

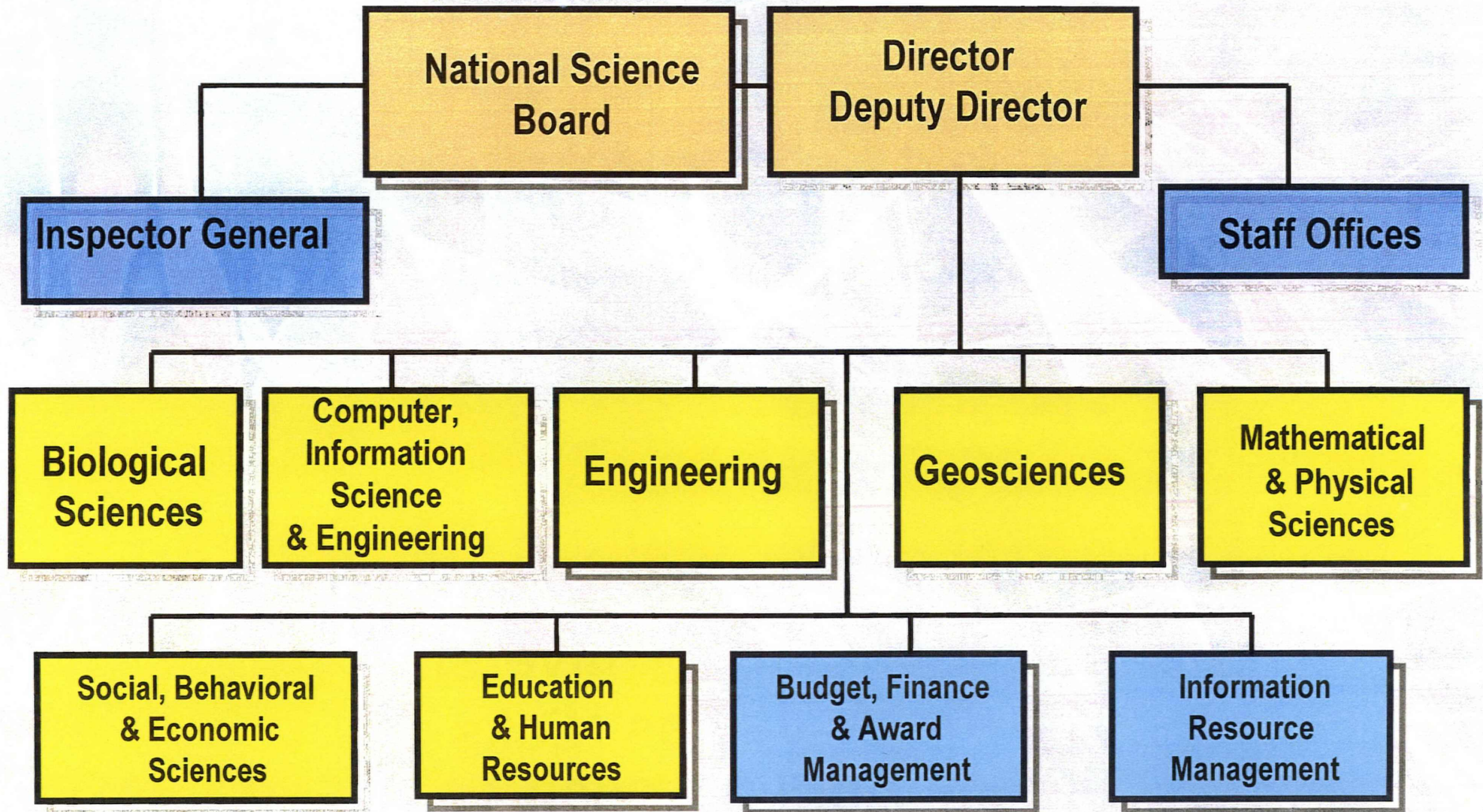
# NSF Selected Funding Opportunities

**Norfolk State University**  
**Dr. A. James Hicks**  
**April 28, 2008**



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# A Look at NSF



# Sources of Information on NSF Funding Opportunities

- Web: [www.nsf.gov](http://www.nsf.gov)
- Program Solicitations
- NSF – Awards:  
<http://www.nsf.gov/awardsearch/>
- Program Officer



# NSF Updates

[service.govdelivery.com/service/multi\\_subscribe.html?code=USNSF](http://service.govdelivery.com/service/multi_subscribe.html?code=USNSF)

- ❖ Automatically receive updates about NSF programs





# NSF-wide Education Themes

**Broadening participation  
in the S&E workforce**

**Strengthening  
teacher preparation**

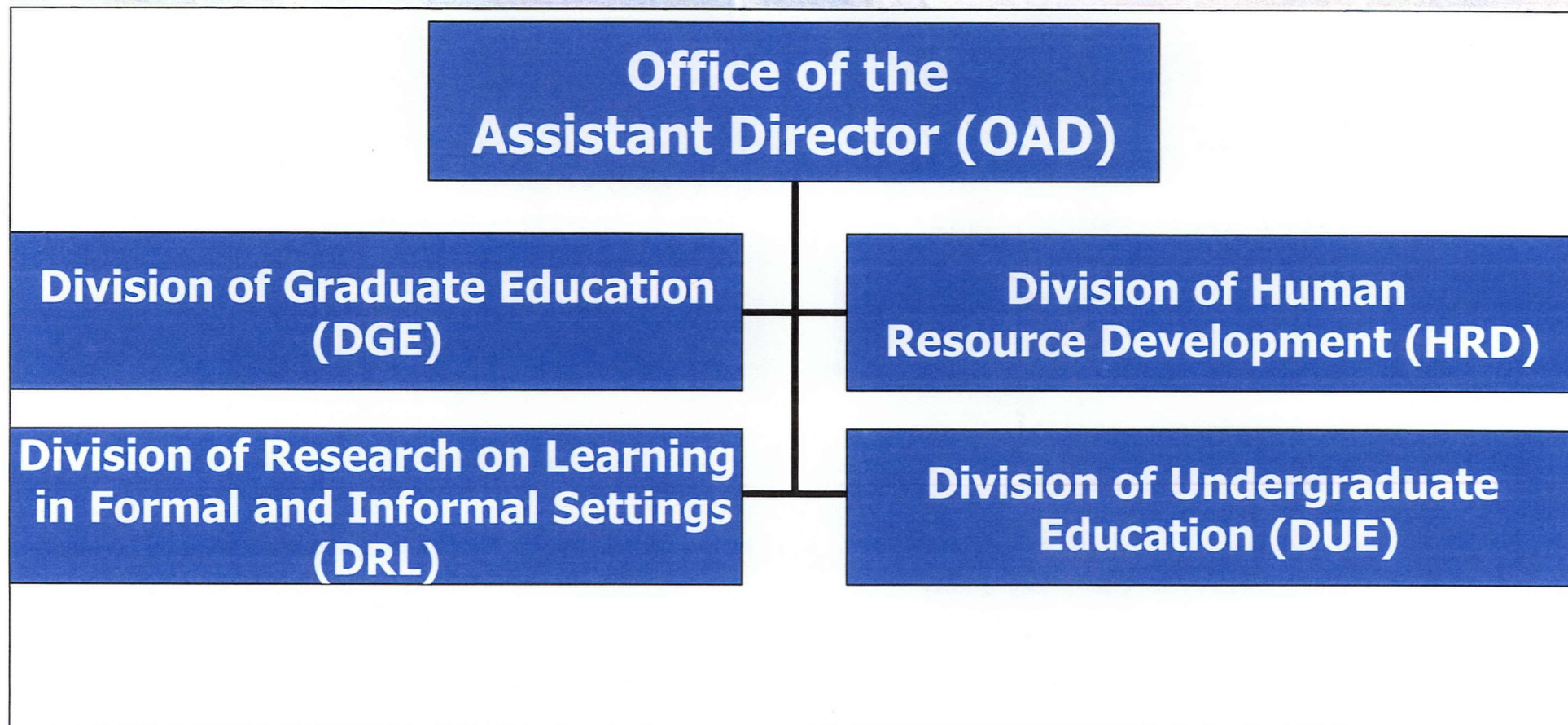
**Integrating  
research and education**

**Stimulating students through  
Inquiry-based learning**

**Reaching a broader public  
through informal education**

# *Directorate for Education and Human Resources (EHR)*

## EHR's Organizational Structure



# Division of Undergraduate Education



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# Course, Curriculum, and Laboratory Improvement (CCLI)

- CCLI seeks to improve the quality of STEM education for all students by targeting activities affecting learning environments, course content, curricula, and educational practices
- Supports projects at all levels of undergraduate education
- Supports activities in the classroom, laboratory, and field settings
  
- NSF 08-???, CCLI Phase 1 ?, 2008





# CCLI Goals and Objectives: A New Emphasis

- ❖ Provide a framework for projects to maximize their effectiveness in improving undergraduate STEM education
- ❖ Increase the emphasis on projects that build on prior work and contribute to the knowledge base of STEM education research and practice
- ❖ Contribute to building a community of scholars who work in related areas of education
- ❖ Explicitly identify a set of measurable outcomes that will be used in the project management and evaluation



# CCLI: 3 Phases

- ❖ **Phase 1 – *Exploratory Projects***

Involve exploratory, initial investigation or adaptation in one of the component areas.

- ❖ **Phase 2 – *Expansion Projects***

Build on smaller scale but proven innovations, refine and test innovations on diverse users

- ❖ **Phase 3 – *Comprehensive Projects***

Several diverse institutions, evaluation or assessment activities—deep & broad, combine proven results and mature innovations from several component areas, sustainability, national dissemination, etc.



# Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP)

- STEP seeks to increase the number of students (U.S. citizens or permanent residents) receiving associate or baccalaureate degrees in established or emerging fields within science, technology, engineering, and mathematics (STEM).

- NSF 07-570, Letter of Intent August 07, 2007  
Full Proposal September 18, 2007



# STEP

- **Bridge programs that enable additional preparation for students**
- **Programs that focus on the quality of student learning**
  - **high-caliber teaching in smaller classes**
  - **new pedagogical approaches**
  - **training of teaching assistants**
- **Programs to encourage undergraduate research**
- **Programs that provide financial incentives to students**
- **Many others**



# NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM)

➤ Goal: Provides institutions funds to provide scholarships to academically talented, but financial needy, students. Students can be pursuing associate, baccalaureate, or graduate degrees.

- NSF 07-524 Letter of Intent July 10, 2008  
Full Proposal August 12, 2008



# S-STEM

## ➔ Major Features

- Eligible disciplines extended to include biology, physical and mathematical sciences, computer and information sciences, geosciences, and engineering
- Maximum scholarships increased to \$10,000 (but still based on financial need)
- Grant size increased to \$600,000
- One proposal per constituent school or college
- About \$50-\$70 million available



# S-STEM

## ➔ Special Program Features

- Has a faculty member in a STEM discipline as the PI.
- Involves cohorts of students.
- Provides student support structures.
- Includes optional enhancements such as research opportunities, tutoring, internships, etc.
- Enrolls students full time.



# Division of Research on Learning in Formal and Informal Settings (DRL)





# Research on Learning in Formal and Informal Settings (DRL)

- ❖ Primarily program involving outreach/improvements in K-12 and STEM
- ❖ Some programs that may be of interest:
  - ◆ **Innovative Technology Experiences for Students and Teachers (ITEST)**
  - ◆ **Discovery Research K-12 (DR K-12)**
  
- ❖ The division homepage is available at:  
<http://www.nsf.gov/div/index.jsp?div=DRL>



# Division of Human Resource Development (HRD)



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# Human Resource Development (HRD)

- ❖ Some programs that may be of interest:
  - ◆ **Alliance for Broadening Participation in STEM (ABP)**
    - Louis Stokes Alliance for Minority Participation (LS-AMP)
    - Bridge to the Doctorate (BD)
    - Alliance for Graduate Education and the Professoriate (AGEP)
  - ◆ **Centers of Research Excellence in Science and Technology (CREST)**
  - ◆ **HBCU Research Infrastructure for Science and Engineering (HBCU - RISE)**
  - ◆ **HBCU Undergraduate Program (HBCU - UP)**
  - ◆ **Tribal Colleges and Universities Program (TCUP)**
  - ◆ **Research in Disabilities Education (RDE)**
  - ◆ **Research on Gender in Science and Engineering (GSE)**
  - ◆ **ADVANCE: Increasing the Participation & Advancement of Women in Science and Engineering Careers**
  
- ❖ The division homepage is available at:  
<http://www.nsf.gov/div/index.jsp?div=HRD>



# HBCU-UP Program Overview

- ❖ This program provides awards to enhance the quality of undergraduate science, technology, engineering, and mathematics (STEM) education and research at Historically Black Colleges and Universities (HBCUs) as a means to broaden participation in the Nation's STEM workforce.
  
- ❖ Funding opportunities include
  - ◆ Implementation Projects (IP)
  - ◆ Planning Grants (PG)
  - ◆ Targeted Infusion Projects (TIP)
  - ◆ Education Research Projects (ERP)



# Planning Grants

- ❖ **Goal: Provide support for an institution to prepare for the submission of a five-year implementation project**
- ❖ **One-year projects, \$50K**

# Implementation Projects

- ❖ **Goal: Provide support to enhance the quality of STEM education that students receive at the HBCU**
- ❖ **Five-year projects, approx. \$2.5 million**
- ❖ **Examples of IMP project activities may include**
  - ♦ **Student support services**
  - ♦ **Retention and recruitment**
  - ♦ **Faculty development**
  - ♦ **Curriculum improvement**
  - ♦ **Bridge programs – High school to college and college to graduate school**
  - ♦ **Research opportunities**
- ❖ **Institutions with prior funding should describe the outcomes and impact of the project and should not propose to simply continue the previous project**
  - ♦ **Please comment on prior funding in your review**



# Targeted Infusion Projects

- ❖ **Goal: Provide support to meet short term, focused goals to improve STEM undergraduate education at the HBCU**
- ❖ **One- to two-year projects,  $\leq$  \$150K**
- ❖ **Examples of TIP support may include**
  - ◆ **Work towards accreditation (e.g., ABET or ACS)**
  - ◆ **Acquisition of equipment for teaching laboratories**
  - ◆ **Development of new degree programs**
  - ◆ **Enhancement or updating of curricula**



# Education Research Projects

- ❖ **Goal: Provide support to encourage education research activities at HBCUs**
- ❖ **Three-year projects,  $\leq$  \$500K**
- ❖ **Examples of ERP support may include projects that**
  - ♦ **Contribute significantly to the current knowledge base on undergraduate education**
  - ♦ **Have potential to improve the quality of undergraduate STEM education at HBCUs**
- ❖ **ERPs should be rigorous and address important new research questions**
  - ♦ **Note: Although a proposal may be a well designed ERP, it might not be highly competitive since it may have limited impact and not investigate a novel question.**
- ❖ **Because this is a relatively new initiative, we expect that some proposals may not be appropriate for this initiative.**



# Centers of Research Excellence in Science and Technology (CREST)

- ❖ Develops outstanding centers through the integration of education and research
  - ♦ Minority Serving Institutions are eligible
  - ♦ Promote the production of new knowledge
  - ♦ Increase the research productivity of faculty
  - ♦ Broaden student access to STEM research
  - ♦ Five-year projects, up to \$1 M per year
- ❖ Research Infrastructure for Science and Engineering (HBCU-RISE)
  - ♦ HBCUs with STEM doctoral programs only
  - ♦ Three-year projects, \$1 M total





# Program Contacts

- ❖ Patrick F. Mensah, Program Officer  
(703) 292-4988, pmensah@nsf.gov
- ❖ Toni Edquist  
(703) 292-4679, tedquist@nsf.gov
- ❖ CREST Program Home page:
  - ◆ [http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=6668](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=6668)



# NSF Crosscutting Activities

[http://www.nsf.gov/funding/pgm\\_list.jsp?type=xcut](http://www.nsf.gov/funding/pgm_list.jsp?type=xcut)



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# CAREER: Faculty Early Career Development Program

- ❖ CAREER recognizes and supports the early career-development activities of those teacher-scholars who are most likely to become the academic leaders of the 21<sup>st</sup> century.
- ❖ CAREER awardees are selected on the basis of creative career-development plans that effectively integrate research and education within the context of the mission of their institution.
- ❖ NSF 05-579, July 17-19, 2007.



# IGERT: Integrative Graduate Education and Research Traineeship Program

- ❖ Innovative research-based graduate education
- ❖ Organized around an interdisciplinary research theme
- ❖ Provides a framework for integrating research and education and promoting collaborations across departments and institutions
- ❖ Involves a diverse group of faculty members
- ❖ Students gain a breadth of skills and understanding to work in interdisciplinary environments while being grounded with knowledge of disciplinary field
- ❖ NSF 05-517, pre-prop April 24, 2008, full proposal October, 20 2008



# GK-12: NSF Graduate Teaching Fellows in K-12 Education

- ❖ Supports fellowships and training to place science and engineering graduate students in K-12 schools
- ❖ Collaboration between university and local school system
- ❖ \$200,000-\$500,000 per year for 3 years
- ❖ NSF 05-553
- ❖ Letters of Intent deadline, May, 2007  
Full proposal deadline, July, 2007



# Major Research Instrumentation Program

- Designed to improve the condition of scientific and engineering equipment and facilities for research and research training
- Awards for instrumentation will range from \$100,000 to \$2 million.
- Cost sharing at a level of 30% of total eligible costs is required (for PhD-granting institutions)
- NSF 08-503, proposal deadline January, 2008
- POC: Joan M. Frye, (703) 292-8040, [jfrye@nsf.gov](mailto:jfrye@nsf.gov)



# Research Experiences for Undergraduates (REU)

- ❖ Emphasis is on providing a meaningful research experience with significant student-faculty interaction
- ❖ REU Sites Competition:
  - ◆ 10-12 week summer programs
  - ◆ 8-12 students
  - ◆ Total project costs = \$600-\$650/student/week
  - ◆ NSF 07-569, August 18, 2008
- ❖ REU Supplements
  - ◆ Support research of 1-2 undergraduates
  - ◆ Awarded as supplement to existing NSF grant
  - ◆ Contact your program officer, and/or R. Corby Hovis, (703) 292-4625, [chovis@nsf.gov](mailto:chovis@nsf.gov)



# Overview of Engineering Directorate Education Programs





# Innovations in Engineering Education, Curriculum, and Infrastructure (IEECI)

- ❖ Three main areas:
  - ◆ Innovations in Teaching and Learning
  - ◆ Strategic Supply-Chain Partnerships for Engineering and Technology Programs (partnerships to expand the pipeline of students from K-12 into college)
  - ◆ Insights into the Business of Engineering Education (how to measure teaching effectiveness of faculty)
- ❖ Exploratory (up to \$100,000) and Expansion (up to \$500,000)
- ❖ NSF 08-542, April 30, 2008



# Research Experiences for Teachers (RET)

- ❖ Build long term collaborative relationships between K-12 teachers of science and mathematics and the NSF research community
- ❖ RET Site Program
  - ◆ Directorate for ENG, NSF 07-557, 3<sup>rd</sup> Monday in November
  - ◆ Up to \$500,000 total for 3 years
  - ◆ Includes community college faculty
- ❖ REU Supplements - \$10,000/teacher/year
  - ◆ ENG (07-557), due 3<sup>rd</sup> Monday in November
  - ◆ 1-year supplements to current NSF awards
  - ◆ Contact your program officer!



# Overview of Computer & Information Science & Engineering (CISE) Directorate Education Programs



# CISE Pathways to Revitalized Undergraduate Computing Education (CPATH)

- ❖ To “revitalize undergraduate computing education on a broad scale and develop innovative academic partnerships and pathways that will prepare undergraduates to enter, lead, and thrive in the challenging workplaces and computing environments of the future”
- ❖ Two main areas:
  - ◆ Community Building
  - ◆ Institutional Transformation Track:
    - Conceptual Development and Planning
    - Transformative Implementation
- ❖ Range from \$50,000 to \$1,000,000
- ❖ NSF 08-516, March 11, 2008



# Teacher Preparation Program Opportunities



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# **NOYCE: Robert Noyce Scholarship Support Program**

- ❖ **Purpose:** This program seeks to encourage talented science, technology, engineering, and mathematics majors and professionals to become K-12 mathematics and science teachers. The program provides funds to institutions of higher education to support scholarships, stipends, and programs for students who commit to teaching in high-need K-12 school districts.
- ♦ **Sample BIO NOYCE Projects:** 0630412 Teacher Education Collaboration for High-Need Schools - New Jersey (TECHS-NJ) is recruiting, preparing, certifying and helping retain a new cohort of 26 science and mathematics teachers, who, upon graduation, hold baccalaureate degrees in Biology, Botany, Chemistry, Environmental Geology, Environmental Science, Geology, or Mathematics.



# **MSP: Math and Science Partnership**

- ❖ **Purpose:** This program was established in 2002 to integrate the work of higher education with K-12 to strengthen and reform mathematics and science education.
- ♦ **Sample BIO MSP Projects:** 0634175 The American Society of Human Genetics (ASHG), the Genetics Society of America (GSA), the National Science Resources Center (NSRC) and the National Association of Biology Teachers (NABT) are using the broad theme of genetics to build a framework to form long-term collaborations between educators and scientists and a sustainable infrastructure to support meaningful outreach by scientists in the high school science classroom. The Geneticist-Educator Network of Alliances (GENA) Project provides the partnering scientific societies with tools to instruct, facilitate, and measure the meaningful engagement of science, technology, engineering, and mathematics (STEM) faculty members in secondary science education.



# Teachers/Faculty Recognition Awards



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# **The Presidential Award for Excellence in Mathematics and Science Technology (PAEMST)**

- ❖ **The Presidential Award for Excellence in Mathematics and Science Teaching (PAEMST) is the highest award a kindergarten - 12th grade mathematics or science teacher may receive for outstanding teaching in the United States.**
- ❖ **This award is given to outstanding mathematics and science teachers from each of the 50 states and 4 U.S. jurisdictions (Washington D.C.; Puerto Rico; Department of Defense Schools; and the U.S. territories as a group: American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, and the U.S. Virgin Islands).**



# PAEMST Awardees

- ❖ **Each awardee receives a \$10,000 award from NSF and gifts from a broad range of donors.**
  
- ❖ **Awardees and their guests are honored during events that take place in Washington, DC, over the course of a week-long celebration.**
  - ◆ **Events include:**
    - **An awards ceremony**
    - **Celebratory receptions and banquets,**
    - **Professional development programs**



# **Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM) program**

- ❖ **PAESMEM, administered on behalf of the White House by NSF, is a program that seeks to identify outstanding mentoring efforts or programs designed to enhance the participation of groups underrepresented in science, technology, engineering, and mathematics.**
- ❖ **The awardees serve as exemplars to their colleagues and are leaders in the national effort to more fully develop the Nation's human resources in science, technology, engineering, and mathematics.**
- ❖ **Nominations to honor individuals and organizations are invited for the competition of these annual awards.**



# PAESMEM

- ❖ **Expectancy that each award will be used to continue recognized activities.**
- ❖ **Nominees must have served in a mentoring role for at least 5 years.**
- ❖ **Beyond grant award, each awardee will be invited to Washington, D.C., to participate in several events:**
  - ◆ **Awards ceremony**
  - ◆ **Recognition events**
  - ◆ **Meeting with leaders in Federal sector education & research**
  - ◆ **Focused workshops addressing effective mentoring of students from underrepresented groups**
- ❖ **Awardees will be honored at a White House ceremony.**



# The Waterman Award

- ❖ The annual Waterman award recognizes an outstanding young researcher in any field of science or engineering supported by NSF.
- ❖ Candidates may not be more than 35 years old, or seven years beyond receiving a doctorate, and must stand out for their individual achievements.
- ❖ In addition to a medal, the awardee receives a grant of \$500,000 over a 3-year period for scientific research or advanced study in their field.



# Broadening Participation in Computing (BPC)

- ❖ To “significantly increase the number of U.S. citizens and permanent residents receiving post secondary degrees in the computing disciplines, with an emphasis on students from communities with longstanding underrepresentation in computing: women, persons with disabilities, and minorities.”
- ❖ Two main areas:
  - ◆ Alliances
  - ◆ Demonstration Projects
- ❖ Range from \$500,000 to \$2,000,000
- ❖ NSF 07-548, May 21, 2008



# Other NSF-wide Opportunities

- Ethics and Education in Science and Engineering [05-532]
- Nanoscale Science and Engineering (NSE) Program [NSF 04-43]
- Nanoscale Science and Engineering Education [05-543]
- Science of Learning Centers (SLC) [NSF 05-509]
- Research in Undergraduate Institutions (RUI) [NSF 00-144]



# Grant Proposal Guide

- Provides guidance for preparation of proposals
- Specifies process for deviations, such as individual program announcements
- Describes process -- and criteria -- by which proposals will be reviewed
- Describes process for withdrawals, returns & declinations
- Describes the award process and procedures for requesting continued support
- Identifies significant grant administrative highlights





# Information Sources

**Read the solicitation!**  
**Read the *GPG!***

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**Read the solicitation!**  
**Read the *GPG!***



# NATIONAL SCIENCE DIGITAL LIBRARY

<http://nsdl.org>

## Mission

NSDL was created by NSF to provide organized access to high quality resources and tools that support innovations in teaching and learning at all levels of STEM and Math education.

