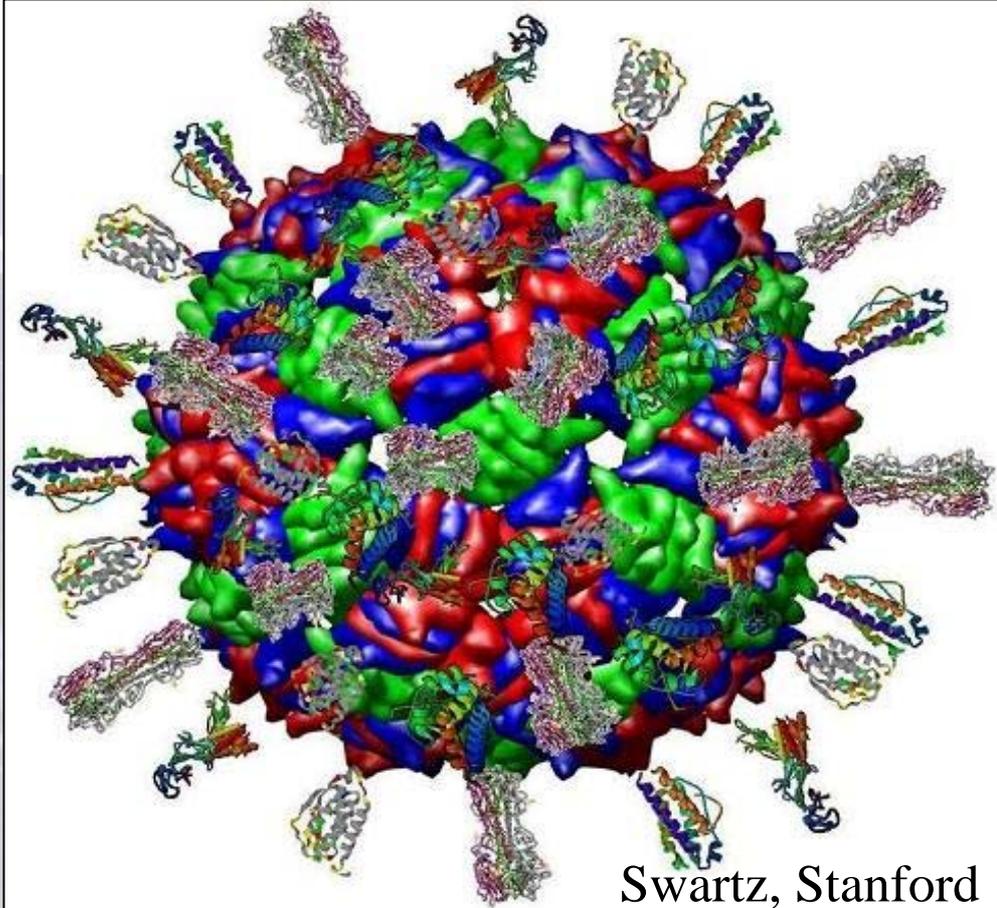


CBET Division Plan



Swartz, Stanford



**National Science Foundation
Chemical, Bioengineering, Environmental
and Transport Systems Division**

Judy Raper

Outline

- **Vision and Mission**
- **Planning Context**
- **CBET GOALS**
- **CBET Research Themes**



CBET Vision and Mission

→ VISION

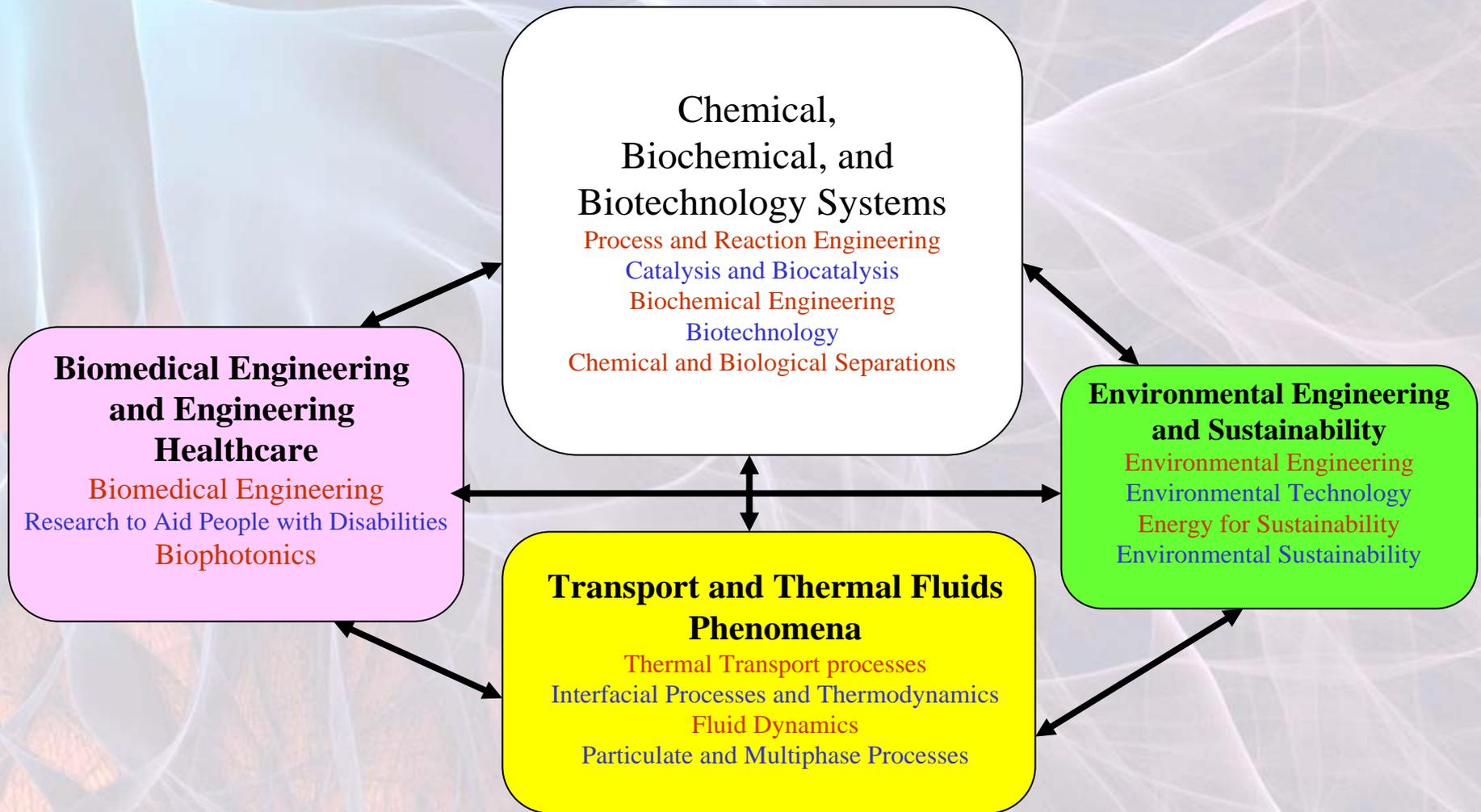
- ◆ CBET will be a global leader in identifying and enabling the most innovative research and education at the frontiers of engineering; inspiring the integration of physical, mathematical and/or life sciences with engineering; and cultivating a vibrant, diverse community in key, emerging and core areas benefiting society.

→ MISSION

- ◆ CBET will promote and support transformative research and education in engineering areas based on the physical, life and/or mathematical sciences; advance scientific and engineering knowledge; and develop a diverse, globally engaged workforce enhancing the economy of the United States.



CBET Programs



Planning Context

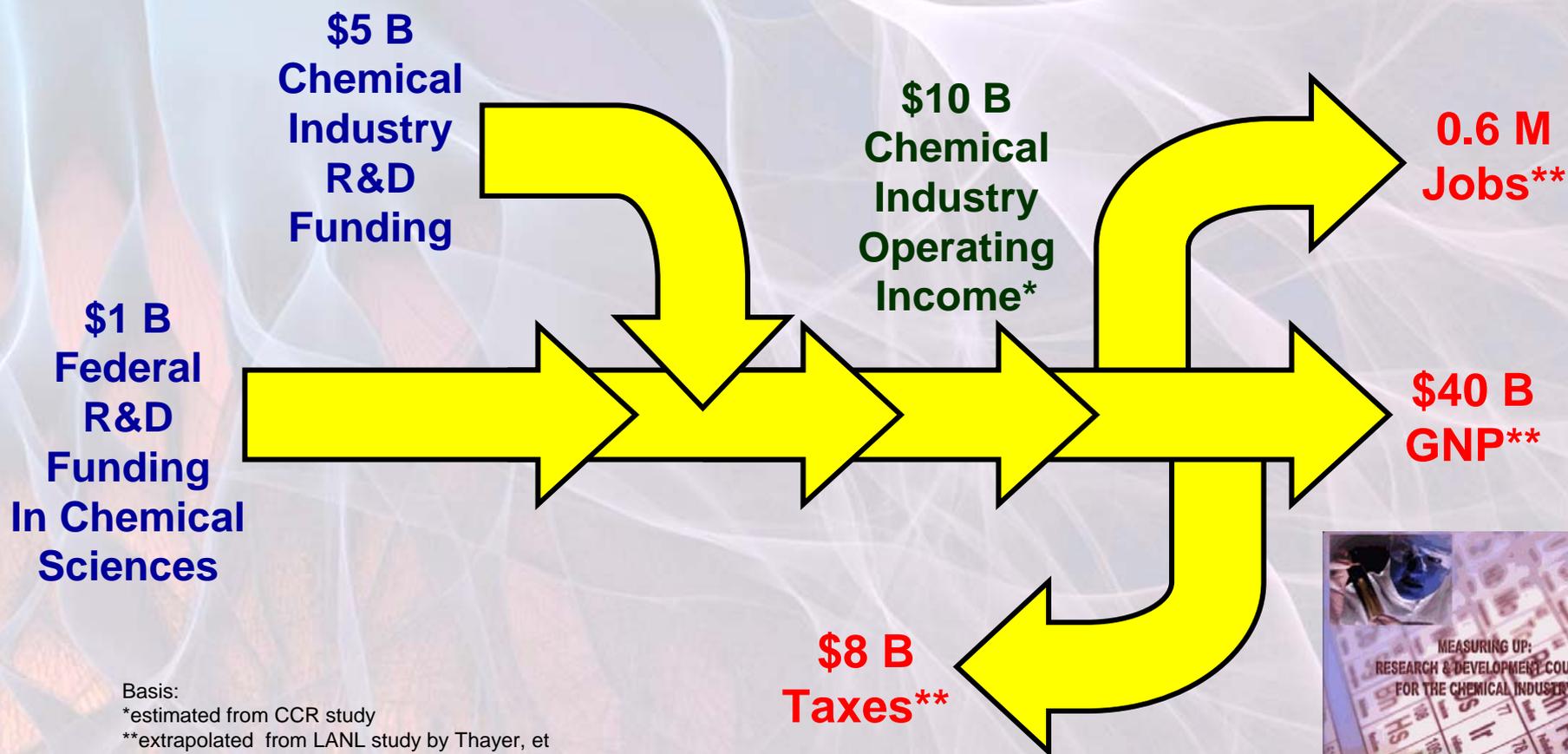
→ Planning process

- Division planning and input
- Off-site retreats
- COV reports
- External reports
- Workshops



Macroeconomic Implications (just a small part of CBET)

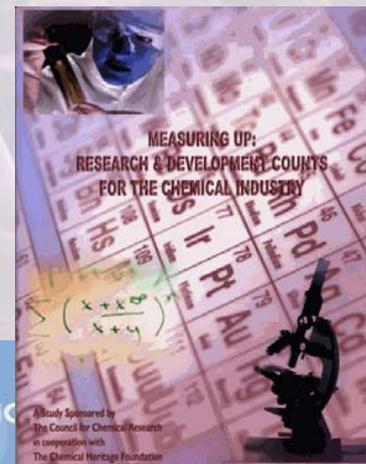
Measuring Up: R & D Counts for the Chemical Industry (CCR Report, 2006)



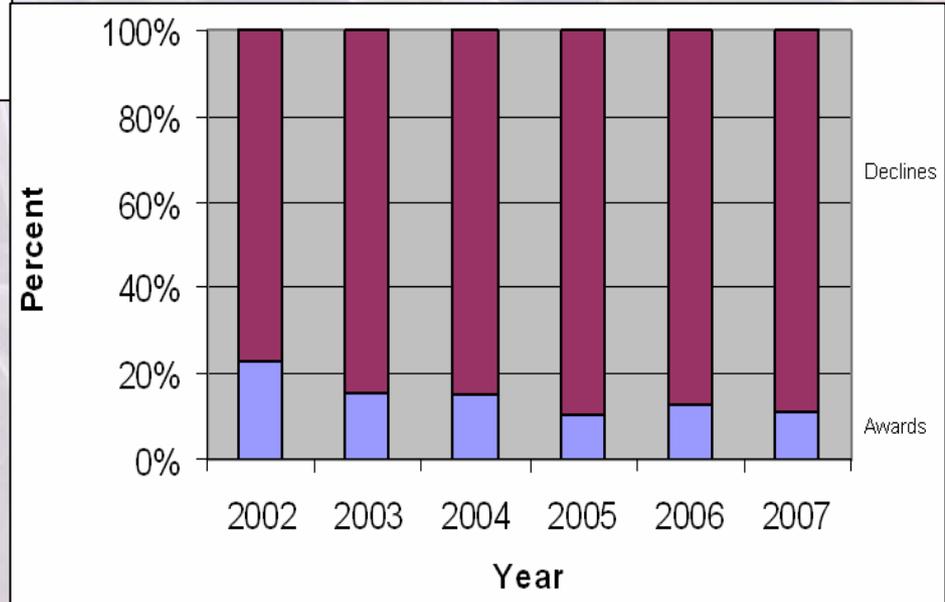
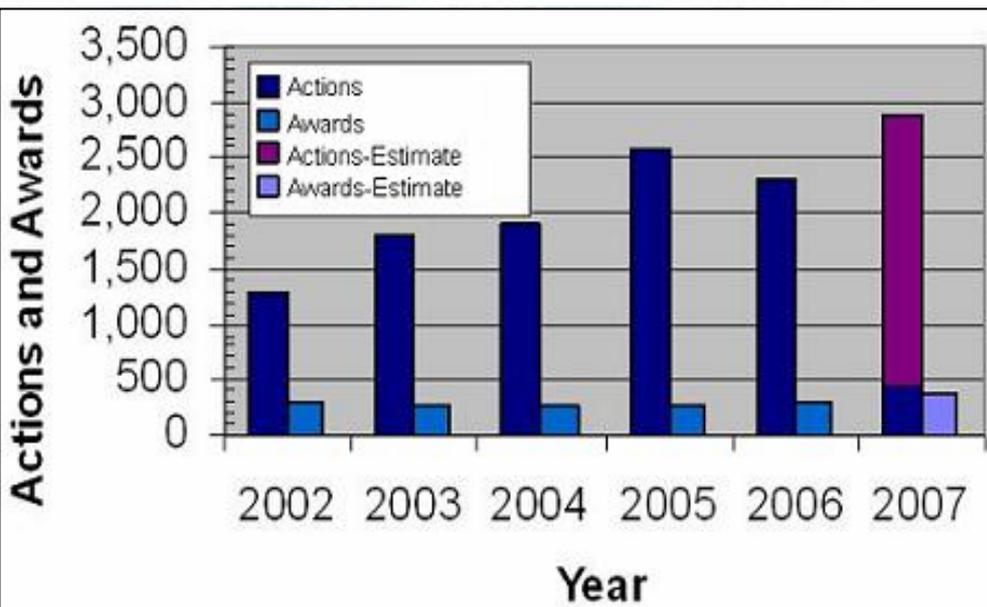
Basis:

*estimated from CCR study

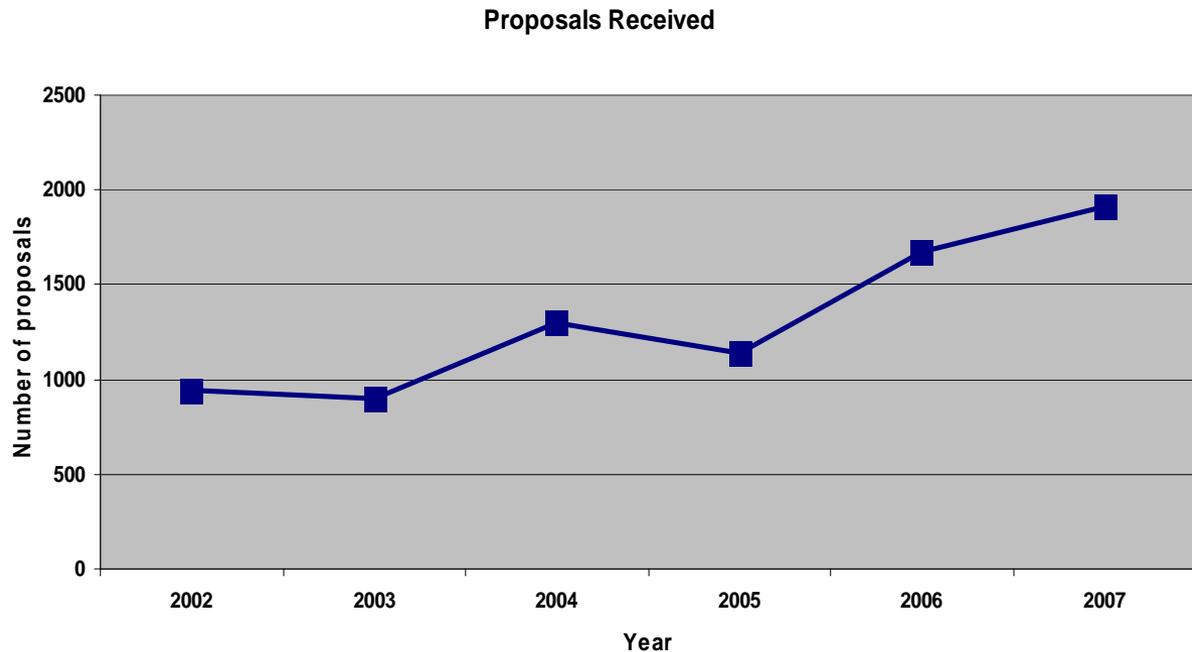
**extrapolated from LANL study by Thayer, et al., April 2005 using REMI economic model



Planning Context – Proposals/Awards



CBET UNSOLICITED PROPOSALS



* Number of proposals have doubled since 2003!

PROGRAM	Received 3/01/07
Particulate & Multiphase Processes	185
Environmental Eng.	194
Fluid Dynamics	168
Biomedical Engineering	154
Energy for Sustainability	215



CBET Goals

→ Aligned with NSF Goals

◆ Discovery

- CBET will lead engineering discovery and innovation in chemical, bioengineering, environmental and transport systems through two strategic objectives.

◆ Learning

- CBET will develop and support the best and the brightest researchers, innovators and educators in CBET'S fields, with two objectives.

◆ Infrastructure

- CBET will enhance its support of both human and physical research infrastructure

◆ Stewardship

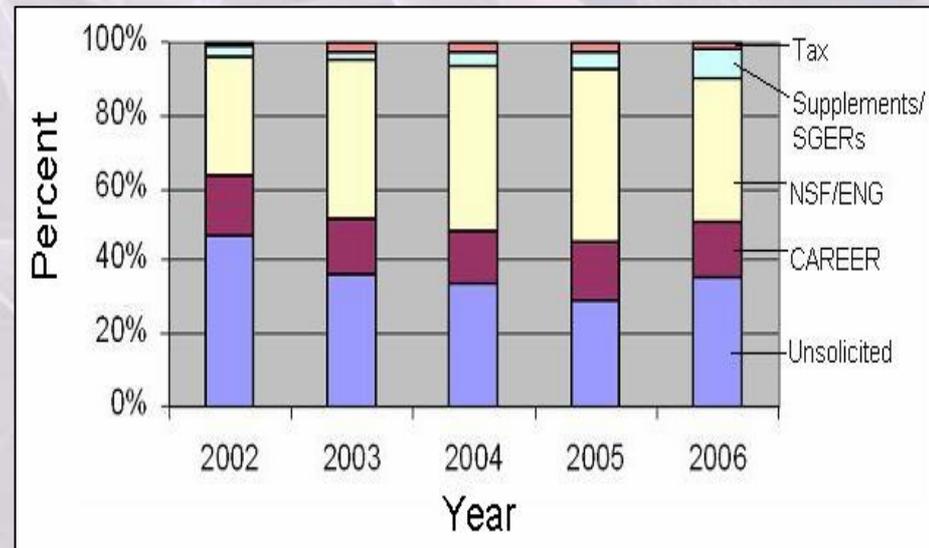
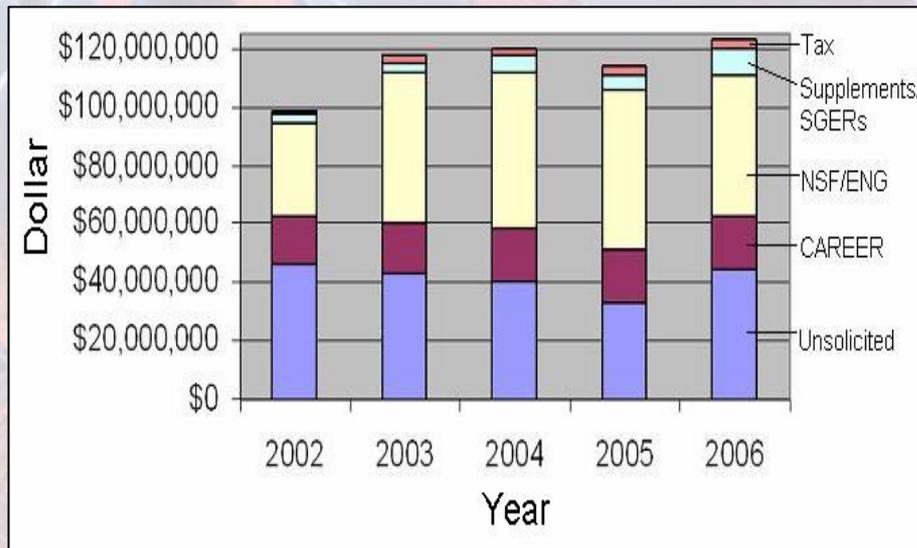
- CBET will enhance its divisional operations, staff development and external relations



DISCOVERY GOAL

Fund more unconstrained investigator-identified and –defined awards

- The CBET *goal* is to increase the funding to investigator-initiated awards.
- Based upon the AD office budgets, the FY06 level was 35%

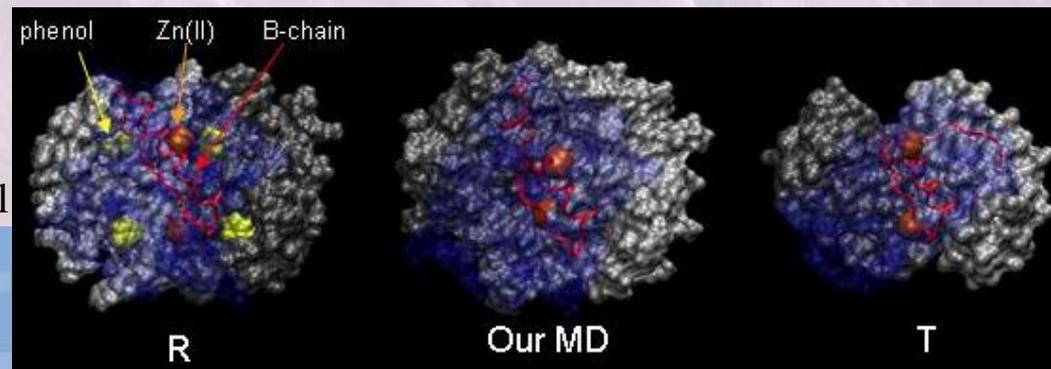


DISCOVERY GOAL

→ Support research in four thematic areas

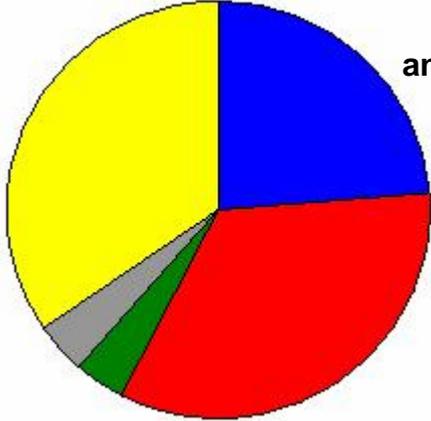
- **Energy, Water and Sustainability (EWS)** [increase funding by 20%]
 - closely aligns with the ACI goals of hydrogen and solar energy, and research critical to alternative energy.
- **Systems, multi-scale modeling and applications of new technologies in engineering research (SME)** [increase funding]
 - overcoming barriers to quantum information processing
- **Nanoscale science and engineering (NSE)** [maintain funding]
 - encourage utilization of research results in active nanosystems and devices
- **Integrating life sciences in engineering (LSE)** [increase funding]
 - Gain advantages of “Genomic” revolution by application of engineering way of thinking

Abrams, Drexel

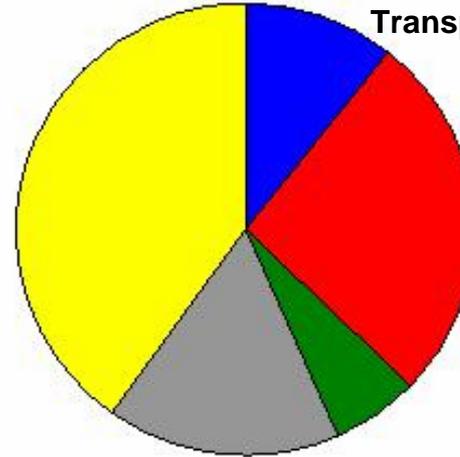


Research Thematic Areas

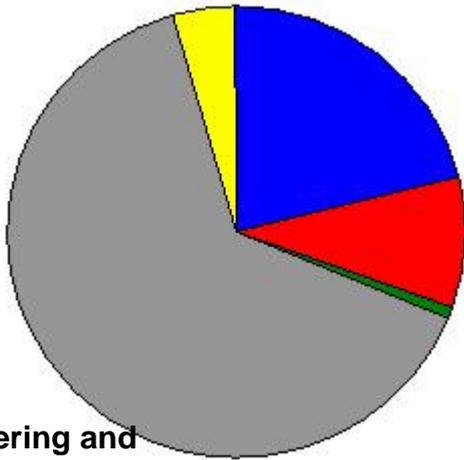
Chemical, Biochemical,
and Biotechnology Systems



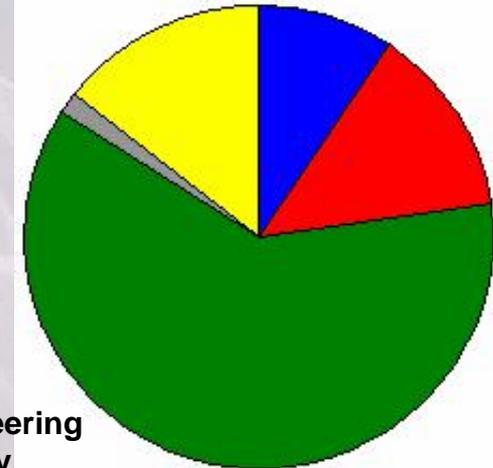
Transport and Thermal Fluids
Phenomena



Biomedical Engineering and
Engineering Healthcare



Environmental Engineering
and Sustainability



■ Systems, Multi-scale Modeling
■ Energy, Water and Sustainability
■ Other

■ Nanoscience and Engineering
■ Life Sciences in Engineering

LEARNING GOAL

To support new faculty

- ◆ CAREER awards – 15% success rate across all programs
- ◆ Workshops
- ◆ Outreach at universities and professional society meetings

To promote lifelong learning and professional development for science, technology, engineering and management (STEM) workforce and science at large

- ◆ Encourage all awards to support graduate and undergraduate students
- ◆ Encourage REU and RET support



INFRASTRUCTURE GOAL

To encourage interdisciplinary, group projects

- Collaboration across programs – 15% of budget on interdisciplinary awards
- Interdisciplinary teams – monitor review process
- Create networks to place PIs well to succeed in NSF-wide solicitations

To apply cyber-infrastructure to CBET engineering fields

- Build teams to best utilize available facilities – planning grants

To fund small and intermediate instrumentation and equipment requests

- \$50K – \$200K – 5% of annual awards for these



STEWARDSHIP GOAL

To pursue and implement partnerships, create a sense of CBET community and disseminate impact to the general public

- Mentoring of new PDs
- Grantees meetings – AIChE, ASME, BSE and EES
- Partnerships within NSF and other agencies

Broaden diverse participation throughout CBET in all activities

- Program Directors (30% women, 5% minority)
- Reviewers (28% women/or minority)
- Gather data for panel membership



QUESTIONS?

