



# COSSA

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## Congress Leaves for Election; CR Funding Government

On September 29, after passing a Continuing Resolution (CR) to keep government agencies and programs funded until December 3, the House and Senate left for their pre-election recess. When they return on November 15 for a lame-duck session many expect that the political landscape will have changed.

With a few exceptions, notably the Census Bureau, agencies and programs are funded for the first nine weeks of Fiscal Year (FY) 2011 at their FY 2010 levels. The Census Bureau, which had an enormous budget in FY 2010 to conduct the decennial count, had its CR funding pegged at the President's request for FY 2011.

On their return, Congress will need to confront the issue of whether to enact the regular FY 2011 funding bills in one big Omnibus spending bill. Democrats hope this can occur. Republicans, anticipating significant gains in the 2010 elections, might rather wait until next year, as occurred when the Democrats took over the House and Senate following the 2006 elections.

Congress and the Administration will also continue to face the expiration of the 2001 and 2003 Bush tax cuts. The debate will probably go into December and may be influenced by the report of the President's Fiscal Commission due to report on December 1.

## Suresh Confirmed as NSF Director

Before leaving town, the Senate confirmed Subra Suresh as the new director of the National Science Foundation (NSF). Suresh, Dean of Engineering at MIT, was nominated by President Obama on June 3. (For Suresh's full background see Update, [June 14, 2010](#)).

Sociologist and former COSSA Board Member Cora Marrett has served as Acting Director since director Arden Bement's departure at the end of May. Marrett, who had been serving as Acting Deputy Director, has subsequently been nominated by the Administration to serve as Deputy Director. The Senate has not considered her nomination.

## Collins Addresses Dental and Craniofacial Advisory Council: Discusses NIH's Budget

National Institutes of Health (NIH) director Francis Collins has been making the rounds of the recent quarterly meetings of the 27 institutes' and centers' advisory councils. On September 27, Collins addressed the [National Advisory Dental and Craniofacial Research Council](#) (NADCRC).

Collins began by observing that the National Institute of Dental and Craniofacial Research (NIDCR) is an "important" institute and is doing "interesting work." Referencing to his recent appointment of Lawrence Tabak as NIH's Principal Deputy Director, Collins noted that it was apparent that NIDCR is at an obvious juncture in terms of leadership (see Update, [September 13, 2010](#)). Tabak served as the NIH Acting Deputy Director in the interim between Collins appointment and former NIH director Elias Zerhoun, while Raynard Kington served as Acting Director.

Collins also recognized Isabel Garcia, NIDCR's Deputy Director, who is currently serving as NIDCR's Acting Director, and indicated that he is moving forward to replace Tabak. He announced the formation of a search committee co-chaired by the directors of two institutes that have a shared interest with NIDCR: Alan Guttmacher, the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, and Roderick Pettigrew, National Institute of Biomedical Imaging and Bioengineering. Collins expressed his hope to have a director appointed by spring 2011.

Collins reported on the Scientific Management Review Board's deliberations regarding the feasibility of a merger of the National Institute on Drug Abuse and the National Institute of Alcohol Abuse and Alcoholism (see Update, [September 27, 2010](#)). He recognized that there was concern within NIDCR of the institute getting caught up in that discussion. There is "no intention of changing [NIDCR's] part of the organizational structure other than to find the institute a great leader," Collins reassured the Advisory Council.

He then turned to the "sobering reality" of available resources the agency has to invest in research. He highlighted the fact that the President's budget for FY 2011 proposes an additional \$1 billion above the FY 2010 funding level. Collins acknowledged that the proposed increase is "remarkable considering the economic situation we are in and concerns about the deficit." There is, however, he warned, a big issue because of the big difference between FY 2010 and FY 2011, which resulted from the "wonderful addition of the \$10 billion from the American Recovery and Reinvestment Act (Recovery Act) which made it possible after five years of flat funding to invest in a great deal of exciting research."

The Recovery Act funding has "provided some fascinating new ideas and projects that the agency would like to see go forward," insisted Collins, adding that science, however, "does not operate on two-year cycles so the NIH is facing this cliff of a total of \$36 billion [in FY 2010], if you count the Recovery Act dollars to \$32 billion in FY 2011." He cautioned that the NIH's budget situation is actually worse if you factor in inflation, which is measured by the Biomedical Research and Development Price Index (BRDPI). The index indicates how much the NIH budget must change to

maintain purchasing power. It was developed and is updated annually by the Bureau of Economic Analysis (BEA) within the Department of Commerce under an interagency agreement with the NIH.

Collins explained that when BRDPI is factored into the equation, it reveals that 2003 was the agency's best year and the NIH "has been losing ground every since." So in terms of real purchasing power, NIH is where it was in 2001 and 2002, said Collins. This has consequences, he cautioned, that are going to be difficult for the agency to manage. It will be most difficult from the view of the applicant and what happens to success rates at a time where there is a "great deal of scientific outpouring," especially in those areas stimulated by Recovery Act. Reviewing the success rate since 1979, Collins lamented that a success rate of 20 percent is a very difficult one for investigators and reviewers. It will force "many people to rewrite and rewrite and resubmit grant applications repeatedly only to be turned away." According to Collins, a success rate of 25-30 percent would eliminate some of this tension.

### **'We Need That Next Generation'**

Collins maintained that barring some very unexpected developments in the ultimate decision about the NIH FY 2011 budget, which is not anticipated to get better than the President's budget, and it may get worse, success rates will likely fall further in FY 2011 to perhaps "historically low" numbers. He stressed that there "is no magic" in terms of figuring out how to address this in a way that is going to limit the consequences to those involved in the biomedical research enterprise. He also warned that NIH "must not hunker down and not do anything new." That would be the worse decision," he contended.

Collins maintained that if the NIH is going to continue to encourage innovation to come up with new ideas that are ripe for exploration, the agency "will have to be very careful in looking at long-term projects that may not be quite as productive as some of the new things." The NIH will have to think about ways to do those adjustments and that will not come "without a good deal of distress" on everybody's part. Of great concern to the NIH director is the need to make it clear in the grant award process that early stage investigators have a chance to be part of this career path. "We need that next generation," he asserted. The worse thing that the agency could do is to chase potential early stage investigators away, he added.

Responding to a question from a NADCR Council member regarding what the patient community could do to support the NIH, Collins stressed the need for NADCRC members "to continue to make the case" when they were not acting in an official capacity as a Council member "for biomedical research in the broadest sense." "We have to avoid the circumstance when things get tight to say one area of research is so much more important than the rest" which results in "tension between advocacy groups which gives people excuses not to pay attention to any of it. Getting all of the voices together would be a timely [endeavor] at this juncture," related the director. The case, stressed Collins, is really strong both in terms of what research can do for human health and the track record of the investments made by NIH. But they are not widely appreciated, acknowledging the lack of NIH name recognition and the fact that most people do not know what NIH is, he admitted.

Collins argued that the case can be made that NIH is good for the economy, noting a return of \$2.27 for each \$1 invested. Most importantly, said Collins, the community has to make the case that researchers are the life blood of the NIH enterprise and that it can't just shut that down and be expected to come back again. If we are going to have a future and not have all of science migrate to other parts of the world, we have to figure out how to sustain the enterprise, to empower it, and invigorate it, he insisted. Collins concluded that he is optimistic based on history and the time will come when things are less constrained than they currently are, "but clearly we are in for a bit of a rough ride for the next couple of years."

He further advised NADCRC members, when they are not serving on the Council, that a particular valued activity that they could do is to invite their elected officials to come to their institutions for a half-day to meet with young scientists excited about their work. This would help these officials

to realize biomedical research is relevant to their districts and not just about NIH in Bethesda. Most of the resources are out in their states and districts. Collins related that he is surprised by the number of members of Congress who have not seen what the funding they approved are doing for the institutions in their districts.

Responding to a second question regarding education reform, the pipeline and science and whether the NIH is in a position to get more actively involved in this effort, Collins answered that although compared to the National Science Foundation (NSF) and the Department of Education (ED), the NIH's mandate for K-12 education has never been particularly clear in its congressional appropriations. At the same time, NIH has been supporting a variety of programs through the institutes "because we do believe that is our future." If we are not more successful in recruiting the next generation the agency will find itself hurting for talent in the future, he insisted. He pointed out the strong effort from the Administration to support K-12 education. He shared that there are things the NIH can do with the efforts underway to link them more closely with NSF and Education, noting that he has had conversations on this topic with the heads of NSF and ED. He cautioned that he would like to figure out how to unleash the excitement of NIH grantees interested in putting together new curriculum without eating into the agency's research budget too heavily.

## Easton Outlines IES Priorities to Board

John Easton, director of the Institute of Education Sciences (IES), submitted his final priorities to the National Board for Education Sciences (NBES) on September 29. Eric Hanushek of the University of Texas at Dallas and the Hoover Institution chairs the NBES, which advises and consults with the Director on the policies of the Institute and considers and approve priorities proposed by the Director to guide the work of the Institute.

IES's mission is to expand the knowledge and understanding of education, and to provide education stakeholders with reliable research and useful information. Through supporting research, conducting evaluations and the promotion of scientific evidence, IES's goal is to generate knowledge that will assist educators and policymakers in assessing and improving the education system. In addition to supporting new research, IES also promotes the dissemination of existing and ongoing research to policymakers and practitioners.

Easton's priorities include many of the major elements of the current school reform movement. In his written proposal to the board he states the "priorities address a broad range of education related outcomes for all students."

The priorities would affect a wide range of students from infants and toddlers to young adults in postsecondary education and adults in need of education and vocational training. Priorities include: "developmental outcomes for infants and toddlers with disabilities; school readiness; learning higher order thinking; achievement in reading, writing, math and science; and educational attainment in postsecondary, vocational and adult education."

To support these priorities IES plans to continue examining the state of education, by developing and evaluating innovative research, identifying education policies, programs and practices that improve educational outcomes for all students and determine for what students and under what conditions they are effective. IES will also continue to encourage close partnerships between researchers, practitioners and other stakeholders.

## NIH's ORWH Releases 'A Vision for 2020 for Women's Health Research;' Holds Scientific Symposium

The National Institutes of Health (NIH) Office of Research on Women's Health (ORWH) has updated

the NIH women's health research agenda, *A Vision for 2020 for Women's Health Research: Moving Into the Future with New Dimensions and Strategies*. It is the "culmination of a two-year strategic planning process, involving more than 1,500 leading scientists, women's health advocates, public policy experts, health care providers, Federal, State, and local elected officials, and the general public in five regional scientific meetings."

NIH Associate Director for Research on Women's Health and ORWH director Vivian Pinn states in the preface to the Strategic Plan that it "not only articulates new priorities, but also strongly reinforces existing areas, such as interdisciplinary and sex differences research." Pinn emphasizes that the Strategic Plan, the third since the Office was established, is not disease specific, unlike earlier reports. This iteration of the Strategic Plan acknowledges that the "health of women has a direct bearing on the health of their families, and communities, and ultimately, the health of societies. Women's health research must encompass global considerations and continue to seek ways to address the pressing health needs of women worldwide."

The Strategic Plan has three overarching themes: 1) Advancing understanding of biological sex differences in health and disease; 2) Emerging new scientific fields and technologies that can provide unique opportunities to maximize research; and 3) Fostering partnerships to improve the translation and dissemination of health information. Its goals include:

1. Increase sex differences research in basic science studies - An expanded conceptual framework is needed that explores variations due to sex as an integral part of the search for knowledge across the entire research spectrum beginning at the most basic laboratory level. "This should encompass research in diverse fields . . . [including the] behavioral and social sciences."
2. Incorporate findings of sex/gender differences in the design and application of new technologies, medical devices and therapeutic drugs.
3. Actualize personalized prevention, diagnostics, and therapeutics for girls and women. Personalized medicine considers individual differences in genetics, morphology, behavior, and health history. A comprehensive approach to personalized medicine must take into account biological sex, age, and factors such as social and cultural influences. Efforts to translate clinical knowledge into interventions, services, and policies with measurable public health impact have had mixed success. To truly affect women's health, translational research must go beyond "bench to bedside" by pursuing opportunities for dissemination and community uptake and involvement, including advocacy and policy development. Achieving this goal will require interdisciplinary collaboration and communication between basic science researchers, clinical researchers, behavioral scientists, public health researchers, clinicians, the community and policymakers.
4. Create strategic alliances and partnerships to maximize domestic and global impact on women's health research. These strategic alliances and partnerships should include women's health stakeholders, such as NIH institutes, centers, and offices; other Federal agencies; academia; advocacy groups; foundations; and industry are imperative to furthering women's health research. Another objective is to partner with professional societies to include women's health research issues in national scientific meetings and conferences, including those involving career training and development.
5. Develop and implement new communication and social networking technologies to increase understanding and appreciation of women's health and wellness research.
6. Employ innovative strategies to build a well-trained, diverse, and vigorous women's health research workforce. Although women are well represented in early career phases of the life sciences, there is a well-recognized underrepresentation or absence of women in senior research leadership positions. It is therefore essential to learn from and expand upon successful efforts and develop and implement innovative programs and policies that will attract, retain, and advance women throughout their scientific careers.

## ORWH Holds Scientific Symposium to Celebrate 20th Anniversary

On September 27, ORWH held a scientific symposium on the NIH Bethesda campus to celebrate the 20<sup>th</sup> anniversary of the Office. Established in 1990, ORWH was the first public Health Service office dedicated specifically to women's health. Statutorily authorized in the NIH Revitalization Act of 1993, the Office serves as the focal point for women's health research at the NIH. According to Pinn, ORWH felt that a symposium was an appropriate way to celebrate given the challenge the office had in proving that it was not just a "politically correct" office but would "deal in science-driven initiatives."

Pinn paid homage to the late Assistant Secretary for Health of the U.S. Department of Health and Human Services Edward Brandt who established the first Public Health Service (PHS) task force on women's health research in 1983. That committee continues today as the Coordinating Committee on Women's Health, she noted. Brandt brought attention to the need for data and research on women's health. The symposium can be viewed at <http://videocast.nih.gov/Summary.asp?File=16165>.

## NAS Report on Women's Health Research: Inadequate Attention to Social and Environmental Factors

In 1985, the Public Health Service Task Force on Women's Health Issues concluded that "the historical lack of research on women's health concerns has compromised the quality of the health information available to women as well as the health care they receive." The report spawned a number of changes in government support of research, in policies, in regulations and in organization, notes the recently released September 2010 Institute of Medicine (IOM) report on ***Women's Health Research: Progress, Pitfalls, and Promise***. In the Consolidated Appropriations Act of 2008 (Public Law 110-161) Congress provided funding to the Department of Health and Human Services Office on Women's Health (OWH) to support an IOM study to examine the status of women's health research and to report on suggestions for the direction of future research.

The IOM Committee on Women's Health Research is chaired by Nancy Adler, University of California, San Francisco. The Committee developed a series of questions to guide its deliberations:

- Is women's health research studying the most appropriate and relevant determinants of health?
- Is women's health research focused on the most appropriate and relevant health conditions?
- Is women's health research studying the most relevant groups of women?
- Are the most appropriate research methods being used to study women's health?
- Are the research findings being translated in a way that affects practice?
- Are the research findings being communicated effectively to women?

In the preface to the report, Adler highlights the fact that "the concept of women's health has expanded beyond a narrow focus on disorders associated with the female reproductive system to encompass other diseases that create significant burden in women's lives...This broader approach to women's health and related research moves towards a woman-centered view rather than a disease-centered view."

The Committee acknowledged that "substantial progress has been made since the expansion of investment in women's health research." Findings from this research have "changed the practice of medicine and public-health recommendations in several prominent contexts." The report also recognizes the decreases in mortality in women from breast cancer, heart disease, and cervical cancer. There has been less progress, however, in research on other conditions that affect women

and identification of ways to reduce disparities among subpopulations of women.

Adler also noted the challenges faced by the Committee, including its inability to conduct a comprehensive review of the literature on all potential health conditions and determinants, or even for any single health condition or determinant. The report, she cautions, should be seen as highlighting some of the relevant research used by the Committee to draw general conclusions and make recommendations.

### Recommendations

Among its key findings and recommendations in the Committee found that "there has been inadequate attention to social and environmental factors that, along with biologic risk factors, influence health." At the same time, the Committee acknowledges that "Considerable progress has been made in understanding the behavioral determinants of women's health that involve social, community and societal factors." The Committee also found that "women who experience social disadvantage as a result of race or ethnicity, low income, or low educational level suffer disproportionate disease burden, adverse health outcomes, and barriers to care but have not been well represented in studies of behavior and health."

1. U.S. government agencies and other relevant organizations should sustain and strengthen their focus on women's health, including the spectrum of research that includes genetic, behavioral, and social determinants of health and how they change during one's life. Relevant agencies include the Department of Health and Human Services (National Institutes of Health (NIH), the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), the Agency for Healthcare Research and Quality (AHRQ), and the Substance Abuse and Mental Health Services Administration, Department of Veterans Affairs, the Department of Defense, and the Environmental Protection Agency.
2. The NIH, AHRQ, and CDC should develop targeted initiatives to increase research on the population of women that have the highest risks and burdens of disease.
3. Research should include the promotion of wellness and quality of life in women. Research on conditions that have high morbidity and affect quality of life should be increased. Research should include the development of better measures or metrics to compare effects of health conditions, interventions, and treatments on quality of life.
4. Cross-institute initiatives in the NIH -- such as those in the Division of Program Coordination Planning and Strategic Initiatives - should support research on common determinants and risk factors that underlie multiple diseases and on interventions on those determinants that will decrease the occurrence or progression of diseases in women. The NIH Office of Research on Women's Health should increase collaborations with the Office of Behavioral and Social Sciences Research to design and oversee such research initiatives.
5. Government and other funding agencies should ensure adequate participation of women, analysis of data by sex, and reporting of sex-stratified analyses in health research. Given the practical limitation in the size of research studies, research designs and statistical techniques that facilitate analysis of data on socio-demographic subgroups without substantially increasing the overall size of a study population should be explored. Conferences or meetings with a specific goal of developing consensus guidelines or recommendations for such study methods should be convened by NIH, other federal agencies and relevant professional organizations.
6. Research should be conducted on how to translate research findings on women's health into clinical practice and public-health policies rapidly.
7. The Department of Health and Human Services should appoint a task force to develop evidence-based strategies to communicate and market health messages that are based on research results to women.

The full report of *Women's Health Research: Progress, Pitfalls, and Promise* can be found at [http://www.nap.edu/catalog.php?record\\_id=12908](http://www.nap.edu/catalog.php?record_id=12908).

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## GAO Tells Science Agencies to Figure Out How to Determine High-Risk, High-Reward Research

While the 2010 reauthorization of the America COMPETES legislation remains unfinished, the Government Accountability Office (GAO) has attempted to fulfill one of the requirements of the original COMPETES law enacted in 2007. That law required GAO to evaluate, within three years following its enactment, the effectiveness of authorized programs.

On October 7, GAO sent a letter to key Members of Congress, Sens. Jay Rockefeller (D-WV), and Kay Bailey Hutchison (R-TX), Chairman and Ranking Member of the Commerce, Science and Transportation Committee, Sens. Jeff Bingaman (D-NM) and Lisa Murkowski (R-AK), Chairman and Ranking Member of the Energy and Natural Resources Committee, and Reps. Bart Gordon (R-TN) and Ralph Hall (R-TX), Chairman and Ranking Member of the Science and Technology Committee, that examined the implementation of COMPETES at the Departments of Commerce's National Institute of Standards and Technology (NIST) and Energy, and the National Science Foundation (NSF).

The main conclusion GAO reached is that "it is too early to evaluate the programs long-term effectiveness," and the expenditure of approximately \$30 billion in research and science education funding.

GAO also pointed out that COMPETES required the science agencies to "strive to support and promote innovation by setting a goal of allocating an appropriate percentage of its basic research budget toward funding high-risk, high-reward research." The act, according to GAO, describes high-risk, high-reward research projects "as those that should also (1) meet fundamental scientific or technical challenges, (2) involve multidisciplinary work, and (3) involve a high degree of novelty."

The Agencies are annually required to report whether they have set a percentage funding goal for high-risk, high-reward research, whether the goal is being met by the agencies and describe the activities funded, and report this information to Congress along with documents supporting their annual budget. In its review, GAO admonished the agencies for not fulfilling this requirement insisting they "could improve [their] reporting of high-risk, high-reward research priorities."

In a letter signed by Acting Director Cora Marrett, NSF responded that: "After considering the GAO recommendation regarding high-risk/high-reward research, NSF does not support setting a percentage goal for high-risk/high-reward at either an agency level or government-wide. The ability to identify *a priori* during the review stage proposals that will lead to transformative results before the research is conducted and before the scientific community can assimilate the findings is challenging, and in most cases, impossible. In addition, as noted by advisory committees to NSF, there is no basis to determine an appropriate set-aside for high-risk/high-reward research funding within the NSF context."

GAO was not impressed and told NSF and the other agencies that it was a congressional requirement to figure out a percentage of this kind of research and report it in their budget submission.

The full letter is available at: <http://www.gao.gov/products/GAO-11-127R>.

## NSF Awards Grants to Study Water Supply and Quality

At the Association of American Geographers (AAG) 2010 meeting in mid-April, the Association's Past



President John Agnew of UCLA called the politics of water power the "defining issue of the 21<sup>st</sup> Century," where both domestic and international disputes have or will arise (see Update, [April 19, 2010](#)).

In early October, the National Science Foundation (NSF) announced that it has made 17 awards as part of its Water Sustainability and Climate Change solicitation. The research grants will allow scientists to examine the challenges facing the world in ensuring the adequate supply and quality of water, especially in light of burgeoning human needs and climate variability and change. The goal of these projects is to understand and predict the interactions of Earth's water system with climate change, land use, the built environment, and ecosystem function and services.

NSF points out that despite water's importance to life on Earth, major gaps exist in our understanding of water availability, quality and dynamics, and the impacts of a changing climate and human activity on Earth's water system. The awards are for studies of the water system using observations at specific sites, in combination with models that allow for spatial and temporal extrapolation to other regions, as well as integration across different Earth processes.

The solicitation was supported and managed by NSF's Directorate for Geosciences; Directorate for Engineering; Directorate for Biological Sciences; and Directorate for Social, Behavioral and Economic Sciences.

Social and behavioral scientists are the principal investigators on two of the grants. NSF awarded a workshop planning grant to Douglas Jackson-Smith, a rural sociologist at Utah State University, to examine the intended and unintended consequences of changes in water allocation and water use efficiency in response to anticipated climate change and urbanization. The project will build on the results of a co-located NSF-funded WATERS test bed watershed, a U.S. Department of Agriculture Conservation Effects Assessment Program research watershed, and an EPA Targeted Watersheds Project in the Intermountain West.

Professor John Braden an environmental economist from the University of Illinois, Urbana-Champaign has a project that would improve the understanding of coupled water systems, lead to development of predictive scientific models that incorporate human behavior, and enable policies and institutions that improve environmental outcomes while also increasing the economic value of water.

In addition, William Hargrove, director of the Center for Environmental Research & Management (CERM) at the University of Texas at El Paso, will conduct workshops to analyze the resilience, adaptability, and transformability of the ecological/social system in response to change. The system under study is the Middle Rio Grande River and the U.S./Mexico border at El Paso/Juarez, which presents unique challenges in a complex biophysical and socioeconomic environment complicated by violence, migration, and social inequities.

*This awards for this program is part of NSF's investment in Science, Engineering, and Education for Sustainability (SEES). The SEES portfolio address challenges in climate and energy research and education using a systems-based approach to understanding, predicting, and reacting to change in the natural, social, and built environments. Initial SEES efforts focused on coordination of a suite of research and education programs at the intersection of climate and environment, including specific attention to incorporating human dimensions.*

For more information about SEES go to: <http://www.nsf.gov/geo/sees/>.

## NRC Releases Research Doctorate Program Assessments

On September 28, the National Research Council of the National Academies released *A Data-Based*

*Assessment of Research-Doctorate Programs in the United States*, its long awaited report on the quality and effectiveness of doctoral programs based on measures important to faculty, students, administrators, funders, and other stakeholders.

Directed by Charlotte Kuh of the National Academy of Sciences, the report reflects years of discussion and guidance from a committee chaired by Jeremiah Ostriker, former Provost of Princeton University. Based on data, collected for the 2005-2006 academic year from more than 5,000 doctoral programs at 212 universities, and the report covers such characteristics as faculty publications, grants, and awards; student GRE scores, financial support, and employment outcomes; and program size, time to degree, and faculty composition. In addition, measures of faculty and student diversity are also included.

In addition to the data, the report contains illustrative ranges of rankings for each program, as well as ranges of rankings for three dimensions of program quality: research activity, student support and outcomes, and diversity of the academic environment. Unlike U.S. News and World Report and the BCS Rankings, there are no number ones, just ranges of excellence.

Accompanying the report is a comprehensive data table in Excel and a detailed explanation of the methodology used to collect data and calculate ranges of rankings. All three of these publications—the two reports and the data table spreadsheet—are available for downloading from <http://www.nap.edu/rdp/>.

## Expanding Underrepresented Minority Participation: 'Moving Beyond the Crossroads'

"America faces a demographic challenge with regards to its [science and engineering] (S&E) workforce: minorities are seriously underrepresented in science and engineering, yet they are the most rapidly growing segment of the population," according to the recently released September 30, congressionally-requested report, ***Expanding Underrepresented Minority Participation: America's Science and Technology Talent at the Crossroads***. The report is the product of the Committee on Underrepresented Groups and the Expansion of the Science and Engineering Workforce Pipeline, Committee on Science, Engineering, and Public Policy, Policy and Global Affairs; National Academy of Sciences, National Academy of Engineering, and Institute of Medicine. Freeman Hrabowski, President of the University of Maryland, Baltimore County, served as the Committee Chair.

According to the report, "underrepresented minority groups comprise 28.5 percent of our national population in 2006, yet just 9.1 percent of college-educated Americans in science and engineering occupations (academic and nonacademic)." "We start from a challenging position," Hrabowski pointed out when releasing the report. "This suggests the proportion of underrepresented minorities in S&E would need to triple to match their share of the overall U.S. population."

***Expanding Underrepresented Minority Participation*** acknowledges the series of reports "over more than half a century," documenting the importance of S&E to the U.S. It also highlights the ***Rising Above the Gathering Storm*** report which argues that the U.S. "was at a crossroads." ***Gathering Storm*** provided compelling recommendations for sustaining and increasing our knowledge workforce as part of a large plan to sustain our scientific and technological leadership, the Committee noted. "However, the recommendations are insufficient: a national effort to sustain and strengthen our science and engineering workforce must also include a strategy for ensuring that we draw on the minds and talents of all Americans, including minorities who are underrepresented in science and engineering and currently embody an underused resource and a lost opportunity." Hrabowski declared that this "is a transformative moment for the nation to seize this opportunity to not fail future generations."

The report was requested in 2007 by the late Senator Edward Kennedy (D-MA), former Senator

Hillary Clinton (D-NY), and Senators Barbara Mikulski (D-MD) and Patty Murray (D-WA) and included in the America COMPETES legislation. The Senators cited the need to develop a strong and diverse S&E workforce. The Committee's charge was to: **1)** Examine the role of diversity in the science, technology, engineering, and mathematics workforce and its value in keeping America innovative and competitive; **2)** Analyze the rate of change and the challenges the nation currently faces in developing a strong and diverse workforce; **3)** Identify best practices and the characteristics of these practices that make them effective and sustainable; and **4)** Write a consensus report that provides a prioritized list of actionable recommendations across stakeholder groups.

### **'Moving Beyond the Crossroads'**

Hrabowski emphasized that underrepresented minorities "aspire" to major in STEM in college as the same rates as their white and Asian peers. While this has been the case since the late 1980s, they have lower four- and five-year undergraduate STEM completion rates relative to those of whites and Asian Americans. And although we have been aware of these problems for some time, we as a nation have made little collective progress in addressing them, Hrabowski argued.

The report also recognizes that "there is a strong connection between increasing educational attainment in the United States and the global leadership of our economy." The Committee stressed that "drawing more deeply on diverse groups within our population has benefits beyond meeting the needs for scientists and engineers. Diversity is a resource for and strength of our society and economy." It also notes that "improving the education of our citizens . . . has further benefits to society." *Expanding Underrepresented Minority Participation* stresses that "the nation needs to pursue aggressive strategies to ensure greater participation of underrepresented minorities in the STEM workforce and to equip them with the technical competencies for emerging needs." The report suggests "a need to realign national policies and practices to integrate these policies and practices vertically and horizontally."

According to the report, fixing the problem will require that we address the issues of: preparation, access, motivation, financial assistance, academic support and social integration. There is substantial agreement about the need for strong pre-school programs, more qualified mathematics and science teachers in predominantly minority and low-income schools, challenging high school curricula that prepare underrepresented minorities for college. More is needed to attract and retain underrepresented minorities, low-income students, and first generation undergraduates who aspire to major in STEM. The report also cited the need for academic support and social integration constitutes keys to persistence and completion.

Hrabowski emphasized that "leadership is key to the successful transformation of institutions and development of sustainable programs." The report calls for leadership in "identifying and articulating minority participation and success as an institutional goal is essential at all levels for all stakeholders: the federal government, state, and local governments, employers, philanthropy, professional societies, educational institutions, programs, faculty, and students."

### **Recommendations**

The Committee made six broad recommendations, along with implementation actions that span the educational system and full spectrum of stakeholders. It also proposed two top priority actions that it believes "should serve as the near-term focal point for national policies for broadening participation."

- 1:** Prepare America's children for school through pre-school and early education programs that develop readiness, provide early mathematics' skills, and introduce concepts of creativity and discovery.
- 2:** Increase America's talent pool by vastly improving K -12 science and mathematics education for underrepresented minorities.

- 3: Improve K-12 mathematics and science education for underrepresented minorities overall by improving the preparedness of those who teach them those subjects.
- 4: Improve access to all post-secondary education and technical training and increase underrepresented minority student awareness of and motivation for STEM education and careers through improved information, counseling, and outreach.
- 5: Develop America's advanced STEM workforce by providing adequate financial support to underrepresented minority students in undergraduate and graduate STEM education.
- 6: Take coordinated action to transform the nation's higher education institutions to increase inclusion of and college completion and success in STEM education for underrepresented minorities. To implement this recommendation, the report calls for the federal government to increase funding for infrastructure, research, curriculum development, and professional development at minority serving institutions; create ADVANCE type programs for under-represented minorities. Institutions are urged to "articulate an institutional commitment to inclusiveness; diversify the faculty; replicate practices of institutions with demonstrated success in producing underrepresented minorities in STEM."

Echoing the recommendations of the COSSA-led 2008 [Enhancing Diversity in Science leadership retreat](#), *Expanding Underrepresented Minority Participation* encourages professional associations to "communicate the importance of broadening participation to members, the public and policy makers." Industry and federal labs are urged to provide structured incentives and programs to ensure sustained impact; and expand partnerships with institutions that enroll large numbers of underrepresented minorities in STEM.

The Committee selected two areas of highest priority for near-term action because they are thought to have "the most immediate impact on the critical pathway transition points in STEM education for underrepresented minorities."

Priority 1: A short-term focus for increasing the participation and success of underrepresented minorities in STEM, policies and programs that seeks to increase undergraduate retention and completion through strong academic, social and financial support. The Committee pointed out that a cadre of qualified underrepresented minorities already exist who attend college, declared an interest in majoring in the natural science or engineering, and either do not complete a degree or switch out of STEM before graduating. The goal is to increase participation at all types of higher education institutions, including research universities, where underrepresented minorities can contribute to research, become more prominent leaders, and serve as role models.

Priority 2: An emphasis on teacher preparation, secondary school programs that support preparation for college STEM education, and programs that support the transition from undergraduate to graduate work. The Committee emphasizes that "At the other end of the undergraduate years, the transition of underrepresented minorities to graduate work at top research universities where they can contribute to research and leadership in [the] nation's science and engineering enterprise is also critical."

## NSF Seeks Graduate Student Applicants for Study in East Asia and the Pacific

The National Science Foundation (NSF) seeks applications from graduate students for their East Asia and Pacific Summer Institutes. The deadline for applying is November 10, 2010.

According to NSF, the East Asia and Pacific Summer Institutes (EAPSI) provide U.S. graduate students in science and engineering: 1) first-hand research experiences in Australia, China, Japan,

Korea, New Zealand, Singapore or Taiwan; 2) an introduction to the science, science policy, and scientific infrastructure of the respective location; and 3) an orientation to the society, culture and language. The primary goals of EAPSI are to introduce students to East Asia and Pacific science and engineering in the context of a research setting, and to help students initiate scientific relationships that will better enable future collaboration with foreign counterparts. All institutes, except Japan, last approximately eight weeks from June to August. Japan lasts approximately ten weeks from June to August.

NSF expects to make 215 awards, depending on the quality of applications and availability of funds. Each award recipient will receive a \$5,000 stipend, a roundtrip international airfare, and will be supported to attend a pre-departure orientation in the Washington, D.C. area. Foreign co-sponsoring organizations will provide additional support to cover the fellows' living expenses abroad during the period of the summer institutes, and will provide an in-country orientation to the science environment and culture(s) of each location.

The East Asia and Pacific Summer Institutes are administered in the United States by the National Science Foundation. In East Asia and the Pacific, the Institutes are co-sponsored by:

- Australian Academy of Science;
- Chinese Ministry of Science and Technology, Chinese Academy of Sciences, and National Natural Science Foundation of China;
- Japan Society for the Promotion of Science;
- National Research Foundation of Korea;
- Royal Society of New Zealand;
- National Research Foundation of Singapore; and
- National Science Council of Taiwan.

For more information, go to: <http://www.nsf.gov/pubs/2010/nsf10591/nsf10591.htm>

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Address all inquiries to COSSA at [newsletters@cosssa.org](mailto:newsletters@cosssa.org)

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