

REPORT
ON A“DAY AT NSF”
FOR PRESIDENTS AND
CHIEF ACADEMIC OFFICERS OF MSIS
CONDUCTED BY THE
QUALITY EDUCATION FOR MINORITIES (QEM) NETWORK
AT THE NATIONAL SCIENCE FOUNDATION
ARLINGTON, VIRGINIA
SEPTEMBER 15, 2009

Prepared by the
QUALITY EDUCATION FOR MINORITIES (QEM) NETWORK
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DEFINITIONS of MSIs

(from the U.S. Department of Education List of Postsecondary Minority Institutions)
<http://www.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>

HISTORICALLY BLACK COLLEGES AND UNIVERSITIES (HBCUs): The Higher Education Act of 1965, as amended, defines an HBCU as: "...any historically black college or university that was established prior to 1964, whose principal mission was, and is, the education of black Americans, and that is accredited by a nationally recognized accrediting agency or association determined by the Secretary [of Education] to be a reliable authority as to the quality of training offered or is, according to such an agency or association, making reasonable progress toward accreditation." HBCUs offer all students, regardless of race, an opportunity to develop their skills and talents.

HISPANIC-SERVING INSTITUTIONS (HSIs) – This is a list of the colleges and universities to which the Department's Office of Postsecondary Education (OPE) recently has given grants, as Hispanic-serving institutions, under the Hispanic-Serving Institutions (HSI) program authorized by Title V of the Higher Education Act of 1965, as amended (HEA), 20 U.S.C. §§1101-1103g. The list includes the institutions of higher education whose full-time equivalent (FTE) enrollment of undergraduate students is at least 25 percent Hispanic, according to Fall 2008 enrollment data that the institutions self-reported in the Integrated Postsecondary Education Data System (IPEDS) survey conducted by the National Center for Education Statistics (NCES).

TRIBAL COLLEGES AND UNIVERSITIES (TCUs) –This is a list of the colleges and universities maintained by the White House Initiative on Tribal Colleges and Universities. In accordance with Executive Order No. 13270, "Tribal Colleges and Universities," as extended by Executive Order No. 13316, the list also includes all of the colleges cited in section 532 of the Equity in Educational Land-Grant Status Act of 1994 (7 U.S.C. 301 note), any other institution that qualifies for funding under the Tribally Controlled Community College Assistance Act of 1978 (25 U.S.C. 1801 et seq.), and Diné College, which is authorized in the Navajo Community College Assistance Act of 1978, Public Law 95-471, title II (25 U.S.C. 640a note).

Disclaimer

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EXECUTIVE SUMMARY

“DAY AT NSF” OVERVIEW AND PURPOSE

On Tuesday, September 15, 2009, the Quality Education for Minorities (QEM) Network held a special meeting at the National Science Foundation (NSF) headquarters in Arlington, Virginia for presidents and chief academic officers (CAOs) from relatively small minority-serving institutions (MSIs) that have at least one award from the Foundation’s Education and Human Resources Directorate. Conducted with support from NSF, the “Day at NSF” was designed to foster ongoing relationships between NSF and leaders from Historically Black Colleges and Universities (HBCUs), Hispanic-serving Institutions (HSIs), and Tribal Colleges and Universities (TCUs). Forty-six (46) presidents/CAOs representing 46 MSIs (16 HBCUs; 16 HSIs, and 14 TCUs) attended the sessions in addition to 30 NSF program officers and staff.

Participants were provided with the opportunity to: (1) reinforce their unique role as catalysts for innovative and integrative STEM initiatives on their campuses; (2) learn about current priorities and emerging initiatives at NSF; and (3) share information on STEM initiatives on their campuses with peers as well as with NSF staff and program officers. Additionally, NSF program officers from various directorates were provided with the opportunity to become better informed about these institutions, their contribution to advancing the STEM enterprise, and their strategic plans for STEM enhancement.

Plenary presentations, concurrent sessions organized by type of institution, and panel presentations provided opportunities for the presidents/CAOs to learn about NSF’s priorities, programs, and policies and to describe their STEM programs, strengths, and needs to NSF program officers. Specific recommendations were offered to enhance/facilitate the MSI presidents/CAOs’ critical role in initiating, leading, and securing support for innovative, transformational efforts in STEM on their campuses. Session discussions also enabled participants to provide feedback to NSF program officers on ways to expand STEM research and education capacity at MSIs. The recommendations and NSF feedback are outlined below.

RECOMMENDATIONS FOR MSI PRESIDENTS/CAOs

Recommendations for the institutional leadership emerged in four broad areas: 1) Campus Climate and Leadership; 2) Increased Understanding of Science Policy and Engagement with NSF; 3) Specific NSF Programs to Meet Critical Needs at MSIs in STEM; and 4) Strategies to Enhance STEM Education and Research at MSIs.

Campus Climate and Leadership

- Faculty and the administration must take responsibility to effect institutional change.
- Administrators and faculty must work to foster a culture of curiosity for students.
- Strategic planning and transformative leadership are part of the foundation of a strong STEM initiative.
- Collaborations with other institutions and nearby K-12 school systems are needed.

Increased Understanding of Science Policy and Engagement with NSF

Presidents/CAOs should:

- Be aware of NSF's current priorities in STEM
- Work in partnership to engage their institutions in NSF's efforts to set science policy
- Become familiar with the America COMPETES Act-based initiatives
- Stay informed about NSF through its monthly newsletter and website
- Know their congressional representatives and identify ways to share their priorities and concerns with them
- Develop a good working relationship with the Program Officer when implementing NSF projects
- Promote effective coordination, communication, and clear written accounting and reporting policies and procedures at the institution

Specific NSF Programs to Meet Critical Needs at MSIs in STEM

- Seek NSF support for distance education for STEM courses, cross-institutional and international connectivity as well as seed money for new efforts
- Encourage NSF to increase support for efforts related to developmental mathematics
- Take advantage of NSF's no-cost, Award Management and Business Assistance Program that assists institutions in meeting NSF and federal financial and reporting requirements

Strategies to Enhance STEM Education and Research at MSIs

Plenary and panel presentations highlighted these strategies:

- Engage faculty who reside on Tribal reservations and are involved in the community
- Infuse Native culture into courses
- Use student interest in research on local issues to spark faculty interest
- Establish STEM learning communities and collaborations
- Implement STEM across the curriculum
- Leverage funds to bolster research infrastructure
- Offer STEM courses by videoconference
- Focus on retention, mentoring, and providing student research experiences

Session discussions also enabled participants to provide feedback to NSF program officers on ways to expand STEM research and education capacity at MSIs.

FEEDBACK TO NSF PROGRAM OFFICERS AND STAFF

Presidents/CAOs proposed several specific steps for NSF to enhance STEM education and research at their institutions, including:

- Addressing the recent decline in Federal science and engineering support for MSIs through increased support for infrastructure development
- Considering increased support for distance education efforts and connectivity in STEM at MSIs and across institutions
- Increasing efforts in support of institutions that enroll large numbers of students under-prepared in mathematics
- Encouraging discourse around how to counter research intensive universities' practice of depending on international students to provide the labor force for their research efforts, while neglecting U.S. students, particularly minority students
- Offering more support for endangered Tribal languages to undergird STEM initiatives at TCUs

NEXT STEPS

Forty-one (41) of the forty-six (46) participants returned a “Day at NSF” Evaluation Questionnaire, for a response rate of 89.13 percent. Of the 39 persons who provided an overall rating for the “Day at NSF,” 87.2 percent rated the event as excellent or very good. Eighty-three (83) percent responded that the “workshop met their expectations.” Immediately following the “Day at NSF,” QEM provided a series of follow-up steps (via e-mail) that presidents/CAOs could take at their campuses to share this information with faculty and administration and consider increased participation in NSF’s programs and proposal review process.

Follow-up surveys/interviews will be conducted with the “Day at NSF” participants and NSF program officers who attended the workshop. The surveys/interviews will assess the extent to which “Day at NSF” caused presidents/CAOs to initiate efforts to seek other NSF support for STEM at their institutions. The follow-up surveys of NSF program officers who participated in “Day at NSF” will provide additional insights on the quality and impact of the workshop, including an increased understanding of the strengths and needs of MSIs in building STEM research and education capacity.

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OVERVIEW AND PURPOSE OF “DAY AT NSF”

The Quality Education for Minorities (QEM) Network, through support from the National Science Foundation (NSF), conducted a “Day at NSF” for presidents and chief academic officers (CAOs) at small Historically Black Colleges and Universities (HBCUs), Hispanic-serving Institutions (HSIs), and Tribal Colleges and Universities (TCUs). Participating institutions were invited based on their student enrollment and their current Science, Technology, Engineering, and Mathematics (STEM)-focused NSF awards. QEM’s aim was for 50 institutions, with limited NSF experience, to participate in the “Day at NSF.” Although 51 presidents/CAOs registered to participate, forty-six (46) persons, representing 46 institutions, actually attended. Sixteen (16) participants were from HBCUs; 16 were from HSIs, and 14 were from TCUs. A list of participating institutions and their representatives is at **Appendix A**. Thirty (30) NSF program officers and staff attended the “Day at NSF,” as listed at **Appendix B**.

The agenda for “Day at NSF” is provided at **Appendix C**. The purpose of “Day at NSF” was to provide participating MSI presidents/CAOs specific opportunities to:

1. gain a better understanding of why the Foundation expects the chief academic officer to serve as the principal investigator on certain projects;
2. learn about current priorities and emerging initiatives at NSF;
3. share information on STEM initiatives on their campuses with colleagues from other MSIs as well as with NSF staff and program officers and assist NSF staff and program officers to become better informed about MSIs, their contribution to advancing the STEM enterprise, and their strategic plans for STEM enhancement;
4. enhance and broaden appreciation for their critical role in initiating, leading, and securing support for innovative, transformative efforts in STEM;
5. benefit from a range of perspectives and insights critical to the development of a sustainable campus STEM research and education infrastructure;
6. become aware of additional strategies that can be used to transform STEM research and education on their campuses and give them the opportunity to meet and get to know NSF program officers in a variety of NSF program areas; and
7. identify strategies to increase the participation of their institutions and their faculty in NSF programs through synergistic, integrated, and coordinated STEM initiatives.

HIGHLIGHTS

For each of the seven specific aims listed above, highlights from the “Day at NSF” presentations and discussions follow.

1. The opportunity to gain a better understanding of why the Foundation expects the chief academic officer to serve as the principal investigator on certain projects

Dr. Freeman Hrabowski, President, University of Maryland Baltimore County (UMBC), gave the keynote address on “STEM Projects on Campus: Leadership Roles that Presidents/Chief Academic Officers Must Play.”

Dr. Hrabowski identified strategies that he, the faculty, and the administration at his institution used to change the academic culture at his institution. He noted that institutional change can only be made when the faculty and administration take responsibility for the programs or strategies developed. They also must be willing to admit that there are issues to address and commit to finding solutions. For example, Dr. Hrabowski asked the faculty and administrators at UMBC to explore the question of why students performed poorly in STEM, particularly in mathematics. Over time, they identified the following curricular and administrative practices to address the issue:

- Encourage students to study in groups
- Increase one-on-one tutoring
- Increase use of technology in classrooms
- Increase student motivation

Dr. Hrabowski emphasized that administrators and faculty within an institution must work together to foster a culture of curiosity. This culture will make it easier to pursue changes that may improve the students’ learning experience.

Ms. Pamela Hawkins, EHR Team Leader, Division of Grants and Agreements (DGA); Mr. L. Rashawn Farris, Grant and Agreement Specialist, DGA; and Ms. Carol Orlando, Team Leader, Cost Analysis and Audit Resolution, from the Office of Budget, Finance, and Award Management (BFA) presented an overview of “Post-award Conditions and Requirements, Project Monitoring, and Oversight.” The DGA staff briefed participants on project management and reporting requirements. They emphasized the importance of good coordination, communication, and clear written accounting and reporting policies and procedures at the institution as well as familiarity with pertinent OMB circulars.

They stated that a good working relationship with the NSF program officer is essential for successful project implementation and explained the purposes of site visits and desk reviews in assessing program accountability. DGA staff responded, in detail, to specific questions regarding reporting of time and effort on awards and the institution’s responsibility for providing faculty

release time in accordance with NSF’s time and effort requirements. BFA offers an Award Management and Business Assistance Program to assist institutions in meeting NSF and federal financial and reporting requirements. “Day at NSF” participating institutions were encouraged to consider taking advantage of this no-cost training service.

2. The opportunity to learn about current priorities and emerging initiatives at NSF

Dr. Joanne Tornow, Executive Officer and Senior Advisor for Strategic Planning, Policy, and Analysis, Office of Emerging Frontiers, provided an overview of the organization and history of the National Science Foundation. Dr. Tornow also spoke about funding opportunities available through both solicited and unsolicited proposals. She reported on the American Recovery and Reinvestment Act’s \$3 billion in additional funding for NSF as well as FY 2010 budget request highlights, including increased support for graduate research fellowships, cyber-enabled discovery and innovation, cyber security, and climate change.

Dr. Fae Korsmo, Senior Advisor, Office of the Director, reviewed NSF’s Broadening Participation Portfolio, which includes 32 broadening participation “focused” programs and 25 broadening participation “emphasis” programs. NSF’s broadening participation effort includes outreach to underrepresented groups; institutions under-participating in NSF’s programs and activities; and underserved geographic areas.

Ms. Teresa Davies, Director, Legislative Affairs, Office of Legislative and Public Affairs (OLPA), NSF, presented an overview of OLPA’s work. Ms. Davies noted the three major issues before Congress at this time: health care reform; financial recovery; and education - No Child Left Behind. She advised administrators interested in STEM to become familiar with the America COMPETES Act-based initiatives. She described various ways to stay informed about NSF, including signing up for a monthly newsletter and the NSF website that features articles about NSF priority and emerging areas as well as NSF Director Arden Bement’s recent speeches. Ms. Davies urged participants to get to know their congressional representatives and to share their priorities and concerns with them.

Dr. Wanda Ward, Acting Assistant Director, Directorate for Education and Human Resources (EHR) spoke to the participants on “Critical Issues in STEM Higher Education: Implications for MSIs.” Dr. Ward affirmed the underlying premise that “the U.S. science and engineering enterprise is strengthened by diversity of thought” and reiterated basic questions that should guide efforts to strengthen science and engineering:

- Who will do science in the 21st Century?
- What science will they do?
- How will they be prepared to do science?
- How will we know they are well-prepared to do science?

She stated that NSF priorities in STEM address these core questions through efforts such as: training and support for young investigators; a focus on training the Nation's technical workforce; a focus on the instructional workforce; and emphases on emerging STEM areas, including energy, climate change, and cyberlearning.

Dr. Ward noted that NSF recognizes innovation as the major driver to worldwide competitiveness in STEM. The basis for stimulating innovation rests on intellectual capacity building, robust infrastructure, and a diverse STEM workforce. NSF seeks to support research on the frontier, curiosity-driven research, and preparing the STEM workforce for the unknown. To do this, NSF supports collaborations between the EHR Directorate and the research directorates; collaborations among federal science-related agencies; and interdisciplinary initiatives.

Dr. Ward emphasized that enabling innovation-based science requires creativity, integration and connectivity, and seamless broadening of participation at critical transitions. It features: greater coherence between formal and informal science education; cyberlearning (learning mediated by technology – learning any time, anyplace, anyone); new fields that bridge formal and informal science learning, underpinned by quality evaluation and assessment; and the critical importance of both breadth and depth in science learning

She stated that minority-serving institutions are a critical and essential aspect of the STEM community. Yet, recent data from NSF's Science Resources Statistics Division (*Federal S&E Obligations to Three Types of Minority-Serving Institutions Decline in 2007*) indicate a decline in Federal science and engineering support for MSIs. However, change is evident in NSF's increased support for infrastructure development through the Major Research Instrumentation (MRI) Program and the Academic Research Infrastructure (ARI) Program. The Centers for Research Excellence in Science and Technology (CREST) Program focuses on MSIs and offers experience and infrastructure for development of Engineering Research Centers and/or Materials Research Science and Engineering Centers.

Several participants posed questions following Dr. Ward's presentation:

- Dr. Julianne Malveaux, President of Bennett College for Women asked about funding for distance education and connectivity in STEM at MSIs. Dr. Ward replied that cross-institutional and international connectivity should be considered as well. Existing funds are available at NSF to support such efforts as well as seed money for new efforts.
- Dr. Charlotte Borst, Vice President for Academic Affairs, Whittier College, cited mathematics preparation as the cornerstone for success in STEM. She asked if NSF is interested in working with institutions that enroll large numbers of students under-prepared in mathematics, for example, pursuing work by The Carnegie Foundation for the Advancement of Teaching in this area. Dr. Ward responded that, while NSF does not support remedial education, funding is available for efforts in developmental mathematics. She referred to the Advanced Technological Education (ATE) Program at NSF that supports course development and improvement at two-year institutions.
- Dr. Shirley McBay, President, QEM Network, asked what can be done to counter research intensive universities' practice of depending on international students to provide

the labor force for their research efforts, while neglecting U.S. students, particularly minority students. Dr. Ward agreed that there must be a renewed commitment to develop domestic talent in STEM. The institutions at the “Day at NSF” enroll a critical mass of underrepresented students that could strengthen and enhance the U.S. talent pool in STEM. Discourse needs to happen around this issue. NSF needs to expand and emphasize work with under-prepared students.

3. The opportunity to share information on STEM initiatives on their campuses with colleagues at the participating institutions as well as with NSF staff and program officers; and, to assist NSF staff and program officers to become better informed about MSIs, their contribution to advancing the STEM enterprise, and their strategic plans for STEM enhancement

In concurrent sessions for HBCUs, HSIs, and TCUs, presidents/CAOs discussed strengths and weaknesses in STEM teaching and research on their campuses. Additionally, a *Profiles of Participating Institutions* document was developed for the “Day at NSF” and included in meeting packets to provide more information to NSF program officers and to facilitate participants’ discussions of similarities/differences in the HBCU/HSI/TCU breakout sessions. Each profile includes the institution’s location, mission, president’s name, website, types of STEM degrees offered, and Fall 2008 enrollment.

Concurrent Session for Historically Black Colleges and Universities (HBCUs) – moderated by Dr. Claudia Rankins, Program Director, HRD/EHR

Dr. Trudie Kibbe Reed, President of Bethune Cookman University, Dr. Perry Ward, President of Lawson State Community College, and Dr. George Bradley, President of Paine College, spoke about the strengths and weaknesses of their institutions (HBCUs) in STEM. They cited strategic planning and transformative leadership as the foundation of a strong STEM initiative. Collaborations with other institutions and nearby K-12 school systems, with well-articulated STEM courses, enhance STEM work. Recruiting needs to begin in middle school. Faculty scholarship is essential. Common weaknesses included the small number of STEM majors, except for Biology; lack of longitudinal student data; inadequate facilities; and heavy teaching loads that discourage faculty involvement in research.

Discussion included concerns about hiring well-prepared faculty (possibly ABD), replacing retiring Science faculty, and support for developmental mathematics. In response, NSF Program Officers encouraged institutions to look at the Advanced Technological Education (ATE) Program, Robert Noyce Teacher Scholarship Program, Research in Disabilities Education (RDE) Program, HBCU-UP Program, and ADVANCE (a program that provides support for women faculty in STEM).

Concurrent Session for Hispanic-serving Institutions (HSIs) – moderated by Dr. Victor Santiago, Program Director, HRD/EHR

HSI Presidents Dr. David Svaldi of Adams State College and Dr. Steven Rose of Passaic Community College, and Dr. Hilda Colon-Plumey, Chancellor of UPR Humacao, addressed strengths and weaknesses in STEM. Strengths noted included qualified and committed faculty and increased external support for STEM. One institution reported success in using postdocs to support faculty and student research efforts. Panelists cited severe under preparation of students in English and mathematics as the greatest challenge in STEM at their institutions. Another institution also cited shortage of space for research activities as a weakness.

Discussion evoked common concerns, including the severe under-preparation of students in mathematics; students' family responsibilities; large student loan debt; heavy teaching loads, and lack of alignment between high school and college STEM courses. Dr. James Hamos, NSF Program Officer, suggested NSF's Math and Science Partnership (MSP) and Course, Curriculum, and Laboratory Improvement (CCLI) Programs as potential opportunities for seeking support, and S-STEM for student scholarship funds.

Concurrent Session for Tribal Colleges and Universities (TCUs) – moderated by Dr. Jody Chase, Program Director, HRD/EHR

Dr. Richard Littlebear, President of Chief Dull Knife College, Dr. Laurel Vermillion, President of Sitting Bull College, and Dr. Virginia Carney, President of Leech Lake Tribal College, shared strengths in STEM at their institutions (TCUs). Reservation-based/research on local issues is attracting students to STEM fields and NSF support has assisted in building STEM capacity. Faculty who reside on the reservation and are involved in the community are an asset. Infusing Native culture into courses also is considered an asset at some of the institutions. Weaknesses in STEM cited included under-prepared students, heavy faculty teaching loads, few Native high school teachers, and very limited resources for research. One of the TCUs reported success in using student interest in research on local issues to spark faculty interest. In response to a question about what NSF can do to increase research at TCUs, Dr. Littlebear responded that more support for endangered languages is needed.

4. The opportunity to enhance and broaden presidents/CAOs' appreciation for their critical role in initiating, leading, and securing support for innovative, transformational efforts in STEM

A three-person panel provided both MSI and NSF participants with an overview of the history and current role of Historically Black Colleges and Universities (HBCUs), Hispanic-serving Institutions (HSIs), and Tribal Colleges and Universities (TCUs). Dr. Earl Richardson, President, Morgan State University; Dr. John Moder, Senior Vice President and Chief Operating Officer, Hispanic Association of Colleges and Universities (HACU); and Dr. Gerald "Carty" Monette, QEM Senior Advisor and former President, Turtle Mountain Community College, spoke of the history and current status of these MSIs respectively. Dr. Thomas Cole, Jr., former President of Clark Atlanta University, was the moderator for this session.

Both HBCUs and TCUs emerged as institutions to educate underserved groups, although their origins during periods of civil rights ferment span over 100 years. HSIs, as designated by the

federal government, are primarily institutions with significant and growing numbers of Hispanic students, although Boricua College in New York, St. Augustine's College in Chicago, and The National Hispanic University in San Jose (CA) were founded to specifically serve Hispanic students. Some HBCUs and TCUs are land grant institutions. TCUs share a common mission to serve the needs of their tribes through economic and workforce development and preservation of Native language, history, and culture.

HSIs comprise the largest and fastest growing group. All MSIs serve large numbers of economically disadvantaged students, many under-prepared to enter college. Fifty-one percent of HSIs and most TCUs are two-year colleges. Faculty at these institutions carry heavy teaching loads and, often, adequate research infrastructure is not available on their campuses. The panelists asserted that HBCUs, HSIs, and TCUs have the potential to enroll and graduate significant numbers of students in STEM.

In the closing session, Dr. Cora Marrett, Acting Deputy Director of NSF, addressed "The Science Policy Context." She spoke about the formation of science policy and the Foundation's role in shaping science policy and strengthening science throughout the nation. Dr. Marrett noted that little is known about this process, including what institutions of higher education can do to change/impact science policy. She encouraged the presidents and CAOs to partner together to engage in NSF's efforts to set policy. She stressed that NSF needs a diverse group of scientists with energy and ideas and welcomes creative suggestions that will represent the best efforts of the Nation's STEM talent.

5. The opportunity to benefit from a range of perspectives and insights critical to the development of a sustainable campus STEM research and education infrastructure

A panel of participating CAOs addressed "Strategies for Integrating/Sustaining Successful STEM Projects/Project Components into on-going Campus Programs and Activities." Dr. Clarice Baker-Big Back, Fort Berthold Community and Tribal College; Dr. Johnnye Jones, Texas College; and Dr. Michael Sperling, Mercy College, described unique facets of their STEM programs and projects.

Dr. Big Back reported that STEM learning communities are at the foundation of Fort Berthold's STEM programs. She also described the importance of integrating culture into STEM courses and activities as well as forging collaborations with other TCUs to sustain STEM programs and projects.

Dr. Jones described Texas College's efforts to integrate STEM across the curriculum, leverage NIH funds to bolster research infrastructure, and offer STEM courses by state-supported videoconferences with nearby Jarvis Christian College and Huston-Tillotson College. She highlighted the newly organized Honors Program that requires an intensive science course in the second semester of the freshman year.

Dr. Sperling cited the importance of focusing on retention to sustain STEM programs and projects. He described mentoring at Mercy College that provides an array of services for STEM students from advising to assisting with financial aid issues. Mercy also has an NIH-supported Research in Minority Institutions (RIMI) award that focuses on health disparities affecting minorities.

6. The opportunity to become aware of additional strategies that can be used to transform STEM research and education on their campuses and give MSI presidents/CAOs the opportunity to meet and get to know NSF program officers in a variety of NSF program areas

In addition to strategies shared in sessions described above, presidents/CAOs heard about NSF programs and initiatives that could provide support to transform STEM research and education on their campuses. The following NSF Program Officers provided information about NSF programs, with particular emphasis on funding for student research experiences.

Dr. Omnia El-Hakim, Program Director of Diversity and Outreach, Directorate for Engineering (ENG), stressed that the NSF encourages small colleges and universities to apply for grants in Engineering. Dr. El-Hakim informed the audience of several upcoming workshops and opportunities in engineering.

Dr. Julia Clark, Program Director, Division on Learning in Formal and Informal Settings (DRL), Directorate for Education and Human Resources (EHR), focused on K-12 funding programs at NSF. Dr. Clark suggested that faculty at MSIs apply for Innovating Technology Experiences for Students and Teachers (ITEST), Discovery Research K-12 (DR-K12), Informal Science and Engineering (ISE), and other DRL programs.

Dr. Patricia White, Program Director, Division of Social and Economic Sciences (SES), emphasized that faculty in search of support should not overlook the Directorate for Social, Behavioral, and Economic Sciences (SBE). Dr. White emphasized that SBE funds could be used in conjunction with funds from other directorates.

Dr. Sally O'Connor, Program Director, Division of Biological Infrastructure, Directorate for Biological Sciences (BIO), reviewed the Undergraduate Research and Mentoring in the Biological Sciences (URM) Program. Dr. O'Connor also described faculty opportunities for research funding available through Research Opportunity Awards (ROA) and Research Initiation Grants (RIG).

Dr. Jill Karsten, Program Director for Education and Diversity, from the Directorate for Geosciences (GEO), highlighted specific funding programs to which the presidents and CAOs should encourage the faculty and students at their institutions to apply. Dr. Karsten recommended smaller institutions partner with larger institutions to conduct Geoscience research or to create Geoscience programs.

Dr. Tyrone Mitchell, Program Director, Division of Chemistry, Directorate for Mathematical and Physical Sciences, (MPS) recommended that faculty seek funds and encourage their minority undergraduate students to participate in the Research Experiences for Undergraduates (REU) Program and minority graduate students to apply for Graduate Research Fellowships (GRFs).

In earlier remarks, program officers also advised presidents and CAOs to encourage their faculty to develop their research efforts by applying to the Faculty Early Career Development (CAREER) Program and to build research infrastructure through the Major Research Instrumentation (MRI) Program.

7. The “Day at NSF” also was designed to identify opportunities/strategies to increase the participation of minority institutions and their faculty in NSF programs through synergistic, integrated, and coordinated STEM initiatives.

To broaden the dissemination of information shared at “Day at NSF,” QEM provided access to all PowerPoint presentations from the event. These presentations can be accessed at the QEM website: http://qemnetwork.qem.org/FinAgenda_NSFDayforMSIs.htm. In addition, QEM provided a series of follow-up steps that presidents/CAOs could take at their campuses to share this information with faculty and administration and consider increased participation in NSF’s programs and proposal review process. These recommendations are at **Appendix D**.

“Day at NSF” presentations and discussions resulted in specific recommendations for both presidents/CAOs and for NSF program officers to expand STEM research and education capacity at MSIs.

RECOMMENDATIONS FOR MSI PRESIDENTS/CAOS

Faculty and the administration must take responsibility for programs or strategies developed to effect institutional change.

Administrators and faculty within an institution must work to foster a culture of curiosity to make it easier to pursue changes that will improve the students’ learning experience.

To ensure successful project implementation, effective coordination, communication, and clear written accounting and reporting policies and procedures at the institution, as well as familiarity with Office of Management and Budget circulars, are vital as is a good working relationship with cognizant program officers.

Institutions should take advantage of the NSF's Office of Budget, Finance, and Award Management (BFA)'s Award Management and Business Assistance Program that is offered to assist them in meeting NSF and federal financial and reporting requirements.

Administrators interested in STEM should become familiar with the America COMPETES Act-based initiatives. They also should stay informed about NSF through its news releases, monthly newsletter, and website.

Presidents/CAOs should know their congressional representatives and identify ways to share their priorities and concerns with them.

Presidents/CAOs should be aware of NSF's current priorities in STEM: training and support for young investigators; focus on training the Nation's technical workforce; focus on the K-16 instructional workforce; and emphases on emerging STEM areas, including energy, climate change, and cyberlearning.

In addition to distance education for STEM courses, cross-institutional and international connectivity should be considered. Programs are available at NSF to support such efforts as well as seed money for new efforts.

MSIs should seek NSF support for efforts related to improvements in developmental mathematics. For example, the Advanced Technological Education (ATE) Program supports course development and improvement at two-year institutions.

Strategic planning and transformative leadership are part of the foundation of a strong STEM initiative. Collaborations with other institutions and nearby K-12 school systems, with well-articulated STEM courses, enhance STEM efforts. Recruiting for STEM-related careers needs to begin in middle school. Faculty scholarship is essential.

Institutions should look at the NSF Advanced Technological Education (ATE) Program, Robert Noyce Teacher Scholarship Program, Research in Disabilities Education (RDE) Program, HBCU-UP Program, and ADVANCE as sources for funding to enhance STEM programs.

STEM faculty and administrators can involve postdocs to support faculty and student research efforts.

NSF's Math and Science Partnership (MSP) and Course, Curriculum, and Laboratory Improvement (CCLI) Programs are potential opportunities for support to address common concerns, including severe under-preparation of students in mathematics; students' family responsibilities; large student loan debt; faculty heavy teaching loads, and lack of alignment between high school and college STEM courses. The S-STEM Program provides scholarship funds.

Faculty who reside on Tribal reservation and are involved in the community are an asset to STEM at TCUs. Infusing Native culture into courses also improves STEM programs. Student interest in research on local issues can spark faculty interest.

In TCUs, STEM learning communities and collaborations are important strategies to sustain STEM initiatives on campus. Integrating STEM across the curriculum, leveraging funds to bolster research infrastructure, and offering STEM courses by videoconference can help to sustain and institutionalize STEM efforts. Focusing on retention, mentoring, and providing student research experiences can help sustain STEM activities.

Presidents and CAOs should work in partnership to engage their institutions in NSF's efforts to set science policy. NSF needs a diverse group of scientists with energy and ideas and welcomes creative suggestions that will represent the best efforts of the Nation's STEM talent.

Presidents/CAOs should review guidelines for the NSF programs presented at the "Day at NSF" and identify potential funding for STEM initiatives on their campuses.

RECOMMENDATIONS FOR NSF PROGRAM OFFICERS AND STAFF

NSF needs to address the recent decline in Federal science and engineering support for MSIs through increased support for infrastructure development through the Major Research Instrumentation (MRI) and the Academic Research Infrastructure (ARI) Programs as well as the Centers for Research Excellence in Science and Technology (CREST).

NSF should consider increased support for distance education efforts and connectivity in STEM at MSIs.

NSF should increase efforts in support of institutions that enroll large numbers of students under-prepared in mathematics.

NSF should encourage discourse on how to counter research intensive universities' practice of depending on international students to provide the labor force for their research efforts, while neglecting U.S. students, particularly minority students.

NSF should offer more support for preservation of endangered Tribal languages as an important component of STEM initiatives at TCUs.

NEXT STEPS

“Day at NSF” Evaluation

This meeting was designed to foster ongoing relationships among MSI leaders and NSF. Expected outcomes from the presentations and discussion throughout the day were that participants would gain:

- (1) an understanding of the organizational structure of the National Science Foundation and its role within the Federal Government;
- (2) an appreciation for how science policy is made and implemented;
- (3) a fairly detailed understanding of the range of programs at NSF, including, but not limited to, those within the Foundation’s Broadening Participation Portfolio;
- (4) contact information for program officers whose responsibilities include programs with potential to enhance STEM offerings on MSI campuses;
- (5) an increased understanding of post-award conditions and requirements that must be met after an award is received from the Foundation;
- (6) a greater appreciation for the history and diversity of the three groups of MSIs represented at the meeting as well as for issues/challenges common across the three groups that might be addressed through new alliances/partnerships; and
- (7) a determination to enhance the quality of the STEM programs on MSI campuses by encouraging/supporting eligible faculty to become more involved with the Foundation as a reviewer or a potential principal investigator.

Forty-one (41) of the forty-six (46) “Day at NSF” presidents/CAOs returned the “Day at NSF” evaluation questionnaire, for a response rate of 89 percent. Of the 39 persons who provided an overall rating for the “Day at NSF,” 87.2 percent rated the event as excellent or very good. Eighty-three (83) percent responded that the “workshop met their expectations.”

Follow-up surveys/interviews will be conducted with participants as well as NSF program officers who attended the “Day at NSF.” The surveys/interviews will assess the extent to which “Day at NSF” caused presidents/CAOs to initiate efforts to seek other NSF support for STEM at their institutions. The follow-up surveys to NSF program officers will provide additional insights on the quality and impact of the workshop, such as an increased understanding of the strengths and needs of MSIs in building STEM research and education capacity.

APPENDICES

Appendix A: LIST OF PARTICIPATING INSTITUTIONS AND THEIR REPRESENTATIVES

Appendix B: LIST OF NSF STAFF, PRESENTERS/MODERATORS, INVITED GUESTS, AND QEM STAFF

Appendix C: AGENDA

Appendix D: FOLLOW-UP E-MAIL TO “DAY AT NSF” PARTICIPANTS

APPENDIX A:
LIST OF PARTICIPATING INSTITUTIONS AND THEIR REPRESENTATIVES

INSTITUTION	NAME	TITLE	TYPE
Bennett College for Women	Dr. Julianne Malveaux	President	HBCU
Bethune-Cookman University	Dr. Trudie Kibbe Reed	President	HBCU
Edward Waters College	Dr. Eurmon Hervey	Provost/Vice President for Academic Affairs	HBCU
J. F. Drake State Technical College	Dr. Helen McAlpine	President	HBCU
Jarvis Christian College	Dr. Cornell Thomas	President	HBCU
Johnson C. Smith University	Dr. Magdy Attia	Chair, Council of Deans and Dean of STEM College	HBCU
Langston University	Dr. Clyde Montgomery	Vice President for Academic Affairs	HBCU
Lawson State Community College	Dr. Perry Ward	President	HBCU
Miles College	Dr. Kenneth Jones	Dean of Academic Affairs	HBCU
Paine College	Dr. George Bradley	President	HBCU
Rust College	Dr. Sheila Flemming-Hunter	Academic Dean	HBCU
Saint Augustine's College	Dr. Yvonne Coston	Vice President for Academic Affairs	HBCU
Stillman College	Dr. Charlotte Carter	Vice President for Academic Affairs	HBCU
Texas College	Dr. Johnnye Jones	Chief Academic Officer	HBCU
Voorhees College	Dr. Carl Carpenter	Executive Vice President and Academic Dean	HBCU
Wilberforce University	Dr. Patricia Hardaway	President	HBCU
Adams State College	Dr. David Svaldi	President	HSI
Capital Community College	Dr. Calvin Woodland	President	HSI
Laredo Community College	Mr. Federico Solis, Jr.	Vice President for Instruction	HSI
Mercy College	Dr. Michael Sperling	Provost and Vice President for Academic Affairs	HSI
Mount St. Mary's College	Dr. Eleanor Siebert	Provost and Academic Vice President	HSI
Northern New Mexico College	Dr. Anthony Sena	Provost	HSI

LIST OF PARTICIPATING INSTITUTIONS AND THEIR REPRESENTATIVES (continued)

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Our Lady of the Lake University	Dr. Helen Streubert	Vice President for Academic Affairs	HSI
Passaic County Community College	Dr. Steven Rose	President	HSI
Porterville College	Dr. Ann Beheler	Vice President for Academic Affairs	HSI
Texas A&M University-Kingsville	Dr. Rex Franklin Gandy	Provost and Vice President for Academic Affairs	HSI
The University of Texas of the Permian Basin	Dr. William Fannin	Provost and Vice President for Academic Affairs	HSI
University of Puerto Rico at Bayamon	Dr. Hector De Jesus Cardona	Dean of Academic Affairs	HSI
University of Puerto Rico at Humacao	Dr. Hilda Colon-Plumey	Chancellor	HSI
University of the Incarnate Word	Dr. Denise Doyle	Provost and Vice President for Academic Affairs	HSI
Whittier College	Dr. Charlotte Borst	Vice President for Academic Affairs	HSI
Blackfeet Community College	Mr. John Salois	President	TCU
Chief Dull Knife College	Dr. Richard Littlebear	President	TCU
College of Menominee Nation	Dr. Donna Powless	Vice President of Academic Affairs	TCU
Fort Belknap College	Dr. Deborah His Horse is Thunder	Dean of Academic Affairs	TCU
Fort Berthold Community College	Dr. Clarice Baker-Big Back	Vice President for Academic Affairs	TCU
Fort Peck Community College	Dr. Janine Pease	Academic Vice President	TCU
Lac Courte Oreilles Ojibwe Community College	Dr. Laura Urban	Chief Academic Officer and Academic Dean	TCU
Leech Lake Tribal College	Dr. Virginia Carney	President	TCU
Little Priest Tribal College	Ms. Helene Lincoln	President	TCU
Oglala Lakota College	Mr. Thomas Shortbull	President	TCU
Saginaw Chippewa Tribal College	Ms. Carla Sineway	Dean of Instruction & Student Services	TCU
Sisseton Wahpeton College	Dr. Diana Canku	President	TCU
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APPENDIX C:

QUALITY EDUCATION FOR MINORITIES (QEM) NETWORK

“Day at NSF” for Presidents/Chief Academic Officers of Small Minority-serving Institutions (MSIs)

National Science Foundation (NSF)
4201 Wilson Boulevard, Arlington, Virginia 22230
STAFFORD PLACE I – ROOM 375
Tuesday, September 15, 2009

AGENDA

Meeting Purpose: To provide an opportunity for participants to learn more about NSF and how it functions as well as for NSF program officers to learn about STEM programs at the participating MSIs.

Please Note: Except for Concurrent Sessions at 11:00 am, all sessions are in *Room 375*

AM

- 8:00 *Registration and Continental Breakfast* *Room 375*
- 8:15 *Welcome, Introductions, and Review of Purpose*
 Shirley McBay, President
 Quality Education for Minorities (QEM) Network
 James Wyche, Director
 Division for Human Resource Development (HRD)
 Directorate for Education and Human Resources (EHR), NSF
- 8:30 *Overview of the National Science Foundation*
 Joanne Tornow, Acting Division Director
 Molecular and Cellular Biosciences (MCB)
 Directorate for Biological Sciences (BIO)
- 9:00 *Overview of NSF’s Broadening Participation Portfolio*
 Fae Korsmo, Senior Advisor, Office of the Director, NSF
- 9:30 *History/Overview of Minority-serving Institutions (MSIs)*
 Moderator: Thomas Cole, President Emeritus, Clark Atlanta University
 and Chair, QEM Network Board of Directors

 Panel:
 Earl Richardson, President, Morgan State University
 John Moder, Senior Vice President and Chief Operating Officer
 Hispanic Association of Colleges and Universities (HACU)
 Gerald (“Carty”) Monette, Former President
 Turtle Mountain Community College, and Senior Advisor, QEM Network
- 10:15 *Break*

10:30 *STEM Projects on Campus: Leadership Roles that Presidents/
Chief Academic Officers Must Play*
Freeman Hrabowski, President, University of Maryland Baltimore County

11:00 Concurrent Sessions for HBCUs, HSIs, and TCUs
Focus of Discussion: *Strengths and Weaknesses in STEM Teaching
and Research at the Participating Institutions*

- HBCUs

(Room 365)

Co-Session Leaders:

Claudia Rankins, Program Director, HRD, and
J. Arthur Jones, Senior Associate, QEM Network

Panel:

George Bradley, President, Paine College
Perry Ward, President, Lawson State Community College
Trudie Kibbe Reed, President, Bethune-Cookman University

- HSIs

(Room 375)

Co-Session Leaders:

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Costello Brown, Senior Associate, QEM Network

Panel:

David Svaldi, President, Adams State College
Steven Rose, President, Passaic County Community College
Hilda Colon-Plumey, Chancellor, University of Puerto Rico at Humacao

- TCUs

(Room 380)

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Panel:

Richard Littlebear, President, Chief Dull Knife College
Laurel Vermillion, President, Sitting Bull College
Virginia Carney, President, Leech Lake Tribal College

Note: Several NSF Program Officers have been invited to join specific
concurrent sessions/to rotate between concurrent sessions

NOON/PM

12:00 *Post-Award Conditions and Requirements, Project Monitoring,
and Oversight*

Room 375

Moderator: Costello Brown, Senior Associate, QEM Network

Panel: NSF Office of Budget, Finance, and Award Management (BFA)

Pamela Hawkins, EHR Team Leader, Division of Grants & Agreements (DGA)
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Carol Orlando, Team Leader, Cost Analysis and Audit Resolution (CARR)
Division of Institution and Award Support (DIAS)

-
- 12:30 *Lunch* (box lunches provided)
NSF's Interactions with the Congress
Teresa Davies, Director, Legislative Affairs
Office of Legislative and Public Affairs, NSF
- 1:15 *Critical Issues in STEM Higher Education: Implications for MSIs*
Wanda Ward, Acting Assistant Director, EHR, NSF
- 1:45 *Funding Opportunities within Various NSF Directorates*
Moderator: Monica Mitchell, Associate, QEM Network
- Panel:
Omnia El-Hakim, Program Director of Diversity and Outreach
Directorate for Engineering (ENG)
Julia Clark, Program Director, Division of Research on Learning in
Formal and Informal Settings (DRL), EHR
Patricia White, Program Director, Division of Social and Economic Sciences (SES)
Directorate for Social, Behavioral and Economic Sciences (SBE)
- 2:15 *Break*
- 2:30 *Funding Opportunities within Various NSF Directorates, continued*
Moderator: Monica Mitchell, Associate, QEM Network
- Panel:
Sally O'Connor, Program Director, Division of Biological Infrastructure (DBI)
Directorate for Biological Sciences
Jill Karsten, Program Director for Education and Diversity
Office of the Assistant Director, Directorate for Geosciences
Tyrone Mitchell, Program Director, Division of Chemistry (CHE)
Directorate for Mathematical and Physical Sciences (MPS)
- 3:00 *Strategies for Integrating/Sustaining Successful STEM Projects/
Project Components into on-going Campus Programs and Activities*
Moderator: Althea Burns, Associate, QEM Network
- Panel:
Clarice Baker-Big Back, Vice President for Academic Affairs
Fort Berthold Community College
Johnnye Jones, Chief Academic Officer, Texas College
Michael Sperling, Provost and Vice President for Academic Affairs
Mercy College
- 3:30 *Break*
- 3:45 *The Science Policy Context*
Cora Marrett, Acting Deputy Director, Office of the Director, NSF
- 4:15 Comments, Questions, and Closing Remarks
- 4:30 *Adjournment*
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APPENDIX D: Follow-up E-mail to “Day at NSF” Participants

Greetings!

At the following website address, you will find a list of links to presentations describing in some detail various NSF programs referenced during our meeting at NSF on Tuesday:

<http://qemnetwork.qem.org/LinksToQEM-NSFPresentations.html>

The linked presentations were made at earlier QEM workshops by NSF program officers with responsibility for implementing the programs in question. Prior to each link you will find contact information for the more program officer who made the presentation as well as a link to the latest program solicitation available for that program.

I strongly encourage you to pass along the link to your STEM faculty so that they can review the presentations and decide whether seeking support from one or more of these programs would enhance the quality of your institution’s STEM offerings.

Suggested next steps the STEM faculty/sponsored program office might take are:

- (1) to download and read the most recent program solicitation/guidelines for the program(s) of interest to see if the goals of the program mesh with what the faculty at the institution have in mind as potential project(s).

Where there is compatibility then:

- (2) to write up a brief summary (no more than a page) of the idea that the faculty would develop later into a full-blown proposal to the program in question; and
- (3) send the brief summary via e-mail to the program officer identified underneath the link and ask for a convenient time a STEM faculty member from your institution might call the program officer to discuss the idea and its potential fit with the goals of the NSF program in question.

If the feedback from the program officer is that there is a potential match, then the faculty should prepare a full proposal, following closely what the program solicitation/guidelines says should be in the narrative of a proposal to that program. The narrative and project summary should, in separate and specific paragraphs, address the two basic criteria used to evaluate all NSF proposals (Intellectual Merit and Broader Impacts) as well as any additional criteria that may be identified in the program solicitation.

If the feedback from the program officer is that the proposed idea is not a good match with the goals of the NSF program, the caller should ask the program officer for the names of other programs that might be a better match and for contact information for program officers with responsibility for administering the programs that may be a better fit.

In closing, let me offer two additional suggestions/reminders:

- one of the best ways for a STEM faculty member to learn how to write strong proposals is to serve as a reviewer. This can be facilitated by sending a copy of the biosketch of the STEM faculty member who wishes to serve as a reviewer to the program officer for the program for which he/she wishes to serve as a reviewer. An excerpt from the April 2009 Grant Proposal Guide (gpg0929) is attached that describes what should be included in a biosketch.
- QEM offers proposal development workshops for several NSF programs. A list of upcoming QEM workshops was in your meeting folder. Faculty can participate in these workshops at no cost. Our grants support the travel, lodging, and other associated expenses for participation. Our expectation, however, is that the participating faculty will follow up with a proposal to the given program.

Please feel free to send me an e-mail if we can be of assistance to you.

Sincerely,

Shirley McBay

Links to recent QEM Workshop Presentations made by Program Officers on NSF Programs, Proposal Development, and Research Opportunities

Below are links to presentations describing in some detail various NSF programs referenced during the "Day at NSF" meeting on Tuesday, September 15, 2009. The linked presentations were made at earlier QEM workshops by NSF program officers with responsibility for implementing the programs in question. Accompanying each link you will find contact information for the program officer(s) as well as a link to the most recent solicitation.

CAREER: [Faculty Early Career Development Program](#)[Solicitation 08-557](#)

Sonia Esperanca, Chair, CAREER Coordinating Committee, telephone: (703) 292-8554,
email: sesperan@nsf.gov

CCLI: [Course, Curriculum, and Laboratory Improvement](#)[Solicitation 09-529](#)

Dennis Davenport, Program Director, telephone: (703) 292-4659, email: ddavenpo@nsf.gov

DR-K12: [Discovery Research K-12](#)[Solicitation 09-602](#)

Julia Clark, Program Director, telephone: (703) 292-5119, email: jclark@nsf.gov

HBCU-UP: [Targeted Infusion and Education Research Projects](#)[Solicitation 09-512](#)

Marilyn Suiter, Program Director, telephone: (703) 292-5121, email: msuiter@nsf.gov
Claudia Rankins, Program Director, telephone: (703) 292-8109, email: crankins@nsf.gov

I-CUBED: [Innovation through Institutional Integration](#)[Frequently Asked Questions](#)

Kathleen Bergin, Member, I-cubed Coordinating Committee, telephone: (703) 292-5171,
email: kbergin@nsf.gov

ITEST: [Innovative Technology Experiences for Students and Teachers](#)[Solicitation 09-506](#)

Sylvia James, ITEST co-lead, telephone: (703) 292-5333, email: sjames@nsf.gov
Julia Clark, ITEST co-lead, telephone: (703) 292-5119, email: jclark@nsf.gov

MRI: [Major Research Instrumentation Program](#)[Solicitation 09-502](#)

Randy Phelps, Staff Associate, telephone: (703) 292-8040, email: rphelps@nsf.gov

MSP: [Math and Science Partnerships](#)[Solicitation 09-507](#)

Kathleen Bergin, Program Director, telephone: (703) 292-5171, email: bergin@nsf.gov
Daniel Maki, Program Director, telephone: (703) 292-4620, email: dmaki@nsf.gov

NOYCE: [The Robert Noyce Teacher Scholarship Program](#)[Solicitation 09-513](#)

Joan Prival, Lead Program Director, telephone: (703) 292-4635, email: jprival@nsf.gov

RDE: [Research in Disabilities Education](#)[Solicitation 09-508](#)

Mark Leddy, Program Director, telephone: (703) 292-4655, email: mleddy@nsf.gov

REESE: [Research and Evaluation on Education in Science and Engineering](#) ...[Solicitation 09-601](#)

Elmima Johnson, Program Director, telephone: (703) 292-5137, email: ejohnson@nsf.gov

RESEARCH CENTERS: [Overview of Major Research Centers Supported by NSF \(STCs, MRSECs, SLCs\)](#)

Joan Frye, Senior Staff Associate, telephone: (703) 292-8040, email: jfrye@nsf.gov

REU: [Research Experiences for Undergraduates](#) ..[Involving Students in STEM Research](#).. [Solicitation 09-598](#)

Sally O'Connor, Program Director, telephone: (703) 292-8470, email: soconnor@nsf.gov

SBE: [Funding Opportunities within the Directorate for Social, Behavioral and Economic Sciences](#)

Patricia White, Program Director, telephone: (703) 292-8762, email: pwhite@nsf.gov

The Quality Education for Minorities (QEM) Network
1818 N Street, NW Suite 350 • Washington, DC 20036
Tel: 202/659-1818 • Fax: 202/659-5408 • E-mail: qemnetwork@qem.org
URL: <http://qemnetwork.qem.org/>