INTEGRATIVE ACTIVITIES $131,370,000

The FY 2007 Budget Request for Integrative Activities (IA) is $131.37 million, a decrease of $5.75 million, or 4.2 percent, below the FY 2006 Current Plan of $137.12 million.

Integrative Activities Funding

(Dollars in Millions)

	FY 2005 Actual	FY 2006 Current Plan	FY 2007 Request	Change over FY 2006 Amount	Change over FY 2006 Percent
Integrative Activities	$130.92	$137.12	$131.37	-$5.75	-4.2%

RELEVANCE

Integrative Activities supports emerging cross-disciplinary research and education, recognizing the importance of these types of integrative efforts to the future of science and engineering. IA is a source of federal funding for the acquisition and development of research instrumentation at U.S. academic institutions. It also funds a number of integrative research and education centers and programs that support and enhance NSF research investments in discovery and workforce development.

Funds requested and appropriated to IA are managed by a variety of organizations within NSF, which provides the flexibility to broaden support for emerging cross-disciplinary research programs and activities. For example, the Science and Technology Centers program currently supports 17 centers that are managed cooperatively by six NSF directorates/offices and the Office of Integrative Activities.

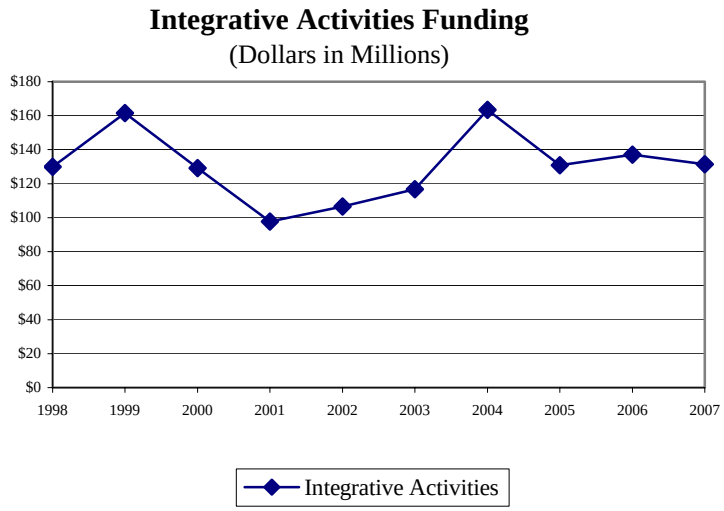
Integrative Activities Funding by Program

(Dollars in Millions)

	FY 2005 Actual	FY 2006 Current Plan	FY 2007 Request	Change over FY 2006 Amount	Change over FY 2006 Percent
Science of Learning Centers	$19.83	$22.71	$27.00	$4.29	18.9%
Science and Technology Centers[1]	7.31	12.74	0.90	-11.84	-92.9%
Major Research Instrumentation	89.26	88.39	90.00	1.61	1.8%
Partnerships for Innovation	9.92	9.00	9.19	0.19	2.1%
Science and Technology Policy Institute/RaDiUS	4.03	4.28	4.28	-	-
EPSCoR, Katrina-Related Activity	0.57	-	-	-	N/A
Total, Integrative Activities	$130.92	$137.12	$131.37	-$5.75	-4.2%

Totals may not add due to rounding.

[1/] The decrease for Science and Technology Centers funding reflects awards from the FY 2005 competition. The funds are shown in Integrative Activities line in the FY 2006 Current Plan, and are transferred to the cognizant directorate/office in FY 2007.



Summary of Major Changes *(Dollars in Millions)*

FY 2006 Current Plan $137.12

Advancing the Frontier

Science of Learning Centers (SLC) +$4.29

The $4.29 million increase brings FY 2007 funding for the SLCs to $27.0 million. NSF's investment builds on the Foundation's support for multidisciplinary research that advances fundamental knowledge about the science of learning. SLCs are built around a unifying research focus and incorporate a diverse, multidisciplinary environment involving appropriate partnerships with academia, industry, international partners, all levels of education, and other public and private entities.

In FY 2007, NSF continues the fourth of five initial years of support for four Centers awarded in the program's first competition. The increased funding will support a diverse portfolio of research projects, providing leadership across a broad range of science and engineering approaches to the science of learning research.

Science and Technology Centers (STC) -$11.84

The FY 2007 Request reflects the transfer of $11.84 million for four Science and Technology Centers initiated in FY 2006 from within IA to the appropriate managing subactivities in the Research and Related Activities account (BIO, GEO (2), MPS). At the FY 2007 Request level, the STC program will support 17 centers that are based in NSF directorates and offices and managed cooperatively with the Office of Integrative Activities. The remaining $900,000 provides ongoing administrative support for activities such as annual site visits, contractor support costs, meetings, and workshops involving the 17 fully operational STCs.

STCs are university-based research efforts that foster partnerships and collaborative cultures among researchers and educators at all levels of academia, industry, government

laboratories, and other public and private organizations. They offer a value-added approach and provide opportunities to explore complex research problems that often require interdisciplinary expertise and high-risk approaches, access to state-of-the-art instrumentation and facilities, and a commitment of high levels of support for sustained periods of time.

Infrastructure and Instrumentation

Major Research Instrumentation (MRI) +$1.61

An increase of $1.61 million brings FY 2007 funding to $90.0 million. Funding supports a diverse portfolio of projects that emphasizes state-of-the-art instrumentation, access and training to support modern research approaches, cross-disciplinary research, public/private partnerships, and support for minority-serving institutions. MRI funding provides for the acquisition and development of major state-of-the-art research instrumentation that is too costly to be supported through regular NSF programs. By improving research training and integrated research and education activities at U.S. institutions for scientists, engineers, graduate, and undergraduate students, MRI projects strengthen science education. Cross-departmental units funded by MRI enable academic departments to create well-equipped learning environments that integrate research with education. MRI also promotes partnerships between academic researchers and private sector instrument developers. Finally, the MRI program directs approximately $20.0 million to support teaching-intensive institutions and minority-serving institutions, including Historically Black Colleges and Universities, Tribal Colleges, and community colleges, with a focus on research training for American students.

In the FY 2005 MRI competition, NSF received 785 proposals and funded 255 (a funding rate of 32 percent) for a total of $89.26 million. Included within this group were 79 proposals from minority-serving institutions and 281 proposals from non-Ph.D. granting institutions (includes some minority-serving institutions). Minority-serving institutions received 26 awards totaling $9.20 million. Non-Ph.D. granting institutions received 109 awards totaling $25.80 million. Funding provided for FY 2006 (Current Plan) and requested for FY 2007 will enable NSF to make approximately 260 awards.

Partnerships for Innovation (PFI) +$0.19

An increase of $190,000 brings FY 2007 funding to $9.19 million. Funding for the Partnerships for Innovation (PFI) supports partnership grants that seek to (1) stimulate the transformation of knowledge created by the national research and education enterprise into innovations that increase competitiveness, create new wealth, build strong local, regional, and national economies, and improve the national well-being, (2) broaden the participation of all types of academic institutions and all citizens in NSF activities to more fully meet the broad workforce needs of the national innovation enterprise, and (3) catalyze or enhance enabling infrastructure necessary to foster and sustain innovation in the long-term. Awards are for up to $600,000 for a maximum of three years, and more than 90 percent involve academic institutions that do not normally receive a large amount of funding from NSF. The budget level supports 10 to 15 PFI awards.

STPI/RaDiUS

NSF's FY 2007 budget provides $2.94 million for the Science and Technology Policy Institute (STPI) and $1.34 million for the Research and Development in the United States

(RaDiUS) database. These levels are unchanged from FY 2006. STPI is a Federally-Funded Research and Development Center established by Congress in 1992 to support the complex task of analyzing and contributing to the development of science and technology policy. The Institute provides analytical support to the Office of Science and Technology Policy (OSTP) to identify near-term and long-term objectives for research and development and options for achieving those objectives. In addition, the Institute supports OSTP by assembling and analyzing information regarding significant science and technology developments and trends. Since 2003, the Institute for Defense Analyses has operated STPI. RaDiUS is a database that was developed and is maintained by the RAND Corporation to collect and maintain information on federal investment in research and development.

Subtotal, Changes .-$5.75

FY 2007 Request, IA.....……..……..…… $131.37

QUALITY

NSF uses various internal and external mechanisms to ensure the quality and relevance of existing and proposed programs and to help identify new and emerging opportunities that support agency-specific goals. These mechanisms include merit-based review of proposals, Committees of Visitors, advisory committees and other expert panels, National Academies and other reports, workshops, and long-range planning documents.

NSF maximizes the quality of the R&D it supports through the use of a competitive, merit-based process. To ensure the highest quality in processing and recommending proposals for awards, NSF convenes Committees of Visitors, composed of qualified external evaluators, to review each program. These experts assess the integrity and efficiency of the processes for proposal review and provide a retrospective assessment of the quality of results of NSF's investments. Other programs conduct annual reviews and will undergo a review and assessment of program outcomes in FY 2007.

The Science and Technology Centers (STC): Integrative Partnerships program maintains a variety of ongoing practices that ensure quality during the 10-year tenure of each project. These practices include strategic planning, annual review by an external team of expert site visitors, fourth-year in-depth, competitive review of renewal proposals, training of NSF technical coordinators, and shared governance between research directorates and the Office of Integrative Activities. Additionally, each Center is required to submit an annual report to NSF, participate in annual workshops developed for Center directors and the center education network, provide ethics training, provide specialized communications equipment, and maintain and convene annually a conflict-free external advisory board that provides guidance, advice, and oversight.

The MRI program is a Foundation-wide cross-cutting activity. MRI program proposal actions are reviewed on a three-year basis by COVs in the directorates and divisions that recommend and award grants. In addition to these directorate and division reviews, the program conducts an overall evaluation. In FY 2005, the MRI program convened a COV during which the external evaluators examined overall program management and processes, proposal actions, and the results of NSF investments during five fiscal years: 2000 through 2004.

PERFORMANCE

NSF's FY 2007 budget is also aligned to reflect funding levels associated with the Foundation's four strategic outcome goals and the ten investment categories highlighted in the FY 2003-2008 Strategic Plan. These categories were designed as a mechanism to better enable assessment of program performance and to facilitate budget and performance integration.

Integrative Activities
By Strategic Outcome Goal and Investment Category
(Dollars in Millions)

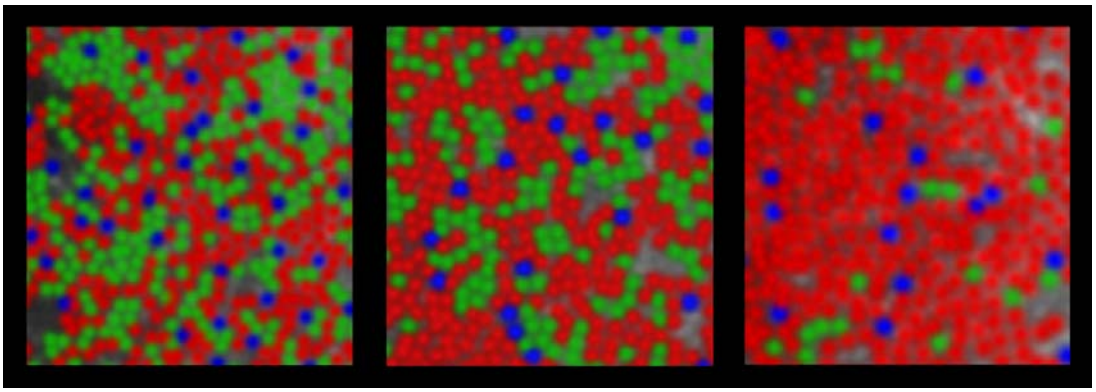
	FY 2005 Actual	FY 2006 Current Plan	FY 2007 Request	Change over FY 2006 Amount	Change over FY 2006 Percent
Ideas					
Fundamental Science and Engineering	-	-	-	-	0.0%
Centers Programs	$27.14	$35.45	$27.90	-$7.55	-21.3%
Capability Enhancement	0.57	-	-	-	N/A
	27.71	35.45	27.90	-7.55	-21.3%
Tools					
Facilities	-	-	-	-	N/A
Infrastructure and Instrumentation	89.26	88.39	90.00	1.61	1.8%
Polar Tools, Facilities and Logistics	-	-	-	-	N/A
Federally-Funded R&D Centers	4.03	4.28	4.28	-	0.0%
	93.29	92.67	94.28	1.61	1.7%
People					
Individuals	-	-	-	-	N/A
Institutions	-	-	-	-	N/A
Collaborations	9.92	9.00	9.19	0.19	2.1%
	9.92	9.00	9.19	0.19	2.1%
Organizational Excellence	-	-	-	-	N/A
Total, IA	$130.92	$137.12	$131.37	-$5.75	-4.2%

Totals may not add due to rounding.

Recent Research Highlight

► **Astronomical Adaptive Optics Applied to the eye reveals remarkable features of human color vision and perception:** Heidi Hofer and colleagues at the University of Rochester have successfully imaged the cone cells distributed throughout the retina in eight living human eyes. The figure below shows three of these distributions, which have been artificially colored to indicate the arrangement and relative numbers of the three kinds of cones that are responsible for color vision.

The researchers obtained the images using a high-resolution camera equipped with adaptive optics. Adaptive optics was originally developed to correct for the aberrations generated by atmospheric turbulence in ground-based telescopes, but the Rochester team demonstrated in 1997 that this technology could be used also to correct the aberrations that are peculiar to each person's cornea and lens. Their technique allowed the first routine, noninvasive microscopic high-resolution images of the retina of the human eye.



Credit: University of Rochester

The NSF Science and Technology Center for Adaptive Optics brings astronomers and vision scientists together to improve the technology, which shows promise for helping us understand and perhaps someday better treat retinal diseases such as retinal degenerations, diabetic retinopathy and glaucoma. (MPS)