The Science and Technology Centers Program in the NSF Context

STC Students / STC Directors' Meeting

National Science Foundation, 2 September 2010

W. Lance Haworth

Director, NSF Office of Integrative Activities

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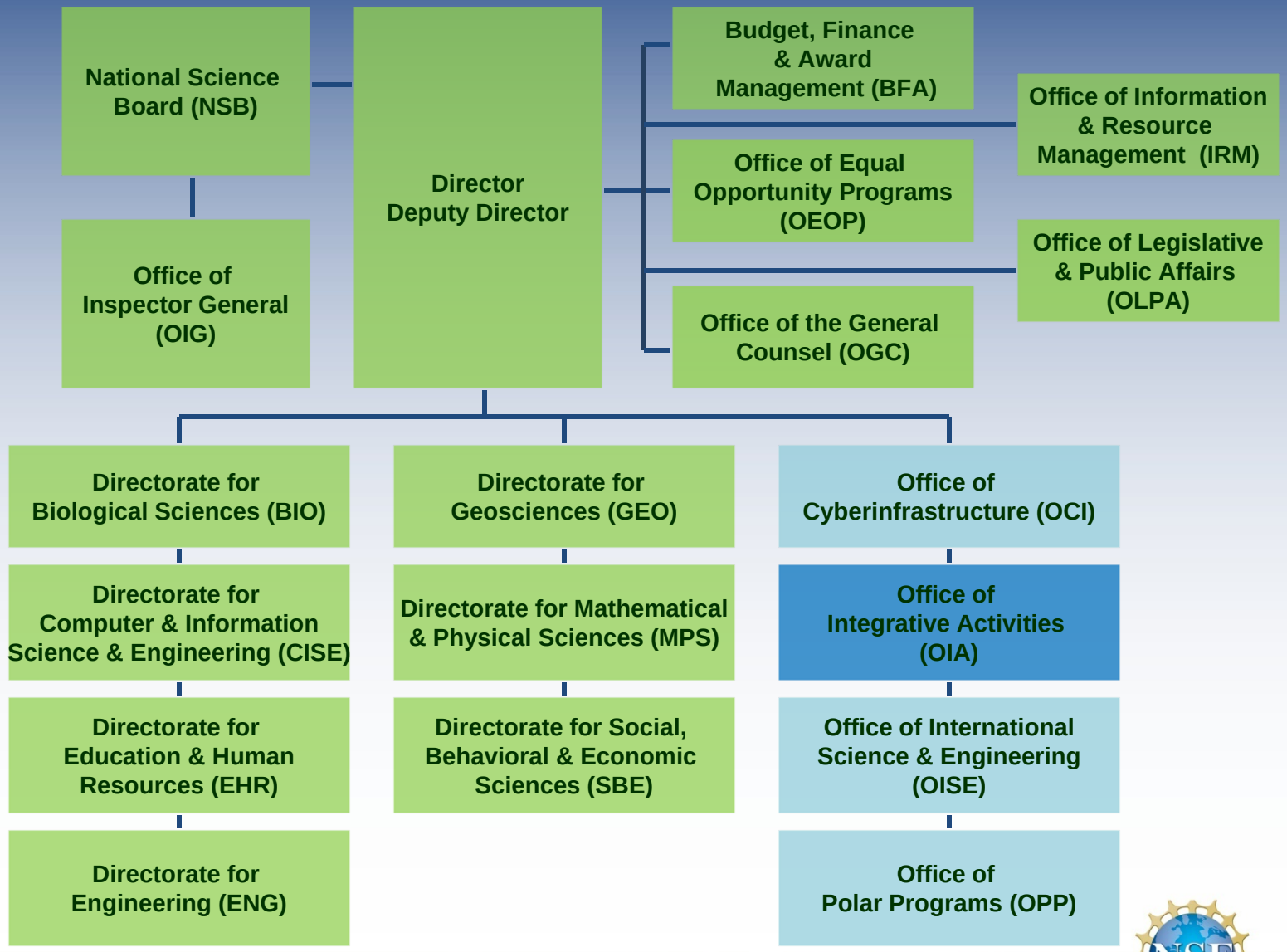
Science and Technology Centers: Graduate Student Poster Session

"Researchers and Educators: Faces of Tomorrow"

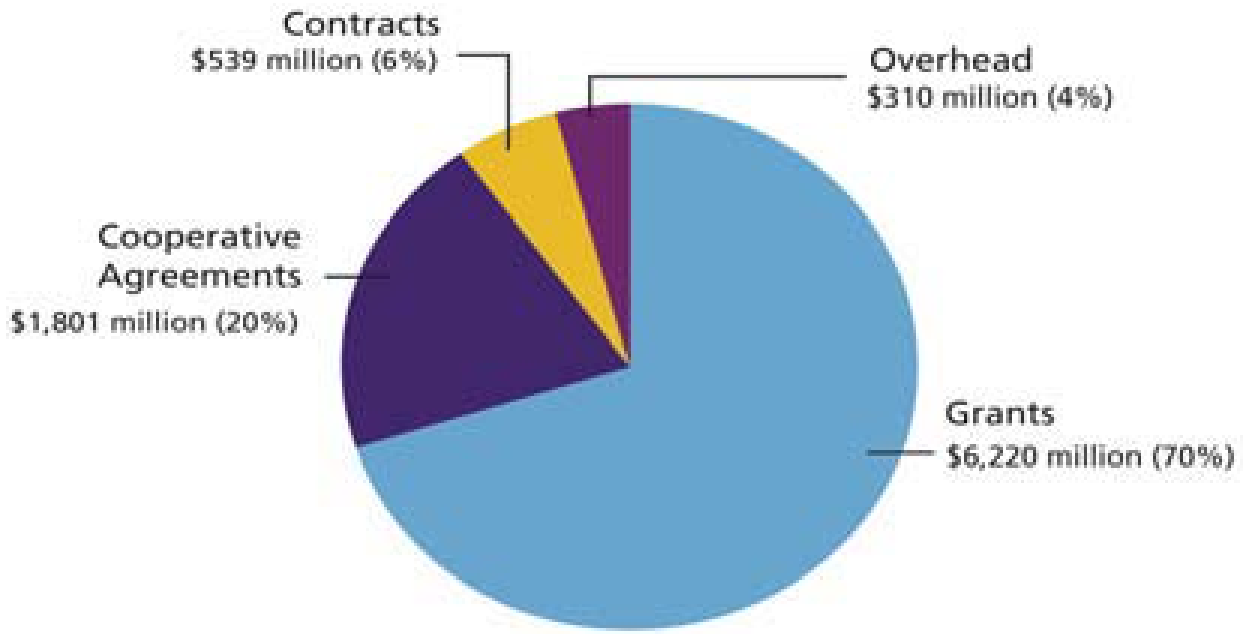
The NSF Vision

Advancing discovery, innovation and education beyond the frontiers of current knowledge, and empowering future generations in science and engineering

NSF Organization

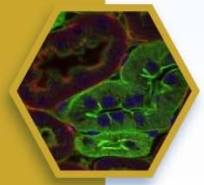


HOW IT'S SPENT: AWARD MECHANISMS
FY 2009 Budget Obligations—$8,870 million



NSF Centers

- **Science and Technology Centers (17)**
  - **the only "NSF-wide" centers program**
- Engineering Research Centers (15)
- Materials Research Science and Engineering Centers (28)
- Nanoscale Science and Engineering Centers (19)
- Science of Learning Centers (6)
- Centers for Analysis and Synthesis (4)
- Centers for Chemical Innovation (9)



OIA Programs and Activities

http://www.nsf.gov/od/oia/

Science and Technology Centers (STCs)

Major Research Instrumentation (MRI)

Academic Research Infrastructure (ARI)

Experimental Program to Stimulate Competitive Research (EPSCoR)

Cyber-Enabled Discovery and Innovation (CDI)

Medals and Awards

Developing STEM Talent

Committee on Equal Opportunity in Science and Engineering (CEOSE)

Developing STEM Talent

- Summer Scholars
  - To develop undergraduate and graduate student potential through exposure to relevant science and engineering policy, research and education issues and programs; and encourage students to earn graduate degrees and pursue careers in STEM.

- AAAS Fellows
  - Provide newly minted PhDs, post-docs and mid-career scientists and engineers an opportunity to learn about science policy.

From the NSF Strategic Plan

"Discovery increasingly requires the expertise of individuals with different perspectives – from different disciplines and often from different nations—working together to accommodate the extraordinary complexity of today's science and engineering challenges.

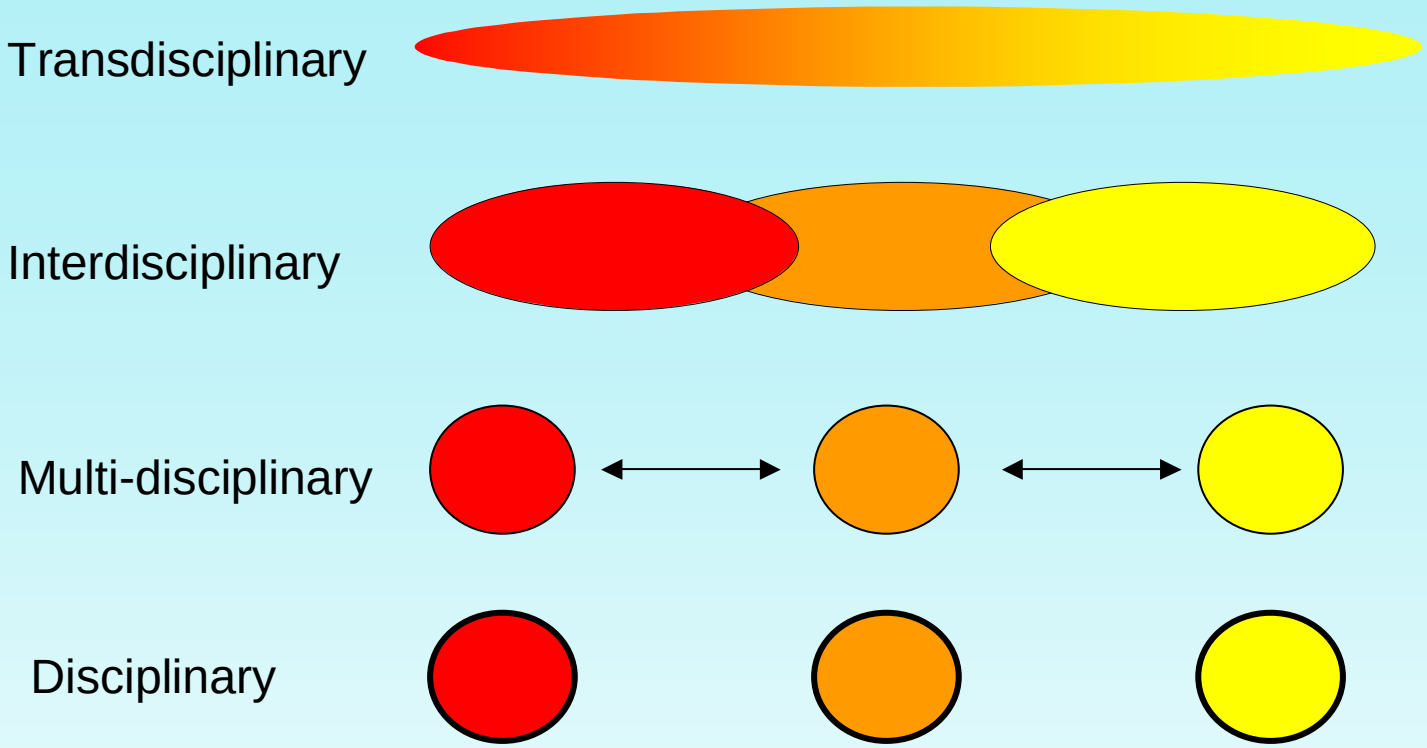
The convergence of disciplines and the cross-fertilization that characterizes contemporary science and engineering have made collaboration a centerpiece of the science and engineering enterprise. "

Innovation and Diversity

There is no more fertile ground for innovation than a diversity of experience. And that diversity of experience arises from a difference of cultures, ethnicities, and life backgrounds. A successful scientific endeavor is one that attracts a diversity of experience, draws upon the breadth and depth of that experience, and cultivates those differences, acknowledging the creativity they spark.

Prof. Joseph DeSimone, Director

STC for Environmentally Responsible Solvents and Processes



The Sciences In Transition

NSF Centers Foster Innovation

NSF supports about 100 centers in seven interdisciplinary program areas that facilitate innovation

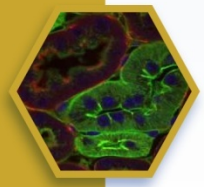
Center for Behavioral Neuroscience

Center for Biophotonics

FY 2011 Request: $314 million

STC Program Goal - 1989

"NSF established the STC Program to help maintain US pre-eminence in science and technology, and ensure the requisite pool of scientists with the quality and breadth of experience required to meet the changing needs of science and society – ingredients essential to successful economic competitiveness."



What's expected of STCs?

World-class research through partnerships

Innovative, potentially transformative, complex research and education projects

Important investigations at the interfaces of disciplines and/or fresh approaches within disciplines

A rich environment for encouraging future scientists, engineers, and educators to take risks in pursuing discoveries and new knowledge

Foster excellence in education by integrating education and research, and by creating bonds between learning and inquiry

Demonstrate leadership in the involvement of groups traditionally under-represented in science and engineering at all levels within the Center

Facilitate knowledge transfer - the mutual exchange of scientific and technical information among the Center partners and others

What's expected of STCs?

Long-term Impact!

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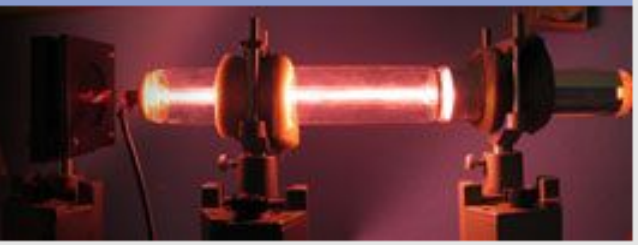
Catalyzing Excellence in Research and Education



OIA Organizations

Programs and Activities

Office of Experimental Program to Stimulate Competitive Research (EPSCoR)

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Special Announcements

New Science and Technology Centers: Graduate Student Poster Session "Researchers and Educators: Faces of Tomorrow" September 1, 2010

New ARI Draft Environmental Assessment is available here
Additional information

New 2011 Alan T. Waterman Award, CALL FOR NOMINATIONS
(DEADLINE: October 30, 2010)

Science and Technology Center Awards Announced

2010 Alan T. Waterman Awardee Announced

What's Showing: OIA Multimedia

- Interviews with Center Directors of Science and Technology Centers

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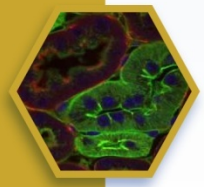
Featured Programs

Academic Research Infrastructure Program: Recovery and Reinvestment (ARI-R²)

Cyber-Enabled Discovery and Innovation

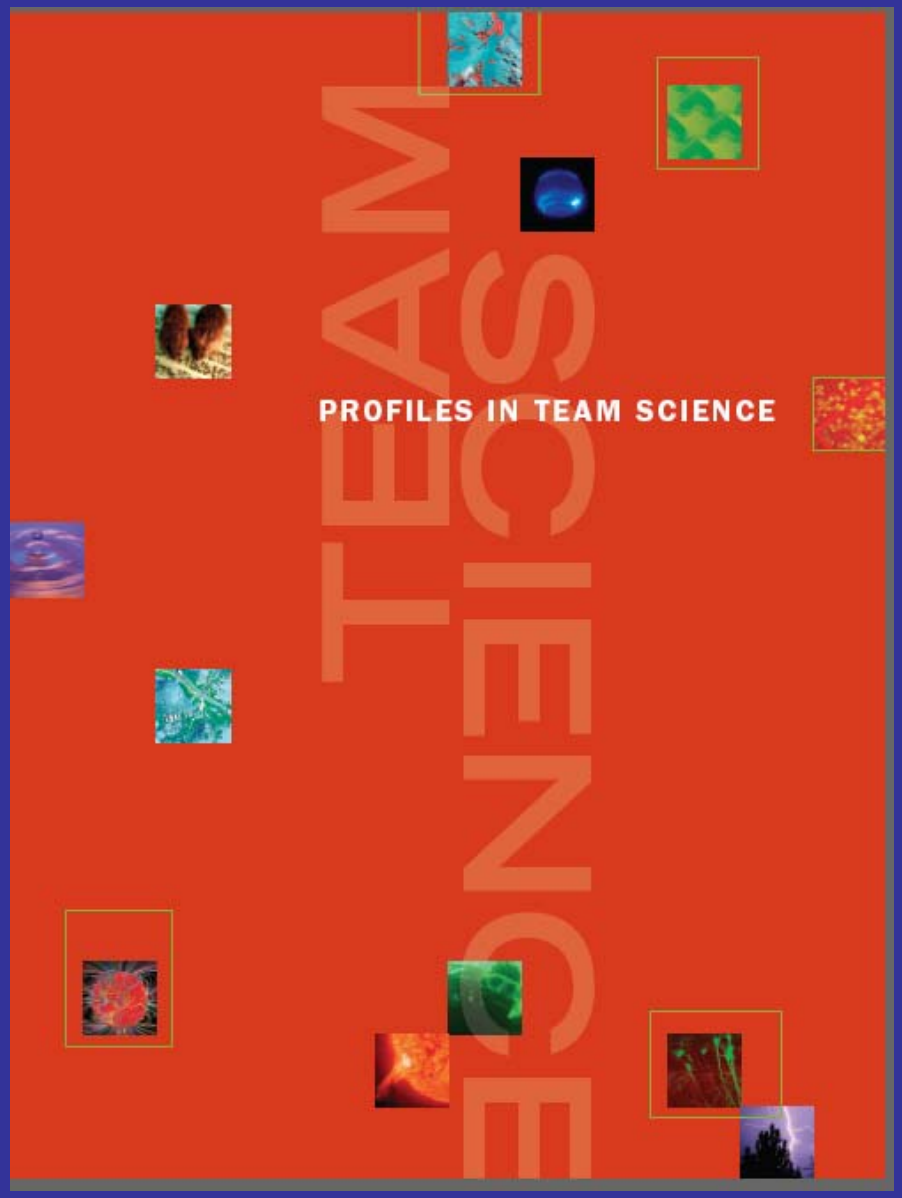
Ethics in Science, Mathematics, and Engineering Online Resource Center

Major Research Instrumentation Program:



STCs - Some Notable Achievements

Key contribution to Lasik surgery
Center for Ultrafast Optical Science, University of Michigan
Modeling for tornado prediction used by the Weather Channel
Center for Analysis and Prediction of Storms, University of Oklahoma
Genomic sequencers
Center for Molecular Biotechnology, University of Washington
South pole telescope -*Center for Astrophysical Research in Antarctica,* University of Chicago
New generation of computer animation, including PIXVAR
Center *for Computer Graphics and Visualization*, University of Utah (originally Cornell)



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