EDUCATING THE NEXT GENERATION

Transforming Education *Promoting Excellence*

National Science Foundation
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Julio E. Lopez-Ferrao

Program Director, EHR/DRL

jlopezfe@nsf.gov

San Antonio, Texas

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NATIONAL SCIENCE FOUNDATION • DIRECTORATE FOR EDUCATION AND HUMAN RESOURCES

Investing in America's Future
NSF Strategic Plan
FY 2006 - 2011

NSF Strategic Goals

- **Discovery**

Advance the frontiers of knowledge

- **Learning**

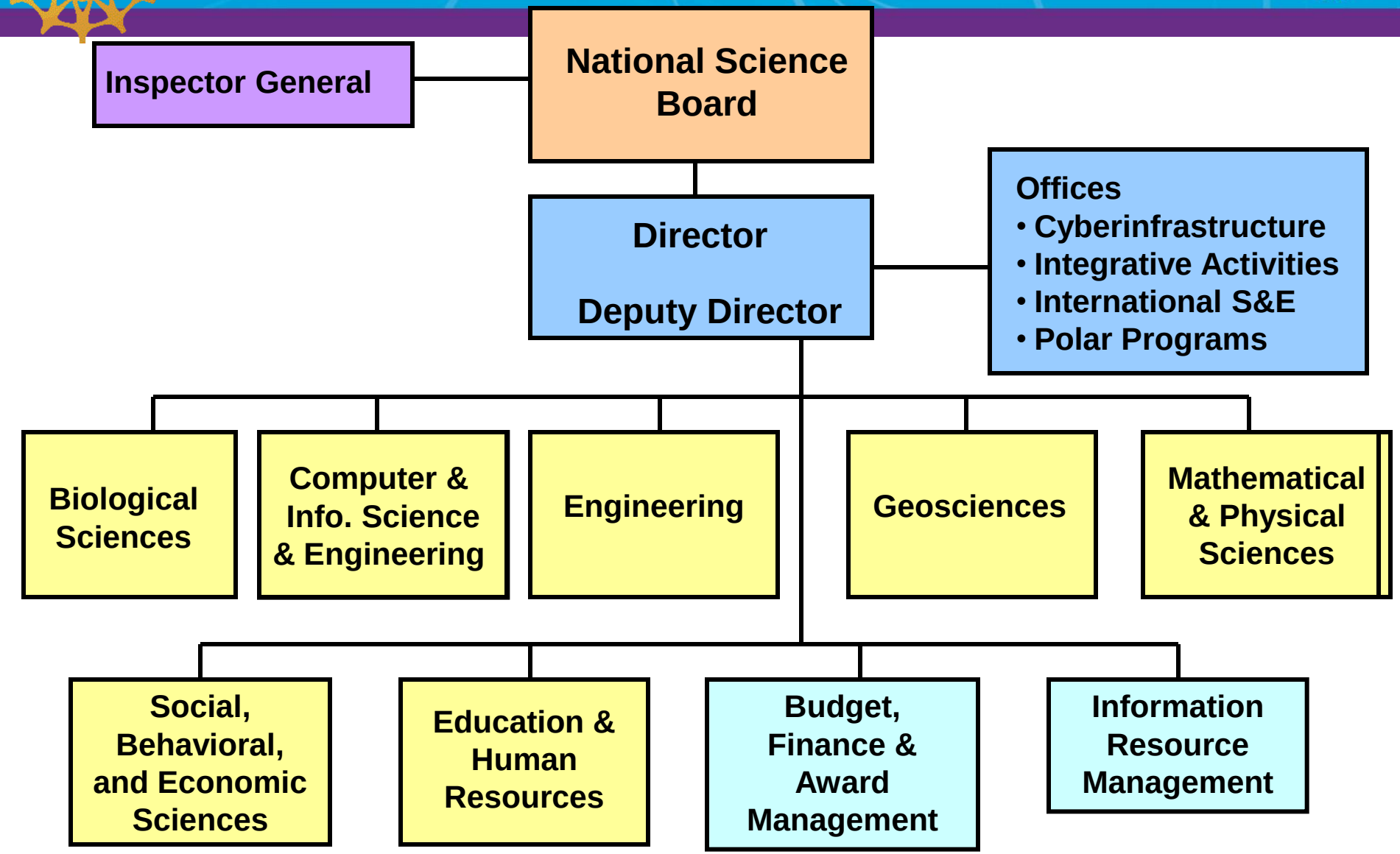
Cultivate a world-class, inclusive science and engineering workforce

- **Research infrastructure**

Build research capability via advanced instrumentation, facilities, cyberinfrastructure and experimental tools

- **Stewardship**

Support excellence and ensure a capable and responsive organization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Engineering
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EHR's Mission

To strengthen U.S. education at all levels, in both formal and informal settings, and to support continued U.S. economic and research preeminence.

To sustain national leadership in STEM research, policy, and practice, in FY 2010 EHR will invest its resources through six thematic priorities:

EHR's Organizational Structure

Office of the Acting Assistant Director

- **Division of Graduate Education (DGE)**
- **Division of Human Resource Development (HRD)**
- **Division of Research on Learning in Formal and Informal Settings (DRL)**
- **Division of Undergraduate Education (DUE)**

Division of Undergraduate Education (DUE)

DUE supports comprehensive approaches to strengthening STEM education at two- and four-year colleges and universities.

The goals of DUE are to:

- Provide leadership
- Support curriculum development
- Prepare high-qualified workforce
- Foster connections at all education levels

Core DUE Programs

- Advanced Technological Education **(ATE)** [managed jointly with DRL]
- Course, Curriculum and Laboratory Improvement **(CCLI)**
- Federal Cyber Service: Scholarship for Service **(SFS)**
- Math and Science Partnership **(MSP)**
- Excellence Awards in Science and Engineering **(EASE)** [managed jointly with DRL]
- National STEM Education Distributed Learning **(NSDL)**
- NSF Scholarships in Science, Technology, Engineering, and Mathematics **(S-STEM)**
- Robert Noyce Teacher Scholarship Program **(NOYCE)**
- Science, Technology, Engineering, and Mathematics Talent Expansion Program **(STEP)**
- Interdisciplinary Training for Undergraduates in Biological and Mathematical Sciences **(UBM)**

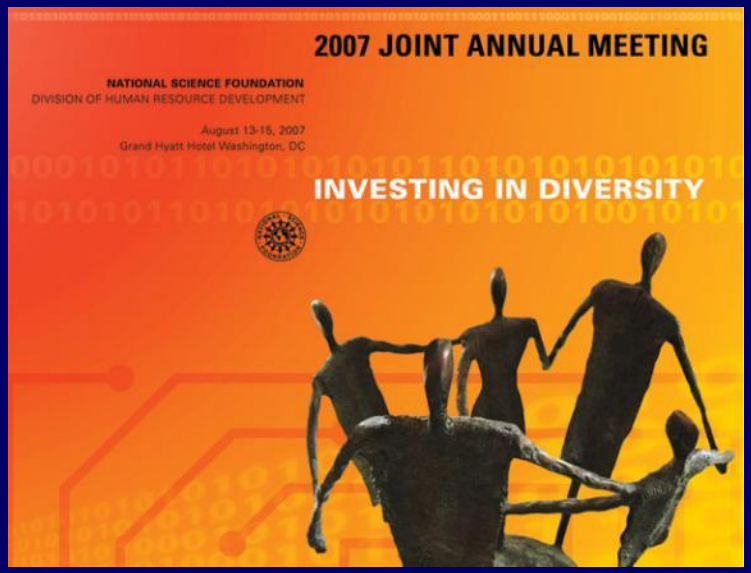
Division of Graduate Education (DGE)

DGE leads NSF's effort to attract the most talented U.S. students into graduate studies, and to support them in their quest to become the leading scientists and engineers of the future.

Core DGE Programs

- Graduate Research Fellowship Program **(GRF)**
- Integrative Graduate Education and Research Traineeship Program **(IGERT)**
- NSF Graduate STEM Fellows in K-12 Education **(GK-12)**

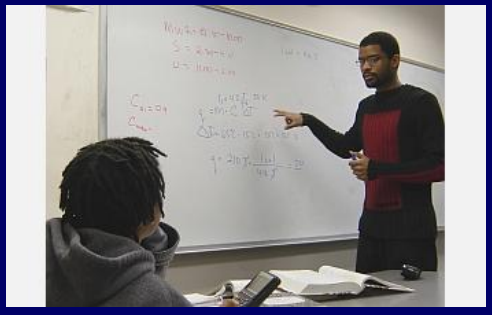
Division of Human Resource Development (HRD)



HRD serves as a focal point for NSF's agency-wide commitment to enhancing the quality and excellence of STEM education and research through broadening participation of underrepresented groups and institutions.

HRD Core Programs

- Research in Disabilities Education **(RDE)**
- Tribal Colleges and Universities Program **(TCUP)**
- **ADVANCE**: Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers
- Research on Gender in Science and Engineering **(GSE)**
- Centers of Research Excellence in Science and Technology **(CREST)**
- Alliances for Broadening Participation in STEM **(ABP)**
- Historically Black Colleges and Universities – Undergraduate Program **(HBCU-UP)**



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

DRL promotes innovative research, development, and evaluation of learning and teaching across all STEM disciplines by advancing cutting-edge knowledge and practices in both formal and informal settings.

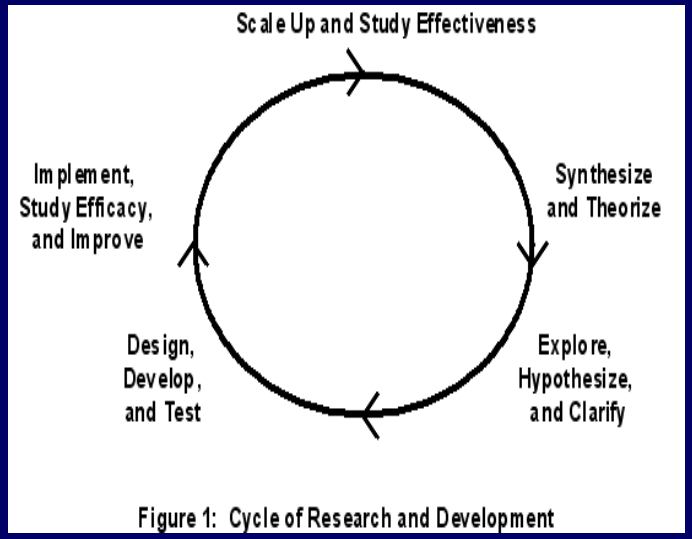


Figure 1: Cycle of Research and Development

DRL: Core Programs

- Discovery Research K-12 **(DR-K12)**
- Informal Science Education **(ISE)**
- Innovative Technology Experiences for Students and Teachers **(ITEST)**
- Research and Evaluation on Education in Science and Engineering **(REESE)**

DRL: Discovery Research K-12 (DR-K12)

Astrobiology students create models of molecules.

- Enables student and teacher learning through the development, implementation, and study of STEM resources, models, and tools.
- Meets a variety of educational needs, from those that address immediate and pressing challenges facing preK-12 STEM education to those that anticipate opportunities for the future.

DRL: Informal Science Education (ISE)

"*The State of the Planet's Oceans*" – An episode in the award wining environmental film series, *Journey to Planet Earth*.

- Advances knowledge in the field through research and evaluation about STEM learning in informal environments.
- Supports the design, implementation, and study of exhibits, models, resources, and programs for STEM learning in informal settings such as science centers, zoos, film, radio, youth programs, and games.
- Expands the capacity of professionals engaged in informal STEM education programs.

DRL: Innovative Technology Experiences for Students and Teachers (ITEST)

Middle and high school students participate in the *Build IT* underwater remotely operated vehicle (ROV) competition.

- Encourages K-12 students to prepare for and consider careers in information technology.
- Equips teachers to prepare and encourage students to enter the STEM workforce.
- Builds a general knowledge base on approaches that increase capacity in the STEM workforce in the United States.

DRL---Research and Evaluation on Education in Science and Engineering (REESE)

A teacher helps students solve problems using a computer based tutorial program.

- Focuses on core scientific questions about STEM teaching and learning.
- Catalyzes discovery and innovation at all ages and in all settings.
- Supports interdisciplinary research among education, policy, evaluation, and cognitive sciences.

Intellectual Merit

- Does the project advance knowledge?
- Are PIs and personnel well qualified?
- Is the activity creative, original, innovative?
- Is the activity well conceived and organized?
- Is there sufficient access to resources?
- Does it suggest and explore creative, original, or potentially transformative concepts?

Broader Impacts

- How well does the project advance discovery and understanding while promoting teaching, training, and learning?
- How does the activity broaden participation of underrepresented groups?
- Will the activity enhance the research and education infrastructure?
- Will results be disseminated broadly?
- What may be the activity's benefits to society?

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