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**COSSA**

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## **WELCOME TO 2010: MOVING BEYOND HEALTH CARE REFORM**

Happy New Year to Update readers! With the end in sight on legislation to reform the nation's health care system, 2010 promises to bring a whole new set of activities in the Executive and Legislative branches of government. Those activities will take place in the context of a congressional election year that could end the filibuster-proof Democratic majority in the Senate and significantly reduce the large Democratic margin in the House.

On February 1, President Obama is scheduled to release his FY 2011 budget; the Administration's blueprint for its funding priorities. With that release debate will exacerbate on the future of federal spending in the face of continued economic problems and the sustainability of historic rates of deficit spending. As a prelude, when Congress returns in the third week of January, a confrontation on further increasing the debt limit will include a vote on a proposal to create a commission to determine out how to maintain federal financial viability in light of the deficit and projected increased future spending on Medicare and Social Security. For research agencies like the National Institutes of Health (NIH) and the National Science Foundation (NSF), which received a large infusion of funds under the American Reinvestment and Recovery Act, returning to normal budgets will create new problems of support for scientific research.

Aside from the debates over federal spending, there is much substantive work to do in the authorizing committees. In December, House Science and Technology Chairman Rep. Bart Gordon (D-TN) announced that he will retire at the end of this Congress. Before he goes he will lead the reauthorization of the America COMPETES Act, which includes the authorization for the NSF. One of Gordon's major goals is to increase the emphasis on Science, Technology, Engineering and Mathematics Education (STEM) at NSF and across the government. Much of the NSF reauthorization will get shepherded by the S&T's Subcommittee on Research and Science Education chaired by Rep. Dan Lipinski (D-IL), a Ph.D. political

scientist. On the Senate side, key players will be Sen. Jay Rockefeller (D-WV), Chair of the Commerce, Science and Transportation Committee and Sen. Tom Harkin (D-IA), chair of the Health, Education, Labor and Pensions Committee. Another wrinkle to the NSF reauthorization may be the appointment of new leadership for the Foundation. Arden Bement's six-year term as director comes to an end in 2010.

As the nation continues to try and improve its education system, not only in STEM but in almost everything, the Administration and Congress still need to consider what to do with No Child Left Behind (NCLB), the major education legislation from the Bush II years. Discussions about reauthorization have occurred for two years now, but no clear direction has emerged. Whether Congress deals with this in an election year is uncertain. Another education law up for renewal is the legislation that created the Institute of Education Sciences, the Department's research, statistics, and assessment arm. Again, preliminary discussions have begun, but whether there is time or the energy to re-examine this entity remains unclear.

This is also the year of the decennial count of the nation's population. Starting this month in Alaska, which gets counted early because of weather-related problems, the 2010 Census gets underway. Ensuring everyone gets counted takes a massive mobilization of the nation, with enormous advertising, state and local partnerships, and the hiring of a large workforce, to carry out this always difficult constitutionally-mandated task. What the Bureau hopes for is a smooth operation devoid of the political interference of previous decennials.

Although the data continue to demonstrate the continuing decline of violent crime in this country, there are still issues in this policy arena that remain on the congressional agenda. A growing recognition of the damage of having one of the worlds' largest prison populations has led some, such as Sen. Jim Webb (D-VA), Sen. Diane Feinstein (D-CA), and Rep. Bobby Scott (D-VA) to introduce legislation to reconsider our criminal justice priorities. With new leadership at the National Institute of Justice (NIJ), John Laub awaits confirmation from the full Senate, and the Bureau of Justice Statistics (BJS) where James Lynch awaits a Senate Judiciary Committee hearing, plus an infusion of FY 2010 appropriation funds to the BJS to help revitalize the National Crime Victimization Survey (NCVS), the research and data capacities of the Department of Justice should undergo a resurgence. In addition, in early spring the National Academies hopes to release the report from its committee that has been reviewing NIJ.

At the Department of Agriculture, the implementation of the new research structure created by the 2008 Farm Bill continues. However, the Department will need a new Undersecretary for Research, Extension, and Economics, since Rajiv Shah has left to become the new Administrator of the U.S. Agency for International Development.

In further missing personnel developments: NIH's Office of Behavioral and Social Sciences Research continues its search for a new director; NSF's Social and Economic Sciences division seeks a new director; and the White House Office of Science and Technology Policy has not yet found an Associate Director for Science.

With the Copenhagen conference over, the Administration will continue to try and obtain a new environmental and energy policy from the Congress. In light of continued deadlock there, the Administration is pushing ahead using its regulatory powers and international agreements to change this policy landscape.

A congressional election year always makes things difficult for an Administration trying to alter policies. The return of terrorism to the forefront of the nation's cognizance and the continued wars in Afghanistan and Iraq will further complicate domestic agenda priorities. The debate over health care has indicated that the kinder, gentler policy milieu President Obama envisioned is not upon us and the oft-times hugely divergent political agendas of parties, politicians, and interest groups will remain dominant.

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## PCAST MEETS; HOLDREN REVIEWS ADMINISTRATION'S S&T

## ACCOMPLISHMENTS

The President's Council of Advisers on Science and Technology (PCAST) held its first meeting of 2010 on January 7. John Holdren, the President's Science Adviser and director of the White House Office of Science and Technology Policy (OSTP), one of PCAST's three co-chairs, opened the meeting by reviewing the Administration's first-year accomplishments in science and technology (S&T).

Holdren asserted that "science, technology and innovation got a lot of attention" from the Administration in 2009, much of it led by President Obama. He did this by his speeches, such as to the National Academies in late April, the release of an American Innovation Strategy, his science, technology, engineering and mathematics (STEM) education initiatives (see other story), and his outreach to international science, that included his speech in Cairo to the Muslim world.

Furthermore, Holdren boasted that the Administration's budgets provided the "biggest boost to [research and development] in the nation's history." It included \$100 billion in the American Reinvestment and Recovery Act (ARRA) and \$100 billion for education initiatives, including the Department of Education's Race to the Top initiative.

The Administration, Holdren, noted also helped create ARPA-E to promote advanced energy research, and revitalized research at the Departments of Agriculture, Interior, Transportation, and Defense. Making changes in the Visa MANTIS program, overturning the Bush Administration restrictions on stem cell research, and promoting open government initiatives, including open access to federally funded scientific research, all improved the climate for R&D in 2009, according to Holdren.

### Improved Health Care Through Systems Innovation

The panel brought in Atul Gawande of the Harvard School of Public Health and the Harvard Medical School to discuss health policy. Gawande, a frequent contributor to the *New Yorker* and a popular medical writer, advanced the notion of "health systems innovation." He suggested perhaps the nation needed a national institute devoted to that topic. The key, according to Gawande, was to make systems function more successfully. One way to do that is through the use of "checklists" by medical teams to avoid mistakes. We need, Gawande asserted, to concentrate on organizational structures, economic incentives, and healthcare delivery improvements to help overcome the "extreme complexity" of the health care system.

He argued for enhanced funds for the National Center for Health Statistics so that the nation has real time measurements for the efficiency and effectiveness of our health policies. Gawande also called for the elevation of the Agency for Healthcare Research and Quality and an activity comparable to the Agricultural Extension system to monitor healthcare developments and spread best practices.

Most of Gawande's talk suggested a need to focus on the human factors affecting improved health care. Reflecting the make up of PCAST, the discussion instead mostly involved the creation of better technology to accomplish Gawande's systems' improvements. Gawande acknowledged that technology could help, but responding to one of these comments, he pointed out that team checklists in an operating theater can be posted on a piece of paper hanging in the room.

The Committee also heard from Administration officials discussing activities in Energy, from Undersecretary of Energy Kristina Johnson, on the Environment from OSTP Associate Director Shere Abbott, and Defense from Defense Advanced Projects Research Agency (DARPA) head Regina Dugan. Secretary of Commerce Gary Locke pronounced that science and technology needs focused research to produce innovative products that can create American jobs.

Access to the Webcast of the full meeting can be found at:  
<http://www.twworldwide.com/events/pcast/100107/>.

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## NIH LAUNCHES OPPNET AND ANNOUNCES FIRST FUNDING OPPORTUNITY

On November 18, 2009, National Institutes of Health (NIH) director Francis Collins officially announced the launch of the Basic Behavioral and Social Science Opportunity Network (OppNet). The project is a trans-NIH initiative designed to expand NIH's support of basic behavioral and social sciences research (b-BSSR). Basic-BSSR studies mechanisms and processes that influence behavior at the individual, group, community and population level. Research results lead to new approaches for reducing risky behaviors and improving the adoption of healthy practices.

"Synergy across a variety of research disciplines will fuel high-quality basic behavioral and social science research, a vital component of the NIH research portfolio," Collins stated. He also noted that "basic behavioral and social science research contributes to our understanding of the complex factors that affect individuals, our communities and our environments."

At COSSA's annual meeting in November, NIH Deputy Director Raynard Kington described OppNet's genesis to COSSA annual meeting participants. Kington explained that, OppNet "prioritizes activities and initiatives that focus on basic mechanisms of behavior and social process that is relevant to multiple NIH institutes, centers, and offices (ICOs) missions and public health challenges." It builds upon existing NIH investments without replicating them. The OppNet structure is modeled after the NIH Neuroscience Blueprint, a "cooperative effort among NIH ICOs that support neuroscience research. Similar to the Blueprint, it will be multi-tiered, consisting of an ICO Director Steering Committee, an ICO Staff Coordinating Committee, and Project-specific Working Groups" (see Update, [November 9, 2009](#)).

Twenty-four ICs and five programs within the Office of the Director will integrate existing NIH efforts, target research challenges best met collectively and collaborate on new research initiatives in complementary scientific areas supported through a pool of common funds over an initial five-year period. OppNet will also develop a plan for focused multi-year programs across ICs to advance priority topics within b-BSSR. NIH has also created a website with more information, including funding opportunity announcements (<http://oppnet.nih.gov/index.asp>).

In its first year, the goal for OppNet is to develop a plan for targeted multi-year programs to advance priority areas within the basic behavioral and social sciences. On January 5, the first OppNet funding opportunity announcement (FOA) was released. NIH is supporting Inaugural OppNet activities with up to \$10 million in Recovery Act funds in FY 2010. In keeping with the Recovery Act's goals, OppNet's initial activities are focused on short-term research and/or training. The NIH intends to use regularly appropriated resources to support OppNet during FY 2011-FY 2014.

### **Short-term Mentored Career Development Awards in the Basic Behavioral and Social Sciences for Mid-career and Senior Investigators**

The NIH OppNet is inviting applications for short-term mentored career development awards of up to one year duration, aimed at established, mid-career and senior investigators seeking an intense, mentored career development experience designed to substantially improve their ability to pursue future research in the basic behavioral and social sciences. The awards are intended to provide candidates with protected time to achieve a shift in the focus of their research direction in the basic and social sciences, or to substantially enrich a b-BSSR research program through the introduction of tools, theories or approaches from another discipline or area of science.

The announcement targets two categories of candidates: 1) biomedical or clinical researchers with little experience in b-BSSR seeking training with a well-established b-BSSR investigator in order to explore the introduction of basic behavioral and social science research into their research program; and 2) investigators in the basic or applied behavioral and social sciences who wish to build new components or domains of b-BSSR into their research programs.

The announcement is not intended as a substitute for research project support. Accordingly, it is

expected that either the candidate or the mentor has sufficient research funding to support the proposed project. It is not a requirement, however, that the candidate or the proposed mentor receive their primary funding through the NIH.

## Research Scope

The priority of OppNet is to build upon the existing body of knowledge about the nature of behavior and social systems by supporting initiatives that focus on basic mechanisms of behavior and social processes that are relevant to the missions and public health challenges addressed by multiple NIH ICOs. Basic behavioral and social science research includes research on behavioral and social processes, interactions between biology, behavior and social processes, and research on methodology and measurement as described below.

### Research on behavioral and social processes

Research on behavioral and social processes involves the study of human or animal functioning at the level of the individual, small group, institution, organization, community, or population. At the individual level, this research may involve the study of behavioral factors such as cognition, memory, language, perception, personality, emotion, motivation, and others. At higher levels of aggregation, it includes the study of social variables such as the structure and dynamics of small groups (e.g. couples, families, work groups, etc.); institutions and organizations (e.g. schools, religious organizations, etc.); communities (defined by geography or common interest); and larger demographic, political, economic, and cultural systems. Research on behavioral and social processes also includes the study of the interactions within and between these two levels of aggregation, such as the influence of sociocultural factors on cognitive processes or emotional responses. Finally, this research also includes the study of environmental factors (both natural and human created) such as climate, noise, environmental hazards, residential and other built environments and their effects on behavioral and social functioning. Examples of research topics include, but are not limited to:

- Sensation and perception
- Emotion and motivation
- Vulnerability and resilience
- Attention, learning and memory
- Ingestive, sexual and aggressive behaviors
- Language development
- Social influences and social cognition
- Family processes and social networks
- Sociocultural and environmental processes, population dynamics

### Interactions between biology, behavior and social processes

The study of the interactions of biological factors with behavioral or social variables and how they affect each other (i.e., the study of bi-directional multilevel relationships). Examples of research topics include, but are not limited to:

- Gene by environment interactions and correlations, including epigenetic effects, over time and lifespan developmental phases
- Behavior genetics
- Behavioral, cognitive, affective, social and economic neurosciences
- Psychoneuroimmunology and psychoneuroendocrinology
- Psychopharmacology
- Behavioral cardiology
- Social networks and the spread of vectors of disease

## **Research on methodology and measurement in the behavioral and social sciences**

Research on methodology and measurement encompasses the development of new approaches to research design, data collection, measurement, and data analysis. This research is designed to develop research tools that could be used in the behavioral and social sciences or in biomedical research or their interaction. Examples of research topics include, but are not limited to:

- Research on methods for analyzing complex dynamic systems
- Development or application of technologies, such as information technology, wearable sensors, or monitoring systems for data collection, harmonization, and measurement
- Statistical modeling techniques
- Development of innovative research designs (e.g., multi-method, multi-informant designs)
- Methods to reduce sampling, survey, and item non-response bias in research studies
- Development of new technologies, tools, and methods for observing and analyzing behavior
- Qualitative and ethnographic methods
- Development of novel animal models of behavior or translation of existing models toward new problems
- Development of new measurement procedures for behavioral, neuropsychological, and social phenomena

Additional funding announcements include:

[Recovery Act Funds for Competitive Revision Applications \(R01, R03, R15, R21, R21/R33, and R37\) through the NIH Basic Behavioral and Social Science Opportunity Network \(OppNet\) \[NOT-OD-10-032\]](#)

Release Date: January 7, 2010

Letters of Intent Receipt Date: February 2, 2010 (optional)

Application Due Date: March 2, 2010

[Recovery Act Funds for Competitive Revision Applications \(R01, R03, R15, R21, R21/R33, and R37\) for HIV/AIDS-related Research through the NIH Basic Behavioral and Social Science Opportunity Network \[NOT-OD-10-032\]](#)

Release Date: January 7, 2010

Letters of Intent Receipt Date: February 25, 2010 (optional)

Application Due Date: March 25, 2010

[Recovery Act Funds for Competitive Revision Applications for Small Business Innovation Research and Small Business Transfer Technology Research Grants \(R43/R44 and R41/R42\) through the NIH Basic Behavioral and Social Science Opportunity Network \(OppNet\) \[NOT-OD-10-034\]](#)

Opening Date: January 7, 2010

Letters of Intent Receipt Date: February 25, 2010 (optional)

Application Due Date: March 25, 2010

[HIV/AIDS Funds for Competitive Revision Applications \(R01, R03, R15, R21, R21/R33, R37\) for HIV/AIDS-related Research through the NIH Basic Behavioral and Social Science Opportunity Network \(OppNet\) \[NOT-OD-10-036\]](#)

Opening Date: January 7, 2010

Letters of Intent Receipt Date: April 7, 2010 (optional)

Application Due Date: May 7, 2010

HIV/AIDS

[Recovery Act Funds for Competitive Revision Applications \(R01, R03, R15, R21, R21/R33, and R37\) for HIV/AIDS-related Research through the NIH Basic Behavioral and Social Science Opportunity Network \[NOT-OD-10-033\]](#)

Opening Date: January 7, 2010

Letters of Intent Receipt Date: February 25, 2010 (optional)

Application Due Date: March 25, 2010

For more information or to apply see: <http://grant.nih.gov/grants/guide/rfa-files/RFA-OD-10-1003.html>.

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## FINAL FY 2010 APPROPRIATIONS

The following chart posts the final FY 2010 appropriations figures for selected key agencies that support social and behavioral science research. Most of these come from the Consolidated Appropriations Act Congress passed in mid-December. Others, such as Agriculture and Homeland Security are from their individual appropriations bills enacted earlier in 2009. The numbers are in millions.

	FY 2009 <u>Approp.</u>	FY 2010 <u>Proposed</u>	ARRA Funds	FY 2010 <u>Approp.</u>
Hatch Act	207.1	207.1		215.0
Agricultural Food and Research Initiative	201.5	201.5		262.5
Special Grants	100.4	18.0		105.2
Economic Research Service	79.5	82.5		82.5
National Agricultural Statistical Service	151.6	161.8		161.8
Census Salaries and Expenses	233.6	259.0		259.0
Periodic Censuses and Programs	2,906.3	7,115.7	1,000.0	7,065.70
Bureau of Economic Analysis	87.1	101.2		93.5
Institute of Education Sciences				
Research and Dissemination	167.2	224.2		200.2
Regional Education Labs	67.6	70.7		70.7
Statistics (NCES)	98.5	108.5		108.5
Assessment (incl. NAGB)	138.8	138.8		138.8
StateWide Data Systems	65.0	65.0	250.0	58.3
International Education and Foreign Languages	118.9	118.9		125.9
Fund for the Improvement of Postsecondary Education	133.7	47.4		159.4
Javits Fellowship Program	7.9	7.9		7.9
Graduate Assistance in Areas of National Need	31.0	31.0		31.0
Thurgood Marshall Legal Educational Opportunity	3.0	3.0		3.0
Homeland Security University Programs	50.3	46.0		49.4
Homeland Security Human Factors Programs	12.5	15.1		16.1
HUD Office of Policy Development and Research	32.0	50.0		48.0
Bureau of Justice Statistics	45.0	60.0		60.0
National Institute of Justice	48.0	48.0		48.0
Bureau of Labor Statistics	538.0	633.2		611.5
Bureau of Transportation Statistics	28.0	28.0		29.0
National Science Foundation Total	6,490.4	7,045.0	3,002.0	6,926.5
Research and Related Activities	5,183.1	5,733.2	2,500.0	5,617.9
Education and Human Resources	845.3	857.8	100.0	872.7
Agency for Healthcare Research and Quality	372.1	372.1	700.0	397.1
Centers of Disease Control and Prevention	6,614.60	6,643.50	300.0	6,742.80
National Center for Health Statistics	124.7	138.7		138.7
National Institutes of Health	30,317.0	30,758.8	10,380.7	31,017.0

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## NIH COLLINS CHAIRS FIRST ACD MEETING

On December 4, 2009, National Institutes of Health (NIH) director Francis Collins convened his first and the 99th meeting of Advisory Committee to the Director (ACD). Collins began by noting the "wild ride" he has been on since his confirmation. He noted the many personnel changes that need addressing. This includes a search for his replacement at the National Human Genome Research Institute (NHGRI).

In the meantime, he has appointed Eric Green as Acting Director of NHGRI. Green is currently the NHGRI scientific director and director of the NHGRI Division of Intramural Research. NIH also seeks permanent directors for the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) and the National Heart, Lung, and Blood Institute (NHLBI). NHGRI's Deputy Director Alan Guttmacher is currently serving as the Acting Director of NICHD, following the brief stint as Acting Director by Susan Shurin. (Shurin, who is the Deputy Director for NHLBI, has returned to the institute to serve Acting Director following the departure of Betsy Nabel, who stepped down at the end of November and is now at Brigham Young University.

Collins also remarked that searches continue for permanent directors of the NIH Office of Behavioral and Social Sciences Research (OBSSR), the Office of Extramural Research (OER), and the NIH Office of Budget whose director John Bartrum has moved to the House Appropriations Subcommittee on Labor, Health and Human Services and Education. Directors are also needed for NIH Office of Legislative Policy and Analysis (OLPA), and the NIH Division of Program Coordination, Planning and Strategic Initiatives, all within the office of the NIH Director. Collins indicated that he is nearing making an appointment for OLPA. Collins shared his vision with the members of the ACD.

### Science and Healthcare Reform

Barbara L. Wolf of the La Follette School of Public Affairs at the University of Wisconsin-Madison and the former director of its Institute on Poverty expressed her excitement regarding Collins' discussion about using science to examine healthcare reform, especially its affect on health disparities. She asked whether there are larger opportunities for investigations to learn much more about what prevention strategies work as well as what kind of delivery models reduce disparities. Noting that the nation is currently in a period of high unemployment and the accompanying poverty, Wolf noted that these are targeted opportunities, which require planning right now and research designs that need development before some of the reform takes place.

Collins agreed and noted that there is a window of opportunity that will not remain open indefinitely. He thinks that health disparities is an area that all of the institutes and centers (ICs) perceive as a high priority. Those already invested in research programs related to health disparities are attempting to craft the kinds of protocols that will provide answers.

### Workforce Issues

The discussion also included a comment by ACD member Thomas Kelly of the Sloan-Kettering Institute regarding workforce issues. Kelly noted that scientific community has no idea whether currently implemented training programs are working. He suggested that a working group of the ACD should examine what the future of the scientific workforce should look like. "I think we should look at this issue in a deeper and in a more quantitative way and try to do some modeling in order to make decisions about what science should look like in this country 20 years from now," said Kelly. Collins agreed with him.

Keith Yamamoto of the University of California, San Francisco also questioned whether NIH should re-examine the goals of graduate training. What is the intellectual product, the creative product that graduate training should be endeavoring to produce as its endpoints? How much are we putting into our programs now really moves to that product? He noted that postdoctoral work is extending to as long as five or six additional years. Yamamoto submitted that academia has never looked at post-doctoral training as an educational imperative.

The meeting also included a discussion of NIH comparative effectiveness research, stem cell policy, neglected and rare diseases, and a director's report by Linda Birnbaum director of the National Institute of Environmental Health Sciences. The videocast of the meeting can be found at <http://videocast.nih.gov/PastEvents.asp?c=39>.

### **Collins Warmly Received On Capitol Hill**

On December 2, 2009, Capitol Hill welcomed National Institutes of Health (NIH) director Francis Collins at reception. A number of members of Congress were in attendance, including Senators Tom Harkin (D-IA), Byron Dorgan (D-ND), and Judd Gregg (R-NH), as well as Representatives Lois Capps (D-CA), Brian Bilbray (D-CA), Shelley Berkley (D-NV), Vern Ehlers (R-MI), Leonard Lance (R-NJ), James Langevin (D-RI), Sander Levin (D-MI), Dennis Moore (D-KS) Cathy McMorris Rodgers (R-WA), and Cliff Stearns (R-FL). Capitol Hill staff, NIH Institute and Center directors, research community representatives, patient advocacy and education organizations were also in attendance. COSSA cosponsored and attended the event.

Master of Ceremonies, former Secretary of the Department of Health and Human Services Louis Sullivan reflected on Collins' many achievements, particularly in the field of genomics. Collins thanked the biomedical research community for their warm welcome. In his remarks, he described his priorities and the opportunities he sees for biomedical, behavioral, and social science research. Collins also emphasized the need for NIH and the scientific community to work with Congress to advance research and health, especially given the budgetary challenges NIH currently faces, maintaining the momentum that has been afforded by the resources provided by the American Recovery and Reinvestment Act.

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## **PRESIDENT'S CALL TO ACTION: 'EDUCATE TO INNOVATE'**

In 2009, President Obama launched an "Educate to Innovate" campaign designed to improve the participation and performance of America's students in science, technology, engineering, and mathematics (STEM). The campaign was designed to include efforts not only from the federal government but also from leading companies, foundations, non-profits, and science and engineering societies to work with young people across America to excel in science and math. When announcing the initiative, the Administration explained that as a part of the campaign, it hoped to do a series of events, announcements and other activities that build upon the President's "call to action" and address the key components of this national priority.

Leaders from private companies and universities, foundations and non-profits, and organizations representing millions of scientists, engineers, and teachers from across America are supporting the campaign, according to the White House. The initial commitment of the private sector has been than \$260 million.

Obama stressed that the key to meeting the challenges before America, "improving our health and well-being, to harnessing clean energy, to protecting our security, and succeeding in the global economy, will be reaffirming and strengthening America's role as the world's engine of scientific discovery and technological innovation. And that leadership tomorrow depends on how we educate our students today, especially in those fields that hold the promise of producing future innovations and innovators. And that's why education in math and science is so important."

At that time, he also announced that he plans to have an annual science fair at the White House with the winners of national competitions in science and technology. "Scientists and engineers ought to stand side by side with athletes and entertainers as role models, and here at the White House we're going to lead by example. We're going to show young people how cool science can be," said the President.

Obama went further: "We're going to expand opportunities for all our young people - including women and minorities who too often have been underrepresented in scientific and technological fields, but who are no less capable of succeeding in math and science and pursuing careers that will help improve our lives and grow our economy. I also want to note that this is only the beginning."

On January 6, 2010 the President invited the winners of the Presidential Award for Excellence in Mathematics and Science Teaching (PAEMST) to the White House. PAEMST is a program administered by NSF for the White House. Awards are made annually to outstanding pre-college-level science and math teachers from across the country. The winners are selected by a panel of distinguished scientists, mathematicians and educators following an initial selection process done at the state level. Each year, the award alternates, going either to science and math teachers in grades K through 6 (as it is this year) or to those teaching in grades 7 through 12. The President applauded the awardees for "inspiring and educating a new generation in math and science."

While the event honored teachers and mentors, Obama stressed that it is not their responsibility alone. "All of us have a role to play in building an education system worthy of our children and ready to help us seize the opportunities and meet the challenges of the 21st century." Obama also emphasized the need to look further than the mentors honored at the January 6 ceremony. He called on the "200,000 scientists who work for the federal government to do their part in their communities: to speak at schools, to create hands-on learning opportunities through efforts like National Lab Day, and to help stoke that same curiosity in students which perhaps led them to pursue a career in science in the first place."

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## NIH AWARDS RECOVERY ACT FUNDS TO SUPPORT SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS EDUCATION

On January 7, the National Institutes of Health (NIH) announced that it will award nearly \$18.3 million (22 awards) to researchers over a two-year period in support of research designed to strengthen and enhance efforts to attract young people to biomedical and behavioral science careers and to improve science literacy in adults and children. NIH director Francis Collins stressed that "attracting the best and brightest students in science and medical careers is critical to developing a workforce capable of addressing the emerging and complex challenges in biomedical research." These awards reflect the Obama Administration's coordinated effort to improve science, technology, engineering, and math (STEM) education (see other story). "STEM education has the added value of advancing scientific literacy, a high priority for our nation," Collins added.

NIH funded the majority of these grants through the NIH Common Fund. The Common Fund, enacted into law by Congress through the 2006 NIH Reform Act, supports cross-cutting, trans-NIH programs with a particular emphasis on innovation and risk taking. The research will support STEM education in areas of greatest national need and address issues of equity in STEM competencies across racial, cultural and economic barriers.

The research will examine the: the efficacy of educational approaches toward promoting STEM competencies; teacher preparation development programs to support effective STEM teaching and informal science education; innovative approaches to STEM education; and identification of practices that overcome equity issues in STEM learning.

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## BREAST CANCER AND SOCIAL INTERACTIONS DISCUSSED AT NIH DECEMBER OBSSR LECTURE SERIES

On December 17, 2009 Sarah Gehlert presented her research on "Breast Cancer and Social Interactions: Identifying Multiple Environments that Regulate Gene Expression, as part of the National Institutes of Health (NIH) Office of Behavioral and Social Sciences Research's (OBSSR) lecture series.

Gehlert is the E. Desmond Lee Professor of Racial and Ethnic Diversity at the Brown School and a scholar at Washington University's Institute for Public Health. Her presentation was based on her work as principal investigator and director for the Interdisciplinary Health Disparities Research (CIHDR) at the University of Chicago. Her research explores why the mortality rate for breast cancer is higher for black women versus white women. CIHDR is one of eight centers funded in 2003 through the NIH's Centers for Population Health and Health Disparities initiative.

Gehlert described the use of a transdisciplinary research model to examine the potential relation of genes, hormones, psychological factors, social circumstances, and community and neighborhood factors to mammary gland tumor development. CIHDR, she noted, is comprised of social workers, psychologists, physicians, oncologists, biologists, and civil engineers working on four intertwined research projects. The projects establish the connection of social circumstances to biological outcomes of breast cancer in black women by reviewing animal and human models at the genetic, hormonal, psychological, social, environmental, and population levels. The central question for each of the projects is why, despite the fact that white women are more likely to develop breast cancer; African American women are more likely to die from the disease.

CIHDR uses a novel model "based on identifying each link in a downward causal chain from the population or social to the disease or genetic level." According to Gehlert, the chain starts at the top with race, poverty, disruption, and neighborhood crime, moves to isolation, acquired vigilance, and depression; then to stress-hormone dynamics; and finally to cell survival and tumor development. The CIHDR model, while not the only disease-specific model of health factors, Gehlert explained, is unique in its ability to demonstrate important links among those factors. It emphasizes downward causation, in which upstream determinants at the social and environmental levels influence and regulate events at lower levels of organization from individual behavior and physiology to the cellular and genetic interactions of health and disease.

She pointed out some of the challenges that transdisciplinary researchers' face as a result of working outside of their discipline with researchers from different backgrounds. These challenges include such issues as the lack of uniform research process skills, disincentives from academic institutions, and a desire to adhere to the knowledge base of one's discipline. Such challenges can breed distrust and conflict among those participating in the research project. Gehlert described the four interdependent projects that make up CIHDR and are designed to determine the causal links through which genetic mechanisms are regulated by the social environment.

Project 1 looks at the development of mammary tumors and the ovarian function of group-living rats that have been socially isolated. As group-living rats were isolated during various points in their lives, they showed signs of increased stress-hormone levels, hyper-vigilance and did not explore or seek out food in their cage. Even after returning to the group, the isolated rats' interactions were impaired and stress levels remained elevated. Subsequently, these isolated rats were 84 times more likely to have mammary tumors than the non-isolated rats. This suggests a strong link between elevated stress and isolation and tumor development. The use of animal models, Gehlert noted, adds to the investigators' understanding of the determinants of health disparities by allowing manipulation of social conditions using experiments and provides a perspective on gene/environment interactions throughout the lifecycle.

Project 2 explores the exposures prior to diagnoses, social environment, and psychological risk factors for black breast cancer patients in the south side of Chicago and Nigeria. Results show similarities between

BRCA-1 related breast cancer (a mutation of the BRCA-1 gene that leads to early breast onset breast cancer) and the tumors of black women. Using what is described as the McClintock mode developed from Project 1 that identifies an increase in tumor growth as a result of social isolation, the researchers determined that social factors, such as depression, assault, and loneliness cause a constant increase of stress hormones, which leads to the alteration of pathways that lead to BCRA-1 mutations and early onset of breast cancer.

Project 3 uses a community-based participatory research (CBPR) model to explore the views of African-American women in south side Chicago undergoing treatment for breast cancer. It tests the validity of the McClintock model through examination of the neighborhood and community factors, living situations, social connectedness, behavioral responses, and biological and health outcomes of the patients to determine possible correlations. Results show that women who are exposed to more negative factors resulting in social isolation also have increased stress hormone levels and other biological factors that facilitate tumor growth.

Project 4 evaluates the rate of mammary tumor growth, responses to chemotherapy, and chemoprevention in relation to varying stress levels using two types of rats. Current results support the hypothesis that stress from social isolation increases the rate of mammary tumor growth, increases a tumor's resistance to chemotherapy, and decreases the susceptibility of mammary glands to chemoprevention in both types of rats.

Gehlert noted that future CIHDR projects will evaluate the outcomes of social and biological interventions to determine the downstream effect of social intervention on health outcomes at biological level.

*(Briana Walters of the National Association of Social Workers contributed to this story.)*

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### NIH DIRECTOR'S OPPORTUNITY FOR RESEARCH PROGRAM ESTABLISHED

Using resources provided by the American Recovery and Reinvestment Act of 2009, the National Institutes of Health (NIH) has established the "NIH Director's Opportunity for Research in Five Thematic Areas" designed to support projects that address research in specific areas that will benefit from significant three-year funds without the expectation of continued NIH funding beyond this period. Research supported is expected to have high short-term impact, and "a high likelihood of enabling growth and investment in biomedical research and development, public health, and health care delivery."

The five areas align with the opportunities identified by NIH director Francis Collins (see Update, Sept 14, 2009 ) are:

**Applying Genomics and Other High Throughput Technologies:** In the past, many basic biomedical science projects were limited in scope to some aspect of genetics, cell biology, or physiology. The revolution now sweeping the field is the ability to be comprehensive.

**Translating Basic Science Discoveries into New and Better Treatments:** Armed with a wealth of basic science discoveries and an understanding of the pathophysiology of various diseases, we are embarking on the next frontier in designing new diagnostic and therapeutic strategies.

**Using Science to Enable Health Care Reform:** Quality, affordable health care for all Americans cannot occur without significant advances in the underlying science that will enable effective and efficient disease prevention and diagnosis, as well as the identification of better and cheaper treatments. Clinical research targeted toward health disparities, social and behavioral factors, large-scale prospective population cohort analysis, comparative effectiveness, cost-effective prevention and personalized

medicine, and pharmacogenomics will allow us to assess and mitigate disease risks, predict outcome and optimize treatment. Health services research that includes health information technology and health research economics will enhance the safety, quality and efficiency of the health care delivery system, as well as facilitate health promotion.

**Focusing on Global Health:** The NIH has a long tradition of supporting the discovery phase of solutions to major global health challenges, and recent scientific advances in genomics, small molecule screening technologies, and vaccine development portend the possibility of further major impacts on some of the most challenging and harmful diseases worldwide. This theme encourages a greater focus on global health and new emphasis on formulating prevention and intervention strategies to tackle a number of infectious and parasitic diseases, chronic non-communicable diseases and injuries, and other neglected diseases striking the developing world, with the goal to reduce morbidity and mortality associated with these diseases worldwide.

**Reinvigorating the Biomedical Research Community:** The lifeblood of biomedical research in the United States rests upon the talent and dedication of its scientists and the support of innovative research. This theme encourages investigators to cultivate new collaborations and to assemble multidisciplinary or interdisciplinary teams in conducting innovative research on the most challenging biomedical and behavioral areas. The goal is to strengthen our research capacity, to broaden our research base and to enhance cross-fertilization of disciplines by recruiting new investigators and new expertise into the research community, and by developing and retaining these talents in a collaborative environment that fosters creativity and exploration.

**Letters of Intent are due on February 15, 2010. Applications are due March 15, 2010.** For more information or to apply see <http://grants.nih.gov/grants/guide/rfa-files/RFA-OD-10-005.html>.

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## NIAMS SEEKS COMMENTS ON ITS LONG-RANGE RESEARCH PLAN

The National Institute on Arthritis and Musculoskeletal and Skin Diseases (NIAMS) is seeking comments on its current version of the NIAMS Fiscal Year (FY) 2010-2014 Long-Range Research Plan. According to NIAMS director Steve Katz, the plan is designed to "serve as a broad scientific outline for the NIAMS by identifying compelling research opportunities and needs that will inform [the Institute's] priority-setting process, while enabling the Institute to adapt to the rapidly changing biomedical and behavioral science landscapes. Over time, it will help propel research progress related to the understanding, diagnosis, treatment, and, ultimately, prevention of arthritis, musculoskeletal, and skin diseases." Katz acknowledges that the plan is "not comprehensive and that not all research areas were able to be addressed."

The NIAMS Long-Range Plan for FY 2010-2014 cover the five areas of the Institute's broad mission: Arthritis and Rheumatic Diseases; Skin Biology and Diseases; Bone Biology and Diseases; Muscle Biology and Diseases; and Musculoskeletal Biology and Diseases. It is noted in the Plan's executive summary, "shifts in modern science have brought to light the importance of acknowledging trans-disciplinary areas and approaches. Many of the complex diseases and conditions relevant to the NIAMS mission can be seen through a new lens using genome-wide analyses, novel behavioral/biopsychosocial research methods, systems biology approaches, and new imaging modalities."

Four cross-cutting areas, highlighting needs and opportunities that are relevant to many of our research communities have been selected: Health Disparities, Infrastructure, Training and Career Development, and Information Dissemination and Outreach. Below are the sections of the Plant that addresses behavioral and biopsychosocial research under arthritis and rheumatic diseases, and skin and biology diseases.

**Arthritis and Rheumatic Diseases: Behavioral and Biopsychosocial Research** Understanding the etiology, pathogenesis, and outcomes of rheumatic diseases, and developing effective strategies for their

prevention and treatment, requires a multifaceted approach. These endeavors necessitate collaborative research efforts that integrate approaches and perspectives from multiple disciplines.

Biomedical research in the rheumatic diseases continues to yield important discoveries regarding genetic, immunologic, and other biological factors in these conditions. Behavioral and social science research are contributing important epidemiologic information and approaches to managing the distressing symptoms of these disorders (see box below).

However, studies integrating behavioral, basic biomedical, and clinical rheumatology perspectives have been extremely limited to date. The potential of the behavioral and social sciences and a biopsychosocial approach to advance research in the rheumatic diseases has not been fully realized. Interdisciplinary investigations that integrate behavioral and biomedical sciences will likely enhance treatment of these diseases, reduce disability, and may shed light on the complex mechanisms involved in disease processes.

Broad areas of potential research directions include:

## 1. Biobehavioral

- Define genetic and environmental influences on behaviors relevant to health and disease.
- Investigate the central nervous system-endocrine-immune interactions that contribute to disease mechanisms and clinical symptoms.
- Explore cognition and cognitive dysfunction in rheumatic diseases, including the use of brain imaging and assessment of relationships between cognition, mood disturbance, and disease activity.
- Use biopsychosocial approaches to understand gender, ethnic, and socioeconomic differences in clinical disease, symptom perception and management, and interactions with health-care systems.
- Generate theoretical models for the potential influence of stress on disease course and presentation (e.g., symptom flares). Research the influence of stress management techniques and interventions on illness, and study potential mechanisms of stress-illness effects.
- Study fatigue in the rheumatic diseases, focusing on epidemiological issues, potential mechanisms, prevention, and treatment.
- Investigate sleep disturbances and their relationship to disease process, symptoms, and disability in rheumatic diseases.
- Address issues in pediatric rheumatology, including pain, psychosocial adjustment, physical functioning, and intervention.
- Develop animal models to elucidate biobehavioral mechanisms in rheumatic diseases.

## 2. Therapies

- Conduct studies on the management of chronic symptoms, such as itch, fatigue, and pain.
- Investigate placebo responses to pain and treatment, and the impact of catastrophizing and individual pain experiences in disease management and treatment response.
- Explore integrative and complementary therapies, such as biofeedback, relaxation, mind-body interactions, cognitive behavioral therapy, and exercise.
- Investigate the role of non-pharmacological treatments and combined individual, group, and

technology-based interventions for the self-management and improvement of health-related behaviors.

### 3. Psychosocial

- Study the biological, social, and behavioral interactions as they relate to disease onset, progression, and outcomes.
- Define the effect of systemic and societal influences on disease progression, treatment response, quality of life, and other patient-reported outcomes in rheumatic diseases.
- Study the variability in patient outcomes, related to differences in behavior, gender, ethnicity, family environment, prior trauma, education, physiology, or a combination of factors.
- Explore behavioral factors that influence patient interactions with providers, and how this experience affects treatment response and long-term outcomes.
- Examine psychosocial prevention and intervention models from other disorders (e.g., diabetes, AIDS), for the promotion of healthy behaviors and management strategies for people/patients with rheumatic diseases.

### Skin Biology and Diseases: Behavioral and Biopsychosocial Research

- Environmental triggers of many skin diseases, such as ultraviolet radiation from the sun for skin cancer, are modifiable risk factors. These risk factors underscore the role of behavior as a contributor to disease and create the opportunity for prevention and intervention through behavior modification. Mortality is a rare outcome for the majority of skin diseases, but discomfort from wounds and itching can have tremendous impact on patients' quality of life and behavior. Patients with disfigurement from skin diseases are frequently affected by psychosocial problems due to social stigmas.
- Broad areas of potential research directions include:
- Explore measures, including behavioral modification and protective strategies, to prevent skin exposure to ultraviolet radiation, which has adverse effects during teenage years and cumulatively in aging populations.
- Conduct behavioral and psychobiology studies that have the potential to improve understanding of the mechanisms of skin disease.
- Study the mechanisms by which stress affects skin disease progression, and how stress management techniques and interventions impact disease outcomes and response to therapy.
- Determine how the placebo effect influences disease outcome and response to therapy.
- Investigate the management of chronic symptoms, such as itching and pain, as well as ways to minimize the effect of these symptoms on sleep and overall quality of life.
- Use biopsychosocial approaches to understand how gender and/or ethnic and/or socioeconomic differences influence clinical disease outcomes, symptom perception and management, and interactions of patients with the health-care system.
- Incorporate use of patient-reported outcomes instruments into clinical trials in skin diseases, to assess the effects of therapy on disease-specific quality of life.

- The Skin Biology and Diseases programs at the NIAMS cover basic, translational, and clinical research in skin, including work on the developmental and molecular biology of skin, the study of skin as an immune organ, and autoimmune, inflammatory, and genetic diseases of skin. These fundamental research findings contribute to the development of tools for clinical diagnosis, therapeutics, and disease management strategies.

The entire Plan is posted ([http://www.niams.nih.gov/About\\_Us/Mission\\_and\\_Purpose/draft\\_long\\_range\\_plan.asp](http://www.niams.nih.gov/About_Us/Mission_and_Purpose/draft_long_range_plan.asp)) and is available for public comment through January 15, 2010.

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### POPULATION ASSOCIATION BECOMES COSSA'S 18<sup>TH</sup> GOVERNING MEMBER

The Population Association of America (PAA) has elevated its status to become COSSA's 18<sup>th</sup> Governing Member, its top tier of membership. The PAA is a nonprofit, scientific, professional organization established to promote the improvement, advancement and progress of the human race through research of problems related to human population. PAA joined COSSA in 1982 as one of its first Affiliate (now called Membership Organizations) members. The PAA will now receive a seat on the COSSA Executive Committee and two seats on its Board of Directors. COSSA looks forward to continuing its relationship with the PAA and working together to promote and advance the social and behavioral sciences.

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