Overview of the Directorate for Education and Human Resources (EHR)

Mississippi State University
December 4, 2007
Dr. John S. (Spud) Bradley
Program Director
Division of Research on Learning
National Science Foundation
Today's young people face a world of increasing global competition. We depend on the excellence of U.S. schools and universities to provide students with the wherewithal to meet this challenge and to make their own contributions to America's future.

Dr. Arden L. Bement, Jr.
Director, NSF

Committee on Science, U.S. House of Representatives, Hearing on K-12 Science and Math Education Across Federal Agencies -- March 30, 2006
Presentation Outline

- EHR Directorate Goals
- EHR Organization
- Finding information on the NSF Website
- EHR Divisions: Missions and Programs
- Strategies and Participation
**NSF Strategic Goals**

- **Discovery**
  - Foster research that will advance the frontiers of knowledge, emphasizing areas of greatest opportunity in fundamental and transformational science and engineering.

- **Learning**
  - Cultivate a world-class, inclusive science and engineering workforce, expanding scientific literacy of all citizens.

- **Research infrastructure**
  - Build the nation’s research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure and experimental tools.

- **Stewardship**
  - Support excellence in science and engineering research and education through a capable and responsive organization.
Directorate for Education & Human Resources (EHR)

EHR’s Mission: To enable *excellence in U.S. STEM education* at all levels and in all settings in order to support the development of a *diverse and well-prepared workforce* of scientists, technicians, engineers, mathematicians and educators.
Thematic Framework for NSF’s Education and Human Resources

- Broadening Participation to Improve Workforce Development
- Enriching the Education of STEM Teachers
- Promoting Learning Through Research and Evaluation
- Furthering Public Understanding of Science and Advancing STEM Literacy
- Transforming STEM Education through Cyber-enabled Learning Strategies
EHR Divisions

- Division of Undergraduate Education (DUE)
- Division of Research on Learning in Formal and Informal Settings (DRL)
- Division of Graduate Education (DGE)
- Division of Human Resource Development (HRD)
## FY08 Budget Request—EHR

<table>
<thead>
<tr>
<th></th>
<th>FY 2006 Actual 1</th>
<th>FY 2007 Request</th>
<th>FY 2008 Request</th>
<th>Change over FY 2007 Request</th>
<th>%</th>
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<tbody>
<tr>
<td>Research on Learning in Formal and Informal Settings (DRL)</td>
<td>$215.58</td>
<td>$215.00</td>
<td>$222.50</td>
<td>$7.50</td>
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<td>Undergraduate Education (DUE)</td>
<td>211.86³</td>
<td>196.80³</td>
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<td>Graduate Education (DGE)</td>
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<td>169.50</td>
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<td>Human Resource Development (HRD)</td>
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<td><strong>Total, EHR</strong></td>
<td>$700.26</td>
<td>$716.22</td>
<td>$750.60</td>
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Division of Undergraduate Education (DUE)

Mission: To promote excellence in undergraduate science, technology, engineering, and mathematics (STEM) education for all students.

Goals:
- Provide leadership
- Support curriculum development
- Prepare the workforce
- Foster connections
DUE Programs

Curriculum, Laboratory, and Instructional Development

- Course, Curriculum and Laboratory Improvement (CCLI)
- National STEM Education Digital Library (NSDL)
DUE Programs

Workforce Development

- STEM Talent Expansion Program (STEP)
- Advanced Technological Education (ATE)
DUE Programs

Workforce Development - Scholarship Programs

- Federal Cyber Service: Scholarships for Service (SFS)
- Robert Noyce Scholarship Program (Noyce)
- NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM)
DUE Programs

Realignment – New to DUE

- Math and Science Partnership (MSP)

- Excellence Awards in Science & Engineering (EASE)

The Distinguished Teaching Scholars (DTS) Program
The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) Program
The Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM)
Course, Curriculum and Laboratory Improvement (CCLI)

- The Program was significantly revised in fiscal year 2006!
- 3 Phases: All previous CCLI program tracks with some variations and extensions fit within the new solicitation.
- Dates: New solicitation 07-543
- Phase 1 Deadline: (May, 2008)
- Phases 2 & 3 Deadline: (Jan. 10, 2008)
CCLI projects should address a recognized need and undertake exemplary work that addresses at least one component of this cycle.
CCLII: Three Phases in an Organized Cycle to Reach Goals of the Program

• Phase 1 – *Exploratory Projects* *(05/2008)*
  Involve exploratory, initial investigation or adaptation in one of the component areas.

• Phase 2 – *Expansion Projects* *(01/10/08)*
  Build on smaller scale but proven innovations, refine and test innovations on diverse users

• Phase 3 – *Comprehensive Projects* *(01/10/08)*
  Several diverse institutions, evaluation or assessment activities–deep & broad, combine proven results and mature innovations from several component areas, sustainability, national dissemination, etc.
Advanced Technological Education Program (ATE)

- The ATE program promotes improvement in the education of science and engineering technicians at the undergraduate and secondary school level and the educators who prepare them, focusing on technicians for high-technology fields that drive the nation’s economy.

- ATE is in its 15th year of funding community colleges, having started with the Science and Advanced Technology Act of 1992 (SATA).

- FY2008-FY2010
  - Preliminary Proposals April 26, 24, and 23 respectively
  - Formal Proposals October 11, 16, and 15 respectively
Advanced Technological Education

Projects which focus on:
- Program Improvement;
- Professional Development for Educators;
- Curriculum and Educational Materials Development;
- Teacher Preparation; or
- Small Grants for Institutions New to the ATE Program.

• Centers of Excellence – National, Regional, Resource
  - [http://www.ATECenters.org](http://www.ATECenters.org)

• Targeted Research on Technician Education
## Foci of ATE Awards

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>FY 96-01</th>
<th>FY 02-05</th>
<th>FY 2006</th>
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<tbody>
<tr>
<td>Biotechnology</td>
<td>24</td>
<td>14</td>
<td>9</td>
</tr>
<tr>
<td>Chemical Technology/Pulp &amp; Paper</td>
<td>15</td>
<td>12</td>
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<tr>
<td>Multidisciplinary</td>
<td>30</td>
<td>6</td>
<td>4</td>
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<tr>
<td>Electronics/Microelectronics/Nanotech</td>
<td>12</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Other Engineering Technology</td>
<td>30</td>
<td>38</td>
<td>7</td>
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<tr>
<td>Environmental</td>
<td>22</td>
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<tr>
<td>Geographic Information Systems</td>
<td>13</td>
<td>10</td>
<td>5</td>
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<tr>
<td>Manufacturing</td>
<td>52</td>
<td>33</td>
<td>7</td>
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<tr>
<td>Math/Physics</td>
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<td>13</td>
<td>2</td>
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<tr>
<td>Computer/Information Systems/Cybersecurity/Telecommunications</td>
<td>72</td>
<td>58</td>
<td>9</td>
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<tr>
<td>Marine/Agriculture/Aquaculture/Nat. Res.</td>
<td>11</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Teacher Preparation</td>
<td>10</td>
<td>23</td>
<td>1</td>
</tr>
<tr>
<td>Multimedia</td>
<td>0</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Energy Technology</td>
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<td>3</td>
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</tr>
<tr>
<td>Research</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Recruitment/Retention</td>
<td>0</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Institution Reform</td>
<td>0</td>
<td>3</td>
<td>0</td>
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<tr>
<td><strong>Totals</strong></td>
<td><strong>306</strong></td>
<td><strong>243</strong></td>
<td><strong>65</strong></td>
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</table>
Number of Awards per State in ATE’s 13 Year History
Total number of Awards (739)
STEM Talent Expansion Program (STEP)

Goal: 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).

Activities might include

- 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 award scholarships to academically talented, but financially needy, students. Students can be pursuing associate, baccalaureate, or graduate degrees.
- Funded from H1B Visa Funds
- Predecessor was Computer Science, Engineering, and Mathematics Scholarships (CSEMS) Program

S-STEM

- 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 with 7% allowed for administration and 8% for student support
- One proposal per constituent school or college that awards degrees (also schools within institutions)
- About $50 - $70 million available in FY’07
Noyce Scholarship Program

- Funds provided to colleges and universities with strong teacher preparation programs to provide scholarships/stipends for prospective teachers.
- Scholarships/stipends based on academic merit, consideration of financial need, and increasing the participation of minority populations in the teaching workforce.
Noyce Scholarship Program

Projects include—

- Recruitment strategies
- STEM faculty collaborating with Education faculty
- Strong partnership with school district
- Exemplary teacher preparation programs leading to certification
- Support for new teachers
- Mechanism for monitoring recipients
- Evaluation
Interdisciplinary Training for Undergraduates in Biological and Mathematical Sciences (UBM)

• Institutional Awards and Group Awards
• Student involvement in innovative research at the forefront of the biological and mathematical sciences;
• 4 or more students in a cohort, working and learning together (at least 2 math and 2 biology majors) for group awards and eight for institutional ones;
• Long-term involvement of each student with project activities to provide immersion, intense involvement in research, and mutual reinforcement between the research and classroom activities;

Full proposal deadline: February 21, 2008
A “cross-cutting” program, managed and budgeted within the various NSF research units instead of centrally

Program officer for REU in each NSF research unit (generally)

“REU Team” (= REU program officers from the research units) discusses NSF-wide policies for the program and revises the program announcement periodically
Research Experiences for Undergraduates (REU)

- **REU Sites**
  - ~$35M in FY2006
  - Grant to support a group of students in a research area, in response to a specific proposal to establish an REU Site

- **REU Supplements**
  - ~$21M in FY2006
  - Support for one or two students within an NSF-funded research project, in response to a PI’s Request for Supplemental Funding or a special request within a regular research proposal
REU Sites

- Award to an organization specifically to support a group of students (> ~6) in a research area
- Implemented as a formal annual proposal competition within research units NSF-wide
- Research area may be a single discipline or an interdisciplinary/multidisciplinary area with a *coherent intellectual theme*
- Sites design and run student selection process
- Site experiences are usually 8-10 weeks in summer, but academic-year sites are also OK
- Sites use awards to provide stipends for students, plus help with expenses for housing, food, travel, etc.
- Significant fraction of students come from outside the host institution
- Investment in FY2006: ~$35M
- Typical grant: $80k-$100k per year for 3 years
DUE PI RS

Project Information Resource System

(PIRS), through which you can access updated information about DUE projects that is provided and maintained by individual principal investigators. A text search of these records will produce a "hit list" of projects that "match" your input.
Division of Research on Learning (DRL) Core Programs

- Discovery Research K-12 (DRK-12)
- Information Technology Experiences for Students and Teachers (ITEST)
- Research and Evaluation on Education in Science and Engineering (REESE)
- Informal Science Education (ISE)
- Advanced Technological Education (ATE)
Discovery Research K-12

Enables significant advances in K-12 student and teacher learning of STEM disciplines through research, development, and implementation of innovative resources, models, and technologies.

Deadline: January 28, 2008
DR-K12 Projects

- Have a research question or hypothesis about K-12 STEM learning or teaching
- Develop, adapt, or study innovative resources, models, or technologies
- Demonstrate if, how, for whom, and why these implementation affect learning
Five Challenges

Contextual Challenges (*immediate and pressing issues*)

1. How can assessment of relevant STEM content improve K-12 teaching and learning?
2. How can the learning of significant STEM content be achieved to ensure public literacy and workforce readiness?

Frontier Challenges (*vision of the future*)

1. How can all students be assured the opportunity to learn significant STEM content?
2. What will support STEM teachers’ practice and development in an era of cyber-enabled learning?
3. How can the impact of K-12 STEM classroom learning be enhanced by effective integration with local and global resources and systems?

Each project *must* address one or more of these challenges.
Contextual Challenge 1

How can assessment of relevant STEM content improve K-12 teaching and learning?

This challenge encourages but is not limited to proposals that address one of the following areas:

- Assessment of science learning in the elementary and middle grades;
- Formative and instructionally embedded assessments in K-12 STEM;
- Teachers' knowledge of science and technology for teaching.
- Other STEM assessment issues are also eligible.

Syntheses of relevant research including comparison of effects of different assessment approaches are welcome.
Contextual Challenge 2

How can the learning of significant STEM content be achieved to ensure public literacy and workforce readiness?

This challenge encourages but is not limited to proposals that

• Address student and teacher readiness for algebra in the middle grades;

• Teach complex STEM concepts and processes to younger learners;

• Promote the learning of STEM practices and modes of inquiry through virtual laboratory and other inquiry experiences;

• Build on classroom diversity to broaden access to significant STEM learning.

Syntheses that support practitioners and policymakers concerned with promoting STEM learning are welcome.
Frontier Challenges

These projects

• Explicitly anticipate opportunities for teaching and learning in 10 to 15 years;
• Challenge existing assumptions about learning and teaching;
• Require a vision of schools that are dramatically more responsive and effective with diverse learners;
• Implement innovative methods of learning that include collaborative and interactive tools for cyber-enabled learning;
• Have the potential to transform current practice and expand of the classroom boundaries that define formal education today.
Frontier Challenge 1

How can all students be assured the opportunity to learn significant STEM content?

This challenge encourages but is not limited to proposals that

- Provide creative and ground-breaking approaches that ensure access to and success in high-quality STEM education;
- Develop and study innovative resources, models, and technologies that can accelerate access to the most important ideas, concepts, and processes of STEM content;
- Both deepen learning and expand access to learning;
- Develop and/or study resources, models and technologies to enhance teachers' capabilities for working with a diverse student population.

Syntheses of research and practice that would support efforts to enable all students to learn STEM content are encouraged.
Frontier Challenge 2

What will support STEM teachers’ practice and development in an era of cyber-enabled learning?

This challenge encourages but is not limited to proposals that

- Build and investigate resources, models, or technologies for learning that are foundational for lifelong teacher learning and for the transformation of STEM teaching;
- Help preservice and inservice teachers acquire the skills, knowledge, confidence and tools needed to meet emerging challenges in a context of rapidly changing technologies and evolving content;
- Address the needs of students and teachers in a global, interconnected environment;
- Implement models of self-directed, voluntary teacher learning that benefits from cyber-enabled resources, data, and expertise.

Synthesis projects that analyze cyber enabled learning on teachers and their practice are welcome.
Frontier Challenge 3

*How can the impact of K-12 STEM classroom learning be enhanced by effective integration with local and global resources and systems?*

Proposals are encouraged to

- Establish collaborations between formal education and out-of-school, science-rich venues, such as university outreach programs, local industries, science centers, communities, and other science-education organizations.

Syntheses of relevant research to serve as a basis for development in this area are welcome.
Proposal Types

- **Full Research and Development Projects** — research, development and implementation with attention to design and evaluation.

- **Exploratory Projects** — preliminary work to clarify constructs, assemble theoretical or conceptual foundations, or perform analytic or empirical preparatory work.

- **Synthesis Projects** — synthesis of existing knowledge on a topic of critical importance.
Proposal Types

Resource Network—One network will be funded as a cooperative agreement to support the program through

• assistance with R&D methods, implementation, and analysis procedures;
• synthesizing findings across the portfolio;
• promoting national dissemination of project contributions;
• PI meetings and workshops;
• testing of methods;
• promotion of instrument sharing across projects;
• thematic research and evaluation studies.

Conferences and Workshops—A few well-focused conferences or workshops related to the goals of the program are welcome.
DR-K12

An Example

Dr. Linda Coats & Dr. Jianzhong Xu,
Mississippi State University (0732173)

- What are the characteristics of exemplary African-American elementary science teachers?
- What is the impact of mentoring beginning elementary science teachers?
- How does mentoring affect beginning elementary science teachers?
- What is the impact on the mentoring on student learning of science?
ITEST

ITEST is a initiative targeting K-12 students and teachers which focuses on the IT and STEM workforce. It is designed to build the knowledge base, support effective models and strategies that engage and prepare the future workforce, and foster workforce competencies. (H-1B Visa Funded)
ITEST

ITEST Learning Resource Center

http://www2.edc.org/itestlrc/
REESE

- Advances research at the frontiers of STEM learning, education, and evaluation
- Provides foundational knowledge necessary for improving STEM teaching and learning at all educational levels and in all settings

Deadline: January 8, 2008
REESE Strands

**Frontier Research**
- Neural basis for learning STEM
- Cognitive processes underlying STEM learning and teaching
- Measurement, modeling, and methods
- Cyber-enabled learning and teaching

**Contextual Research**
- Studies of STEM teaching and learning in formal and informal settings
- Policy, evaluation, and systems studies
DRK12 and REESE

DR-K12 focuses specifically on issues of K-12 learning and teaching. Projects will involve a substantial development component, or will study the implementation of particular resources, models and technologies for the purpose of informing future design and implementation.

REESE focuses primarily on building theory and knowledge through research and evaluation across learning contexts and ages.

The primary outcomes of DR-K12 projects will be resources, models, or technologies that are grounded in or informed by research or practice, as well as research findings about the implementation and impact of K-12 STEM education resources, models and technologies.

The primary outcomes of REESE projects will be research findings, methods, and theoretical perspectives.
Division of Research on Learning (DRL)

Informal Education Programs

- Informal Science Education (ISE)
- Communicating Research to Public Audiences (CRPA)
ISE Projects

- Exhibitions at museums, science and technology centers, aquaria, botanical gardens, environmental centers, etc.
- Radio and television
- Large format films
- Community centers
- Professional development of informal science educators
- Evaluation in informal settings
DGE programs promote the early career development of scientists and engineers by providing support at critical junctures of their careers through fellowships and traineeships.
DGE Programs

- Graduate Research Fellowship Program (GRFP)
- NSF Graduate Teaching Fellows in K-12 Education (GK-12)
- Integrative Graduate Education and Research Traineeship (IGERT)
- Research focus on Graduate Education
Graduate Research Fellowship Program

Award Information

- $30,000 stipend per year for three 12-month tenure periods over five years
- $10,500 cost-of-education allowance per tenure year payable to the affiliated institution
- $1,000 one-time international research travel allowance
- Honorable Mention for meritorious applicants
- Facilitation Awards for Scientists and Engineers with Disabilities
- Women in Engineering and Computer and Information Science Awards

Value Added

- Supercomputer usage
- Prestige
Graduate Research Fellowship Program

Eligibility Requirements
- U.S. citizen or permanent residents
- Baccalaureate degree prior to Fall
- Completion of fewer than twelve months of full-time graduate study
- Graduate study in STEM disciplines supported by NSF

Fellowship Applications
- Personal profile
- Personal essay
- Previous research experience
- Proposed research plan
- Reference letters
Graduate Teaching Fellowships in K-12 Education (GK-12)

http://www.ehr.nsf.gov/dge/programs/gk12/
GK12 – Particulars

- Program is in its 9th year of operation
- Provides $30,000 stipend and $10,500 COE
- Current number of projects: 164
- Number of awards/year: 23-36
- Projects in 47 states and Puerto Rico
- Largest percentage of projects in urban setting schools
- Each year between 600-900 Fellows supported. Average 10 Fellows/site
GK-12 Fellows spend ~15 hours a week at a K-12 school

- Bring STEM expertise to K-12 teachers and classroom
- Provide state-of-the-art lessons for teachers to use
- Create excitement for science careers among K-12 students
- Raise awareness of connections between science and daily life for K-12 students
Integrative Graduate Education and Research Traineeship Program (IGERT)

http://www.igert.org

Purpose: To provide training opportunities for U.S. Ph.D. students that feature
✓ interdisciplinary cutting-edge research
✓ innovative educational programs
✓ diversity
Unique IGERT Features

- Preparation for interdisciplinary research
  - Learning teamwork, crossing disciplines

- Preparation for a variety of careers
  - Academia, Industry, Entrepreneurship

- Preparation for a global future
  - International collaborative research and education
Division of Human Resource Development (HRD)

Two-fold Mission:

To increase the participation and advancement of underrepresented minorities and minority-serving institutions, women and girls, and persons with disabilities at every level of the science and engineering enterprise.

To serve as a focal point for NSF's agency-wide commitment to enhancing the quality and excellence of science, technology, engineering, and mathematics (STEM) education and research through broadening participation by underrepresented groups and institutions.
HRD Programs

Minorities and Minority Serving Institutions

- Alliances for Broadening Participation in STEM
  - Graduate Education and the Professoriate Program (AGEP)
  - The Louis Stokes Alliance for Minority Participation Program (LSAMP) and Bridge to the Doctorate (BD) Program

- Centers for Research Excellence in Science and Technology (CREST)

- Historically Black Colleges and Universities Undergraduate Programs (HBCU-UP)

- Tribal Colleges and Universities Program (TCUP)
HRD Programs

Women and Girls

- Research on Gender in Science and Engineering (GSE)
- ADVANCE: Increasing the participation and representation of women in academic science and engineering careers (ADVANCE)

Persons with Disabilities

- Research in Disabilities Education (RDE)
Alliances for Graduate Education and the Professoriate Program (AGEP)

- Increase the number minority students receiving doctoral degrees in STEM
  - develop and implement models for recruiting, mentoring, and retaining students
  - develop effective strategies for identifying and supporting students who want to pursue academic careers

- Research on different transitions
  - undergraduate through graduate study
  - course-taking to independent research
  - the academic environment to the workplace
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 $1M per year

Research Infrastructure for Science and Engineering (HBCU-RISE)

- HBCUs with STEM doctoral programs only
- Three-year projects, $1M total
Goal: To develop the strategies to increase the number of minority students who complete BA/BS degrees in STEM.

- Partnerships between institutions, government agencies and laboratories, industry, and professional organizations are required.

- Activities:
  - student enrichment
  - skill development and academic enrichment
  - mentoring
  - curricular and instructional improvement
  - direct student support
Research on Gender in Science and Engineering (GSE)

Goal: To broaden participation of girls and women in STEM.

Proposal types:
- Research informing educational practice
- Dissemination of research
- Integration of proven good practices in education
ADVANCE

Goal: To increase the participation and advancement of women in academic science and engineering careers.

- **Institutional Transformation (IT):** 5-year projects, $2 M to $4 M total
  - Comprehensive, institution-wide, projects to transform the organization and culture of the university or college

- **IT-Start:** 2-year planning grant projects, $100 K to $200 K total
  - Planning and assessment activities to prepare a competitive IT proposal.

- **Partnerships for Adaptation, Implementation and Dissemination (PAID):** One to five-year projects
  - Funding will depend on the scope of the project
  - Projects should adapt, implement and/or disseminate the exemplary programs, policies, and practices to increase the participation of women in STEM academics.
Research in Disabilities Education (RDE)

Goal: To increase the participation and achievement of persons with disabilities in STEM education and careers.

Proposal types:
- Research informing educational practice
- Assistive technologies and technology for learning
- Dissemination of research
- Regional Alliances for persons with disabilities in STEM education
Established in 1994 to recognize efforts by junior faculty members in all disciplines supported by NSF in integrating research and education, and fostering the connections between learning and discovery.

The Presidential Early Career Award for Scientists and Engineers (PECASE) is the highest honor bestowed by the U.S. Government on outstanding scientists and engineers beginning their independent careers.
CAREER PROGRAM
Eligibility Requirements

By the Directorate's July deadline
- Hold a doctoral degree in a field of science or engineering supported by NSF;
- Be untenured;
- Have not previously received an NSF PECASE or CAREER award

By the following October 1st:
- Be employed in a tenure-track position as an assistant professor (or equivalent title) at an institution in the U.S. that awards degrees in a field supported by NSF;
  OR
- Be employed in a tenure-track-equivalent position as an assistant professor (or equivalent) at an organization in the U.S such as a museum, etc.
The minimum CAREER award, including indirect costs, is $400,000 total for the 5-year duration with the following exception. The Biological Sciences Directorate (BIO) has a minimum of $500,000 for the 5-year duration.

The PECASE award is an honorary award for all NSF recipients and does not provide additional funds.

The estimated number of awards is 300-400, Foundation wide. (DRL expects to fund 6 of 55 proposals.)
Integrating Research and Education in the Context of DRL

- Fostering the natural connections between the processes of learning and discovery (e.g., research enhanced by inspired teaching and enthusiastic learning)

- Each proposal must describe a research plan and an education plan reflective of the proposer’s own interest and goals and the needs of the institution

- Both plans must be integrated

- Research and Education plans do not need to be addressed separately
NSB Merit Review Criteria (NSF 04-23)

Intellectual Merit

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields?

How well qualified is the nominee (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.)

To what extent does the proposed activity suggest and explore creative, original or potentially transformative concepts?

How well conceived and organized is the proposed activity? Is there sufficient access to resources?
The term transformative research is being used to describe a range of endeavors which promise extraordinary outcomes, such as: revolutionizing entire disciplines; creating entirely new fields; or disrupting accepted theories and perspectives—in other words, those endeavors that have the potential to change the way we address challenges in science, engineering, and innovation.
Broader Impacts

How well does the activity advance discovery and understanding while promoting teaching, training, and learning?

How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)?

To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships?

Will the results be disseminated broadly to enhance scientific and technological understanding?

What may be the benefits of the proposed activity to society?
Getting Started

- **Start ****EARLY**
- Get acquainted with **FASTLANE** (www.FastLane.nsf.gov)
- Read the Program Solicitation and follow the guidelines.
- **Contact** a program officer to discuss your idea; this provides useful information and often helps you to refine your idea; it may also prevent you from applying to the wrong program (*e-mail* is best).
- Become an NSF reviewer.
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