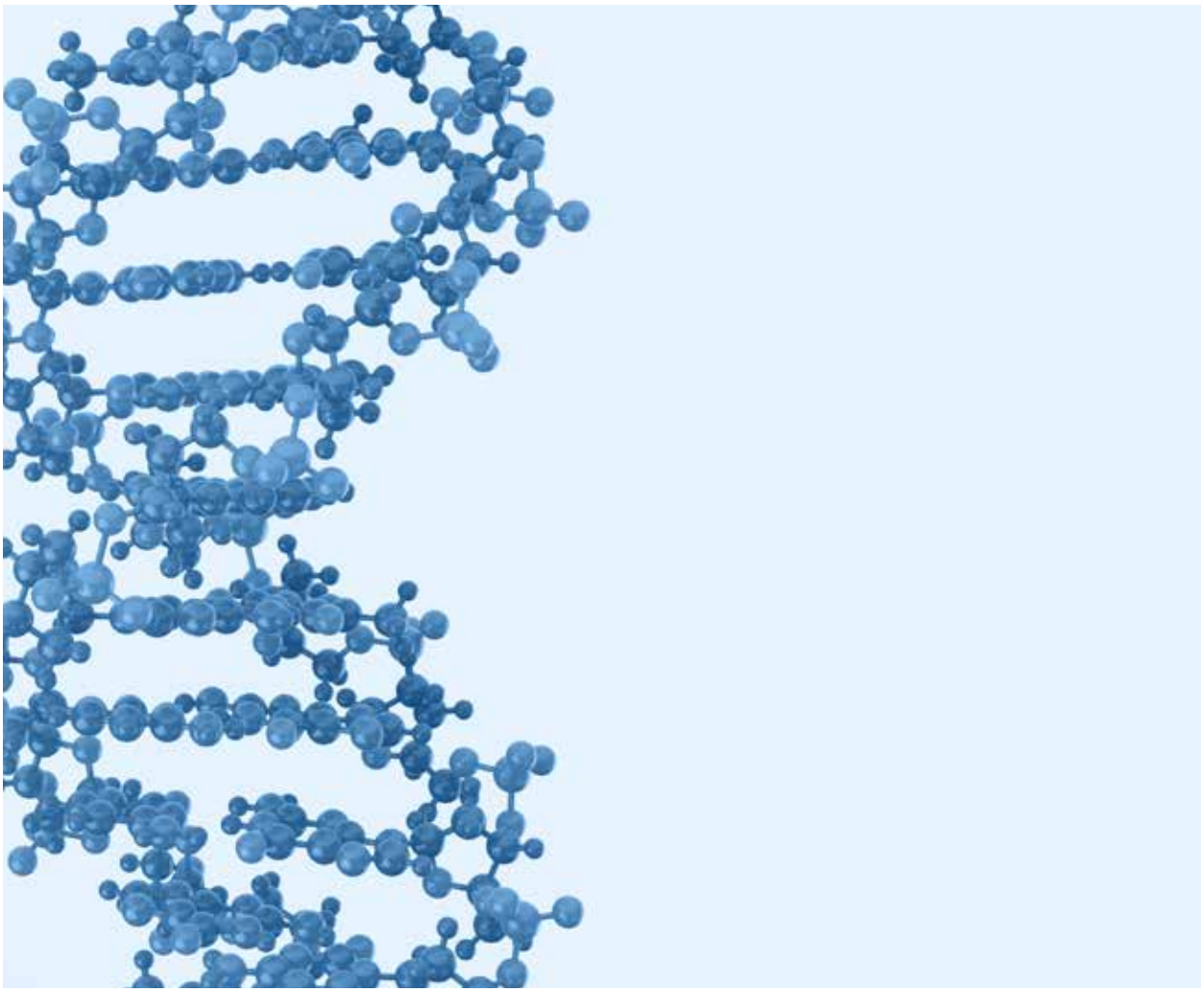
United Jewish Appeal - Federation of Jewish Philanthropies of New York, Inc.
NEW YORK, NY
$10,000 over 12 months to support the work of UJA in memory of Charlotte and Jules Joskow.
Project Director: Liliya Markel, Director, Donor Center

Massachusetts Institute of Technology
CAMBRIDGE, MA
$4,500 over 12 months to remove, clean, restore, and relocate the portrait of Alfred P. Sloan that currently hangs in the E52 Sloan Building Lobby.
Project Director: Beth Ogar, Recording Secretary

Research Foundation of the City University of New York
NEW YORK, NY
$124,923 over 24 months to enhance the reputation of CUNY faculty by developing a program to increase the number of national and international awards and prizes received by CUNY faculty in STEM fields.
Project Director: Virgina Valian, Distinguished Professor

Research Foundation of the State University of New York
ALBANY, NY
$124,391 over 12 months to develop and launch an educational pilot program to train and network women entrepreneurs and investors in the NYC area.
Project Director: Thomas Moebus, Interim Director

Two young girls at New York's newly opened Museum of Mathematics learn that if you know enough geometry, a square-wheeled tricycle is as good as any other. Foundation grants allowed the Museum to develop portable versions of its exhibits for use at science fairs around the country. PHOTO COURTESY OF FLICKR USER HORSEPUNCHKID (CC-BY-NC-SA 2.0)



Other Grants

Other Grants

The Foundation occasionally makes grants outside its normal grantmaking programs when a unique opportunity arises to benefit society or advance other Foundation aims. The following grants made in 2012 do not fall under other active Foundation programs.

Trustee Grants

Keck Graduate Institute
Claremont, CA
$250,000 over 36 months to support the introduction of a PSM Affiliation Fee as a sustainable financial model for PSM quality control and website provision in the future.
Project Director: James D. Sterling, Vice President, Academic Affairs

The Professional Science Master's (PSM) degree affiliation process has become the primary mechanism for maintaining quality control of the PSM degree. The Foundation owns a certification mark for the PSM and its logo, and as the value of the PSM degree and thus its "brand," this has become a useful instrument for ensuring that all such degree programs meet the criteria established by the national advisory committee on the PSM. Since the beginnings of the PSM program, the Foundation licensed the Council of Graduate Schools (CGS) to review prospective PSM programs and authorize those that met the criteria to use the PSM designation and logo. Though the CGS has performed that function admirably, it advised the Foundation that it could not continue indefinitely such a heavy commitment to one graduate degree. This grant defrays administrative and operational costs associated with the PSM affiliation process as it is transferred to its new home at the Keck Graduate Institute.

Officer Grants

University of California, San Diego
La Jolla, CA
$25,000 over 6 months to provide partial support for the 2012 Sloan-Swartz Annual Meeting on Computational Neuroscience.
Project Director: Terrence J. Sejnowski, Professor

National Academy of Sciences
Washington, DC
$44,244 over 3 months to support a one-day workshop on Science in the Administrative Process.
Project Director: Anne-Marie Mazza, Director

National Academy of Sciences
Washington, DC
$16,500 over 3 months to provide partial support for communication materials about the benefits of basic research.
Project Director: Nancy Huddleston, Director, Communications & Media

Tulane University
New Orleans, LA
$17,250 over 3 months to research historical data to determine whether the first and second waves of the 1918 flu pandemic were caused by the same virus.
Project Director: John M. Barry, Visiting Research Professor

2012 Financial Review

The financial statements and schedules of the Foundation for 2012 and 2011 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 2012 was $19,225,496, an increase of $5,923,487 from $13,302,009 in 2011. After the deduction of investment expenses and provision for taxes, net investment income was $5,322,907 in 2012 as compared to $4,273,015 for the prior year. Investment expenses for 2012 consisted of $5,271,829 of direct investment expenses and $6,630,760 for investment management fees. Total investment expenses and provision for taxes of $2,000,000 equaled $13,902,589 versus $9,028,994 in 2011. Total investment gains for 2012 were $160,946,370 as compared with $27,616,909 in 2011.

Grants authorized (net of grant refunds) and management expenses during 2012 totaled $78,312,444 as compared to $91,088,734 for the prior year. Of this total, grants authorized (net of refunds) amounted to $69,352,644, while management expenses were $8,959,800. For the prior year, grants authorized (net of grant refunds) was $81,400,234 and management expenses were $9,688,500.

Grant payments in 2012 were $76,776,612 compared to $75,355,856 for the prior year. Together with management expenses, investment expenses, and provision for taxes, the total of cash expenditures net of grant refunds in 2012 was $99,639,001 while in 2011 the amount was $94,073,350.

Grants authorized and payments made during the year ended December 31, 2012 are summarized in the following table:

Grants unpaid at December 31, 2011	$ 65,041,133
Authorized during 2012	69,726,773
Payments during 2012	(76,776,612)
Grants unpaid at December 31, 2012	$ 57,991,294

The fair value of the Foundation's total assets was $1,734,238,378 at December 31, 2012 including investments valued at $1,733,359,618 as compared with total assets of $1,653,512,812 at December 31, 2011.

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

ALFRED P. SLOAN FOUNDATION

December 31, 2012 and 2011

Audited Financial Statements and Schedules

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Audit • Tax • Advisory

Grant Thornton LLP
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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, 2012 and 2011, 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, 2012 and 2011, 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 2012 consolidated financial statements as a whole. The schedule of management and investment expenses for the years ended December 31, 2012 and 2011 on page 115 and the schedule of grants and appropriations for the year ended December 31, 2012 on pages 116 through 122 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 basis 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.

Grant Thornton LLP

New York, New York
June 27, 2013

Alfred P. Sloan Foundation

Consolidated Statements of Financial Position

As of December 31, 2012 and 2011

	2012	2011
ASSETS		
Cash	$ 878,760	$ 1,488,222
Investments (Note 3):		
Direct investments—equities	94,458,538	65,626,154
Direct investments—fixed income	163,264,399	163,356,824
Direct investments—mutual & exchange traded funds	158,863,478	115,526,119
Alternative investments	1,316,773,203	1,307,515,493
Total investments	1,733,359,618	1,652,024,590
Total assets	$ 1,734,238,378	$ 1,653,512,812
LIABILITIES AND NET ASSETS		
LIABILITIES		
Grants payable (Note 8)	$ 57,991,294	$ 65,041,133
Federal and state excise tax payable (Note 5)	8,779,379	9,739,652
Deferred compensation arrangements	1,093,388	885,368
Accrued postretirement health benefit obligation (Note 7)	4,882,853	3,537,474
Other liabilities	137,581	144,095
Total liabilities	72,884,495	79,347,722
Commitments (Notes 3, 4, and 9)		
NET ASSETS—unrestricted	1,661,353,883	1,574,165,090
Total liabilities and net assets	$ 1,734,238,378	$ 1,653,512,812

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, 2012 and 2011

	2012	2011
INVESTMENT INCOME		
Interest and dividends	$ 19,225,496	$ 13,302,009
Less:		
Investment expenses	(11,902,589)	(8,028,994)
Provision for taxes (Note 5)	(2,000,000)	(1,000,000)
	(13,902,589)	(9,028,994)
Net investment income	5,322,907	4,273,015
EXPENSES		
Grants (net of refunds of $374,129 in 2012 and $398,254 in 2011)	69,352,644	81,400,234
Management expenses	8,959,800	9,688,500
	78,312,444	91,088,734
Excess of expenses over net investment income	(72,989,537)	(86,815,719)
INVESTMENT GAINS		
Net realized gain on disposal of investments	114,771,505	36,089,998
Unrealized gain (loss) on investments, net of deferred federal and state excise tax expense of $9,125,712 and $8,183,368 in 2012 and 2011, respectively	46,174,865	(8,473,089)
	160,946,370	27,616,909
Increase (decrease) in net assets before postretirement benefit adjustments	87,956,833	(59,198,810)
Amounts not yet recognized as a component of net periodic benefit cost	(768,040)	6,119,270
Increase (decrease) in net assets	87,188,793	(53,079,540)
Net assets at beginning of year	1,574,165,090	1,627,244,630
Net assets at end of year	$ 1,661,353,883	$ 1,574,165,090

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, 2012 and 2011

	2012	2011
CASH FLOWS FROM OPERATING ACTIVITIES		
Increase (decrease) in net assets	$ 87,188,793	$ (53,079,540)
Adjustments to reconcile increase (decrease) in net assets to net cash used in operating activities:		
Net realized gain on disposal of investments	(114,771,505)	(36,089,998)
Unrealized (gain) loss on investments	(47,117,209)	8,638,288
(Decrease) increase in federal and state excise tax payable	(960,273)	819,840
(Decrease) increase in grants payable	(7,049,839)	6,442,632
Decrease (increase) in accrued postretirement health benefit obligation	1,345,379	(4,904,063)
Increase in deferred compensation arrangements	208,020	319,072
(Decrease) increase in other liabilities	(6,514)	94,475
Net cash used in operating activities	(81,163,148)	(77,759,294)
CASH FLOWS FROM INVESTING ACTIVITIES		
Proceeds from sales of investments	100,727,942	91,854,668
Purchases of investments	(20,174,256)	(13,400,219)
Net cash provided by investing activities	80,553,686	78,454,449
Net (decrease) increase in cash	(609,462)	695,155
Cash at beginning of year	1,488,222	793,067
Cash at end of year	$ 878,760	$ 1,488,222

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

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2012 and 2011

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

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2012 and 2011

inputs reflect the Foundation's assumptions about the inputs market participants would use in pricing 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 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.

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2012 and 2011

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 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.

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, 2012 consolidated financial statements for subsequent events through June 27, 2013, the date the consolidated financial statements were available to be issued.

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2012 and 2011

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, 2012 and 2011:

	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, 2012 and 2011

	Fair value measurements at December 31, 2011			
	Total	Level 1	Level 2	Level 3
Direct investments:				
Equities:				
Domestic	$ 65,626,154	$ 65,626,154	$ —	$ —
Fixed income:				
U.S. government	163,356,824	163,356,824	—	—
Mutual & exchange—traded funds:				
Equities	40,148,912	40,148,912	—	—
Fixed income	75,377,207	75,377,207	—	—
	115,526,119	115,526,119	—	—
Alternative investments:				
Equities:				
Domestic	$ 101,392,252	$ —	$ 24,147,646	$ 77,244,606
Long/short	151,279,366	—	92,723,631	58,555,735
International	212,190,415	—	209,834,794	2,355,621
Fixed income:				
Global sovereign bonds	55,379,915	—	55,379,915	—
Independent return	430,543,739	—	173,448,502	257,095,237
Real estate	60,050,751	—	—	60,050,751
Private equity	296,679,055	—	—	296,679,055
	1,307,515,493	—	555,534,488	751,981,005
	$ 1,652,024,590	$ 344,509,097	$ 555,534,488	$ 751,981,005

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2012 and 2011

The following table presents a 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 following table presents a reconciliation for all Level 3 assets measured at fair value at December 31, 2011:

	Beginning Balance	Purchases	Settlements / redemptions	Total net realized and unrealized gains (losses)	Transfers In/ Out *	Ending Balance
Alternative Investments:						
Equities:						
Domestic	$ 1,271,746	$ —	$ —	$ (1,046,673)	$ 77,019,533	$ 77,244,606
Long/short	49,764,084	—	—	(3,353,962)	12,145,613	58,555,735
International	33,442,258	—	(20,000,000)	5,934,490	(17,021,127)	2,355,621
Independent return	342,246,869	24,800,000	(19,913,423)	11,353,988	(101,392,197)	257,095,237
Real estate	46,146,661	7,791,958	(2,128,125)	8,240,257	—	60,050,751
Private equity	326,518,143	28,899,660	(61,473,961)	2,735,213	—	296,679,055
	$ 799,389,761	$ 61,491,618	$ (103,515,509)	$ 23,863,313	$ (29,248,178)	$ 751,981,005

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2012 and 2011

The following table lists the redemption terms and unfunded commitments for the alternative investments as of December 31, 2012 and 2011:

	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			

	2011					
	# of Funds	Fair value	Unfunded commitments in millions	Redemption frequency	Redemption notice period	Lock-up period
Alternative investments:						
Equities:						
Domestic	3	$ 101,392,252	$ —	monthly, annually	30 days	None
Long/short	6	151,279,366	—	quarterly, annually, other	30–90 days	None, Rolling 3-year
International	7	212,190,415	—	monthly, quarterly, other	6–60 days	None, 1-year
Fixed income:						
Global sovereign bonds	1	55,379,915	—	monthly	10 days	None
Independent return	19	430,543,739	6	monthly, annually, quarterly, other	30–180 days	None, 1-3 years
Real estate	10	60,050,751	10	None	N/A	N/A
Private equity	44	296,679,055	58	None	N/A	N/A
Total		$ 1,307,515,493	$ 74			

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2012 and 2011

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. $51.1 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 2012, the Foundation sold options contracts. S&P 500 Index put options sold were valued at approximately $15.1 million at December 31, 2012. The Foundation did not enter into such contracts in 2011.

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, 2012 and 2011

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, 2012 and 2011. Therefore, current taxes are estimated at 1% of net investment income for 2012 and 2011. Additionally, certain of the Foundation's investments give rise to unrelated business income tax liabilities. Such tax liabilities for 2012 and 2011 are not material to the accompanying consolidated financial statements; however, the provision for taxes, as of December 31, 2012 and 2011, 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, 2012 and 2011.

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 $801,710 and $743,678 in 2012 and 2011, 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, 2012 and 2011

The following table sets forth the financial information for the plan for 2012 and 2011:

	2012	2011
Change in accrued postretirement benefit obligation:		
Benefit obligation at beginning of year		
Service cost	$ 3,537,474	$ 8,441,537
Interest cost	150,403	388,208
Actuarial loss	149,956	478,635
Assumption change	1,244,101	(5,643,209)
Benefits paid	(199,081)	(127,697)
Benefit obligation at end of year	$ 4,882,853	$ 3,537,474
Components of net periodic postretirement benefit cost reported:		
Service cost	$150,403	$388,208
Interest cost	149,956	478,635
Amortization of transition obligation	476,061	476,061
Amortization of gain	(317,241)	-
Net periodic postretirement benefit cost	$ 459,179	$ 1,342,904
Benefit obligation weighted average assumptions at December 31, 2012 and 2011: Discount rate	3.91 %	4.33 %
Periodic benefit cost weighted average assumptions for the years ended December 31, 2012 and 2011: Discount rate	4.33 %	5.67 %

The medical trend and inflation rate is 9% in 2013 grading down to 6% in 2016 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:

	2012		2011	
	1% Increase	1% Decrease	1% Increase	1% Decrease
Effect on total service and interest cost	$ 70,737	$ (71,385)	$ 71,336	$ (52,932)
Effect on postretirement benefit obligation	710,751	(570,586)	556,472	(441,180)

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2012 and 2011

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

Year ending December 31:		
2013	$	219,675
2014		238,999
2015		224,265
2016		247,225
2017		250,311
Thereafter through 2022		1,610,295
	$	2,790,770

The accumulated amount not yet recognized as a component of net periodic benefit cost was $(1,365,357) and $(2,133,396) at December 31, 2012 and 2011, respectively. The components are as follows:

		2012		**2011**
Transition obligation	$	3,415,345	$	3,891,406
Net actuarial gain		(4,780,702)		(6,024,802)
	$	(1,365,357)	$	(2,133,396)

The transition obligation and actuarial gain that will be amortized into net periodic benefit cost in 2013 will be $476,061 and $(359,198), respectively.

8. GRANTS PAYABLE

The Foundation estimates that the grants payable balance as of December 31, 2012 will be paid as follows:

Year:		**Amount**
2013	$	40,739,456
2014		13,191,688
2015		3,187,760
2016		872,390
	$	57,991,294

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 renewal. Such conditional grant commitments total approximately $11 million at December 31, 2012.

Alfred P. Sloan Foundation

Notes to Consolidated Financial Statements

December 31, 2012 and 2011

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 (a) $1,270,335 per annum for the period commencing on January 1, 2007 and ending on December 31, 2011 and (b) $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 2012 and 2011, including escalations, was $1,842,768 and $1,682,983, respectively.

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. 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 at December 31, 2012 and 2011 was 2% and 2%, respectively. 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, 2012 and 2011

	2012	2011
Management expenses:		
Salaries and employees' benefits:		
Salaries	$ 6,725,657	$ 6,176,460
Employees' retirement plan and other benefits	2,670,134	3,266,981
Total	9,395,791	9,443,441
Rent	1,842,768	1,682,983
Program expenses	1,209,920	1,467,252
Office expenses	894,785	1,180,472
Website and publications	65,508	25,365
Professional fees	822,857	641,308
Total management expenses	14,231,629	14,440,821
Less direct investment and other management expenses allocated to investments	(5,271,829)	(4,752,321)
Management expenses	$ 8,959,800	$ 9,688,500
Investment expenses:		
Investment management fees	$6,630,760	$3,276,673
Direct investment and other management expenses allocated to investments	5,271,829	4,752,321
Investment expenses	$ 11,902,589	$ 8,028,994

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, 2012

Grantee	Unpaid December 31, 2011	2012 Authorized	2012 Payments	Unpaid December 31, 2012
Aczel, Amir D.	$ —	$ 15,408	$ 15,408	$ —
Adler Planetarium	374,983	—	374,983	—
Alaska, University of, Anchorage	80,000	—	48,000	32,000
Albright College	—	100,000	100,000	—
Algebra Project, Inc.	—	120,324	120,324	—
American Academy of Arts and Sciences	—	250,000	125,000	125,000
American Association for the Advancement of Science	—	124,996	124,996	—
American Chemical Society	12,500	—	—	12,500
American Film Institute	90,000	288,000	186,000	192,000
American Indian College Fund	200,000	—	100,000	100,000
American Institutes for Research	—	795,553	359,241	436,312
American Museum of Natural History	200,000	—	200,000	—
American Museum of the Moving Image	76,536	—	76,536	—
American Physical Society	12,000	—	6,000	6,000
American Society for Engineering Education	168,835	—	168,835	—
American Society for Microbiology	—	81,905	81,905	—
American Sociological Association	—	5,000	5,000	—
American University	—	189,802	173,140	16,662
Arius Association	75,000	—	75,000	—
Arizona, University of	32,120	20,000	52,120	—
Association of American Colleges and Universities	—	93,150	93,150	—
Association for Computing Machinery	—	19,920	19,920	—
Azavea, Inc.	—	49,976	49,976	—
Baltimore, University of	—	100,000	100,000	—
Benbough Operating Foundation	—	20,000	20,000	—
Bentley University	—	100,000	100,000	—
Boston College	1,743,388	200,000	1,094,054	849,334
Boston University	—	400,000	400,000	—
British Columbia, University of	—	923,943	397,070	526,873
Brooklyn Academy of Music	300,000	—	—	300,000
Brown University	—	80,000	80,000	—
Bryn Mawr College	—	50,000	50,000	—
Business-Higher Education Forum	—	397,858	161,179	236,679
California Institute of Technology	—	300,000	300,000	—
California, University of, Berkeley	871,744	2,962,389	1,875,675	1,958,458

Alfred P. Sloan Foundation

Schedule of Grants and Appropriations

For the year ended December 31, 2012

Grantee	Unpaid December 31, 2011	2012 Authorized	2012 Payments	Unpaid December 31, 2012
California, University of, Davis	$ 1,989,586	$ 225,000	$ 1,826,930	$ 387,656
California, University of, Los Angeles	945,595	609,600	844,532	710,663
California, University of, Office of the President	—	591,611	591,611	—
California, University of, San Diego	—	503,660	389,720	113,940
California, University of, Santa Barbara	—	50,000	50,000	—
California, University of, Riverside	254,347	—	254,347	—
Carleton College	—	100,000	100,000	—
Carnegie Endowment for International Peace	—	448,000	348,000	100,000
Carnegie Institution of Washington	599,995	3,500,000	2,299,995	1,800,000
Carnegie Mellon University	417,830	1,150,039	594,620	973,249
Catticus Corporation	—	1,559,600	1,059,600	500,000
Cell Motion Laboratories, Inc.	—	20,000	20,000	—
Center for a New American Security, Inc.	—	124,838	124,838	—
Center For Independent Documentary	100,000	—	100,000	—
Clean Air Task Force, Inc.	98,832	—	98,832	—
Chicago, University of	1,007,983	1,124,200	1,443,393	688,790
Chrinon Limited	—	116,048	116,048	—
Cold Spring Harbor Laboratory	150,000	40,000	170,000	20,000
College, University of, London	—	80,000	—	80,000
Colorado, University of, at Boulder	940,421	1,296,190	1,072,837	1,163,774
Colorado, University of, Denver	—	325,900	133,394	192,506
Columbia University	222,891	706,543	855,489	73,945
Connecticut Public Broadcasting, Inc.	596,390	—	596,390	—
Coolidge Corner Theater Foundation	231,713	20,000	251,713	—
Cornell University	—	350,000	300,000	50,000
Corporation for National Research Initiatives	—	497,103	302,956	194,147
Council of Graduate Schools	192,635	430,000	362,635	260,000
Council on Foreign Relations	450,327	117,692	568,019	—
Council on Library and Information Resources	—	672,697	672,697	—
CUNY Graduate Center Foundation, Inc.	50,000	—	50,000	—
Dartmouth College	—	1,435,429	535,614	899,815
DC Foundation, University of	22,250	—	22,250	—
Delaware, University of	—	50,000	50,000	—
Digital Public Library of America, Inc.	—	1,200,000	—	1,200,000
Drexel University	—	572,082	108,961	463,121

Alfred P. Sloan Foundation

Schedule of Grants and Appropriations

For the year ended December 31, 2012

Grantee	Unpaid December 31, 2011	2012 Authorized	2012 Payments	Unpaid December 31, 2012
Duke University	$ —	$ 336,365	$ 336,365	$ —
East Carolina University	699,989	50,000	749,989	—
Edinburgh, University of	—	14,824	14,824	—
Emory University	—	50,000	50,000	—
Ensemble Studio Theatre, Inc.	567,000	—	567,000	—
Ezus Lyon	—	50,000	50,000	—
Families and Work Institute, Inc.	734,141	—	300,000	434,141
Film Independent, Inc.	220,000	—	110,000	110,000
Florida, University of	—	33,123	33,123	—
Foundation Center	130,000	140,000	205,000	65,000
Fred Hutchinson Cancer Research Center	—	50,000	50,000	—
Fund for the City of New York	903,750	731,554	856,756	778,548
Fund for Public Health in New York, Inc.	457,814	—	457,814	—
Georgia Institute of Technology	—	250,000	250,000	—
George Mason University	246,028	100,000	100,000	246,028
George Washington University	—	34,972	34,972	—
Greater Washington Educational Telecommunications Assn., Inc.	750,000	125,000	875,000	—
GuideStar USA, Inc.	—	7,500	7,500	—
Hamptons International Film Festival	153,763	—	153,763	—
Harvard Medical School	—	100,000	100,000	—
Harvard University	1,184,278	2,029,644	1,920,609	1,293,313
Hastings Center	250,000	—	250,000	—
Hunter College of the City University of New York	—	57,708	57,708	—
ICPO-INTERPOL	900,000	—	550,000	350,000
iGEM Foundation	—	60,000	60,000	—
Illinois, University of, at Chicago	—	26,838	26,838	—
Illinois, University of, Urbana-Champaign	—	150,000	150,000	—
Independent Sector	—	17,500	17,500	—
Indiana, University of	376,807	250,000	423,148	203,659
Industrial Organizational Society, Inc.	—	20,000	20,000	—
International Association for Research in Income and Wealth	—	140,000	140,000	—
International Council for the Life Sciences	—	65,000	65,000	—
Institute of International Education Inc.	500,000	—	250,000	250,000
Institute for New Economic Thinking	—	24,300	24,300	—

Alfred P. Sloan Foundation

Schedule of Grants and Appropriations

For the year ended December 31, 2012

Grantee	Unpaid December 31, 2011	2012 Authorized	2012 Payments	Unpaid December 31, 2012
Integrated Ocean Drilling Program Management International	$ 100,000	$ —	$ 100,000	$ —
Johns Hopkins University	—	525,000	342,542	182,458
Kansas, University of	—	6,500	—	6,500
Keck Graduate Institute	—	250,000	75,000	175,000
L.A. Theatre Works	—	450,848	97,907	352,941
Library Foundation of Los Angeles	—	100,000	100,000	—
Library of Congress	38,750	—	38,750	—
Long Island University	—	19,600	19,600	—
Loughborough University (UK)	—	104,212	—	104,212
Lyrasis	250,000	—	250,000	—
Manhattan Theatre Club	200,000	600,000	380,184	419,816
Marine Biological Laboratory	157,466	—	—	157,466
Maryland, University of, College Park	165,272	48,731	151,158	62,845
Massachusetts Institute of Technology	292,322	985,186	750,347	527,161
Massachusetts, University of, Amherst	—	50,000	50,000	—
Massachusetts, University of, Medical School	—	250,000	250,000	—
Michigan State University	212,586	50,000	262,586	—
Michigan, University of	3,601,574	1,475,804	1,954,108	3,123,270
Middlebury College	151,984	—	—	151,984
Minnesota, University of	—	69,500	69,500	—
Montana Tech. of the University of Montana	24,065	—	—	24,065
Montana, University of	48,500	—	29,100	19,400
Mount Holyoke College	—	100,000	100,000	—
Mozilla Foundation	—	810,575	373,875	436,700
Museum of Mathematics	201,461	—	100,000	101,461
National Academy of Sciences	440,925	1,880,744	1,398,563	923,106
National Action Council for Minorities in Engineering, Inc.	4,804,458	3,118,781	2,846,061	5,077,178
National Bureau of Economic Research, Inc.	2,553,760	—	1,713,391	840,369
National Geographic Society	1,000,000	625,000	1,125,000	500,000
National Opinion Research Center	—	1,148,415	774,731	373,684
National Public Radio, Inc.	—	890,000	390,000	500,000
New York Academy of Medicine	—	594,898	494,898	100,000
New York Botanical Garden	200,000	—	200,000	—
New York County District Attorney	60,000	—	—	60,000

Alfred P. Sloan Foundation

Schedule of Grants and Appropriations

For the year ended December 31, 2012

Grantee	Unpaid December 31, 2011	2012 Authorized	2012 Payments	Unpaid December 31, 2012
New York Genome Center, Inc.	$ —	$ 3,000,000	$ 1,000,000	$ 2,000,000
New York Hall of Science	—	320,514	187,514	133,000
New York University	713,703	2,007,196	1,185,600	1,535,299
Northern Arizona University	—	249,877	149,877	100,000
Northwestern University	—	100,000	100,000	—
North Carolina Agricultural and Technical State University	25,000	—	25,000	—
North Carolina State University	20,000	—	20,000	—
Ohio State University	500,000	50,000	550,000	—
Oklahoma, University of	—	13,162	13,162	—
Open Knowledge Foundation	—	79,350	—	79,350
Oregon State University	—	50,000	50,000	—
Oregon, University of	800,000	50,000	550,000	300,000
Ottawa, University of	299,150	—	299,150	—
Oxford University	1,021,583	479,241	787,988	712,836
Pennsylvania State University	—	193,252	193,252	—
Pennsylvania, University of	334,873	481,029	574,308	241,594
Petroski, Henry	—	50,000	50,000	—
Philanthropy New York	—	56,000	28,000	28,000
Pittsburgh, University of	—	117,185	117,185	—
Planetwork NGO, Inc.	—	525,800	525,800	—
Polytechnic Institute of New York University	—	94,398	74,398	20,000
Princeton University	—	323,410	286,699	36,711
PRX Incorporated	—	172,328	172,328	—
Puerto Rico, University of	—	600,000	325,000	275,000
Purdue University	104,227	50,000	105,271	48,956
RAND Corporation	384,206	1,042,697	845,863	581,040
Rensselaer Polytechnic Institute	—	750,000	300,000	450,000
Research Foundation of the City University of New York	575,968	124,923	700,891	—
Research Foundation of State University of New York	—	124,391	124,391	—
Rhode Island, University of	—	851,257	401,876	449,381
Rhodes, Richard	—	125,000	125,000	—
Rochester, University of	—	50,000	50,000	—
Rockefeller University	—	1,050,000	370,000	680,000
Rutgers, The State University of New Jersey	—	449,448	173,541	275,907
Shachtman, Tom	—	30,000	30,000	—

Alfred P. Sloan Foundation

Schedule of Grants and Appropriations

For the year ended December 31, 2012

Grantee	Unpaid December 31, 2011	2012 Authorized	2012 Payments	Unpaid December 31, 2012
San Jose State University	$ —	$ 100,000	$ 100,000	$ —
Sage Bionetworks	—	124,959	124,959	—
Science Festival Foundation	650,000	—	650,000	—
Science Friday Initiative, Inc.	210,000	—	210,000	—
Simon Fraser University	—	50,000	50,000	—
Skidmore College	—	100,000	100,000	—
Sloan Consortium, Sloan-C	1,100,000	—	600,000	500,000
Smithsonian Institution	218,000	1,000,000	968,000	250,000
Society for Human Resources Management Foundation	300,000	—	300,000	—
SoundVision Productions	—	1,098,883	625,486	473,397
Southern California, University of	—	493,772	254,872	238,900
Southern Regional Education Board	—	860,000	305,000	555,000
St. Olaf College	19,500	—	19,500	—
Stanford University	642,404	1,186,781	1,254,831	574,354
Stevens Institute of Technology	—	390,584	390,584	—
Stony Brook University	—	50,000	50,000	—
Sundance Institute	250,000	—	250,000	—
Swarthmore College	66,107	—	66,107	—
Technology Affinity Group	—	5,000	5,000	—
Tennessee, University of	—	273,130	273,130	—
Texas AgriLife Research	63,587	—	63,587	—
Texas A&M University	—	166,201	166,201	—
Texas, University of, Austin	726,502	3,450,145	3,193,944	982,703
The Brookings Institution	451,336	225,000	225,000	451,336
The New School Center for NY City Affairs	150,000	—	150,000	—
Thurgood Marshall College Fund	157,808	—	157,808	—
Tribeca Film Institute	—	216,689	108,689	108,000
Tides Foundation	—	55,000	55,000	—
Toronto, University of	691,225	400,000	714,967	376,258
Toyota Technological Institute	—	50,000	50,000	—
Tribeca Film Institute, Inc.	378,995	—	378,995	—
Tufts University	—	124,906	124,906	—
Tulane University	—	17,250	17,250	—
United Jewish Appeal—Federation of Jewish Philanthropies of NY, Inc.	—	10,000	10,000	—
Upjohn Institute for Employment Research	323,910	—	152,250	171,660

Alfred P. Sloan Foundation

Schedule of Grants and Appropriations

For the year ended December 31, 2012

Grantee	Unpaid December 31, 2011	2012 Authorized	2012 Payments	Unpaid December 31, 2012
Upstate Medical University	$ —	$ 25,000	$ 25,000	$ —
Urban Institute	—	693,824	328,940	364,884
Vanderbilt University	—	50,000	50,000	—
Victoria, University of	—	50,000	50,000	—
Virginia Polytechnic Institute and State University	—	250,000	150,000	100,000
Waldman, Jonathan	—	50,000	50,000	—
Warwick, University of	190,173	—	190,173	—
Washington, University in St. Louis	—	424,999	424,999	—
Washington, University of	453,945	474,290	567,108	361,127
Wellesley College	222,041	100,000	209,310	112,731
WGBH Educational Foundation	2,300,000	1,000,000	1,800,000	1,500,000
Wikimedia Foundation	2,000,000	—	1,000,000	1,000,000
Wisconsin, University of, Madison	—	733,044	243,811	489,233
WNYC Public Radio	512,385	—	262,385	250,000
Wolfram Foundation	—	123,453	123,453	—
Woodrow Wilson International Center for Scholars	1,744,850	—	900,000	844,850
Xavier, University of, Louisiana	—	100,000	100,000	—
Yale University	124,190	320,000	444,190	—
TOTAL	53,810,262	73,175,948	76,720,974	50,265,236
Sloan Research Fellowships to be Granted in Ensuing Year	6,300,000	—	—	6,300,000
Other Appropriations Authorized but not committed	4,930,871	(2,882,366)	622,447	1,426,058
	65,041,133	70,293,582	77,343,421	57,991,294
Reduction for Grant Transfers	—	(566,809)	(566,809)	—
	$ 65,041,133	$ 69,726,773	$ 76,776,612	$ 57,991,294

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

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