

DEPARTMENT OF HEALTH AND HUMAN SERVICES

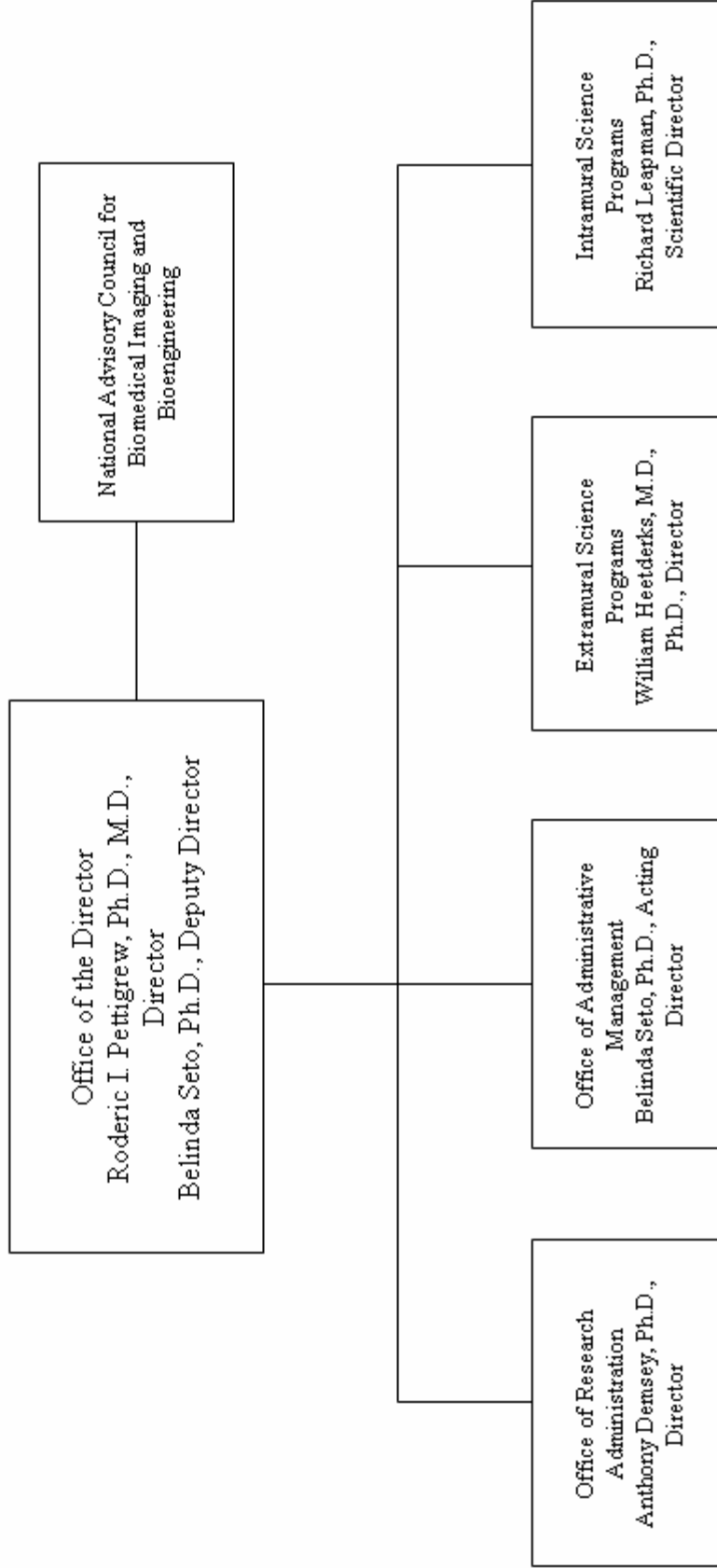
NATIONAL INSTITUTES OF HEALTH

National Institute of Biomedical Imaging and Bioengineering

<u>FY 2008 Budget</u>	<u>Page No.</u>
Organization chart.....	2
Appropriation language.....	3
Amounts available for obligation	4
Budget mechanism table.....	5
Budget authority by program.....	6
Major changes in budget request.....	7
Summary of changes.....	8
Budget graphs	10
Justification narrative.....	11
Budget authority by object.....	18
Salaries and expenses.....	19
Authorizing legislation.....	20
Appropriations history.....	21
Detail of full-time equivalent employment (FTE).....	22
Detail of positions.....	23



NIBIB ORGANIZATIONAL CHART



FY 2008 Proposed Appropriation Language

NATIONAL INSTITUTES OF HEALTH

National Institute of Biomedical Imaging and Bioengineering

*For carrying out section 301 and title IV of the Public Health Service Act with respect to biomedical imaging and bioengineering research, [~~\$296,810,000~~] **\$300,463,000** (Department of Health and Human Services Appropriations Act, 2006)*

Supplementary Exhibit

**Comparison of Proposed FY 2008 Appropriation Language to
Most Recently Enacted Full-Year Appropriations**

NATIONAL INSTITUTES OF HEALTH

National Institute of Biomedical Imaging and Bioengineering

For carrying out section 301 and title IV of the Public Health Service Act with respect to biomedical imaging and bioengineering research, [~~\$296,810,000~~] **\$300,463,000** (Department of Health and Human Services Appropriations Act, 2006)

**National Institutes of Health
National Institute of Biomedical Imaging and Bioengineering**

Amounts Available for Obligation 1/

Source of Funding	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate
Appropriation	\$299,808,000	\$296,810,000	\$300,463,000
Enacted Rescissions	(2,998,000)	0	0
Subtotal, Adjusted Appropriation	296,810,000	296,810,000	300,463,000
Real Transfer under Roadmap Authority	(2,652,000)		
Real Transfer under Secretary's One-percent transfer authority	(204,000)		
Comparative transfer from OD for NIH Roadmap	2,652,000		
Comparative Transfer to NIBIB	1,496,000	1,528,000	
Comparative transfer to OD	(3,000)	(3,000)	
Comparative Transfer to NCRR	(11,000)	(21,000)	
Subtotal, adjusted budget authority	298,088,000	298,314,000	300,463,000
Unobligated Balance, start of year	0	0	0
Unobligated Balance, end of year	0	0	0
Subtotal, adjusted budget authority	298,088,000	298,314,000	300,463,000
Unobligated balance lapsing	0	0	0
Total obligations	298,088,000	298,314,000	300,463,000

1/ Excludes the following amounts for reimbursable activities carried out by this account:

FY 2006 - \$272,000 FY 2007 - \$3,000,000 FY 2008 - \$5,000,000

NATIONAL INSTITUTES OF HEALTH
National Institute of Biomedical Imaging and Bioengineering

(Dollars in Thousands)

Budget Mechanism - Total

MECHANISM	FY 2006		FY 2007		FY 2008		Change	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Research Grants:								
<u>Research Projects:</u>								
Noncompeting	468	\$168,575	402	\$136,254	410	\$136,525	8	\$271
Administrative supplements	(14)	778	(0)	808	(5)	808	(5)	0
Competing:								
Renewal	27	12,199	35	15,666	33	14,835	(2)	(831)
New	144	40,086	186	51,571	193	53,934	7	2,363
Supplements	7	942	7	942	7	942	0	0
Subtotal, competing	178	53,227	228	68,179	233	69,711	5	1,532
Subtotal, RPGs	646	222,580	630	205,241	643	207,044	13	1,803
SBIR/STTR	42	7,875	37	7,302	35	7,206	(2)	(96)
Subtotal, RPGs	688	230,455	667	212,543	678	214,250	11	1,707
<u>Research Centers:</u>								
Specialized/comprehensive	2	1,515	4	7,192	4	7,372	0	180
Clinical research	0	0	0	0	0	0	0	0
Biotechnology	20	20,475	20	20,558	21	20,472	1	(86)
Comparative medicine	0	0	0	0	0	0	0	0
Research Centers in Minority Institutions	0	0	0	0	0	0	0	0
Subtotal, Centers	22	21,990	24	27,750	25	27,844	1	94
<u>Other Research:</u>								
Research careers	25	3,513	39	4,782	40	4,912	1	130
Cancer education	0	0	0	0	0	0	0	0
Cooperative clinical research	0	0	0	0	0	0	0	0
Biomedical research support	0	0	0	0	0	0	0	0
Minority biomedical research support	0	0	0	0	0	0	0	0
Other	14	957	32	1,060	26	1,076	(6)	16
Subtotal, Other Research	39	4,470	71	5,842	66	5,988	(5)	146
Total Research Grants	749	256,915	762	246,135	769	248,082	7	1,947
<u>Research Training:</u>								
Individual awards	27	1,043	35	1,372	38	1,372	3	0
Institutional awards	163	7,039	184	8,347	196	7,847	12	(500)
Total, Training	190	8,082	219	9,719	234	9,219	15	(500)
Research & development contracts (SBIR/STTR)	16 (2)	9,654 (17)	16 (2)	13,936 (18)	16 (2)	14,168 (18)	0 (0)	232 0
Intramural research								
Research management and support	5	5,298	5	9,246	6	9,181	1	(65)
Research management and support	41	15,487	43	15,719	43	15,876	0	157
Cancer prevention & control	0	0	0	0	0	0	0	0
Construction		0		0		0		0
Buildings and Facilities		0		0		0		0
NIH Roadmap for Medical Research	2	2,652	2	3,559	2	3,937		378
Total, NIBIB	48	298,088	50	298,314	51	300,463	1	2,149

NATIONAL INSTITUTES OF HEALTH
National Institute of Biomedical Imaging and Bioengineering
BA by Program
(Dollars in thousands)

	FY 2004		FY 2005		FY 2006		FY 2006		FY 2007		FY 2008		Change	
	FTEs	Amount	FTEs	Amount	FTEs	Amount	FTEs	Amount	FTEs	Amount	FTEs	Amount	FTEs	Amount
Extramural Research														
Detail:														
Applied Science and Technology	6	167,053	4	175,656	5	160,734	5	\$160,734	7	\$151,084	8	\$152,050	1	966
Discovery Science and Technology	6	93,933	5	91,077	5	100,331	5	\$100,331	7	\$97,187	7	\$98,103	0	916
Technological Competitiveness: Bridging the Sciences	2	9,652	2	11,053	2	13,597	2	\$13,586	2	\$21,519	2	\$21,316	0	(203)
Subtotal, Extramural		270,638		277,786		274,662		274,651		269,790		271,469		1,679
Intramural research														
		1885	5	3981	5	3802	5	5,298	5	9,246	6	9,181	1	(65)
Res. management & support	45	14161	39	14557	41	15490	41	15,487	43	15,719	43	15,876	0	157
Research	1	445	2	1,885	2	2,652	2	2,652	2	3,559	2	3,937	0	378
TOTAL	46	287,129	46	298,209	48	296,606	48	298,088	50	298,314	51	300,463	1	2,149

Includes FTEs which are reimbursed from the NIH Roadmap for Medical Research

Major Changes in the Fiscal Year 2008 Budget Request

Major changes by budget mechanism and/or budget activity detail are briefly described below. Note that there may be overlap between budget mechanism and activity detail and these highlights will not sum to the total change for the FY 2008 budget request for NIBIB, which is \$2.1 million more than the FY 2007 Estimate, for a total of \$300.5 million.

Research Careers (+\$0.1 million; total \$4.9 million): NIBIB will support the Pathway to Independence program, by funding an additional 5 awards in FY 2008.

NIH Roadmap for Biomedical Research (+\$0.4 million; total \$3.9 million): NIBIB will continue its support of the NIH Roadmap, an incubator for new ideas and initiatives that will accelerate the pace of discovery, in FY 2008.

NATIONAL INSTITUTES OF HEALTH
National Institute of Biomedical Imaging and Bioengineering

Summary of Changes

FY 2007 Estimate		\$298,314,000		
FY 2008 Estimated Budget Authority		300,463,000		
Net change		2,149,000		
CHANGES	FY 2007		Change from Base	
	FTEs	Budget Authority	FTEs	Budget Authority
A. Built-in:				
1. Intramural research:				
a. Annualization of January 2007 pay increase				
		\$873,000		\$6,000
b. January 2008 pay increase				
		873,000		20,000
c. Two extra days of pay				
		873,000		7,000
d. Payment for centrally furnished services				
		993,000		10,000
e. Increased cost of laboratory supplies, materials, and other expenses				
		7,380,000		189,000
Subtotal				232,000
2. Research Management and Support:				
a. Annualization of January 2007 pay increase				
		\$5,901,000		\$39,000
b. January 2008 pay increase				
		5,901,000		133,000
c. Two extra days of pay				
		5,901,000		45,000
d. Payment for centrally furnished services				
		394,000		4,000
e. Increased cost of laboratory supplies, materials, and other expenses				
		9,424,000		310,000
Subtotal				531,000
Subtotal, Built-in				763,000

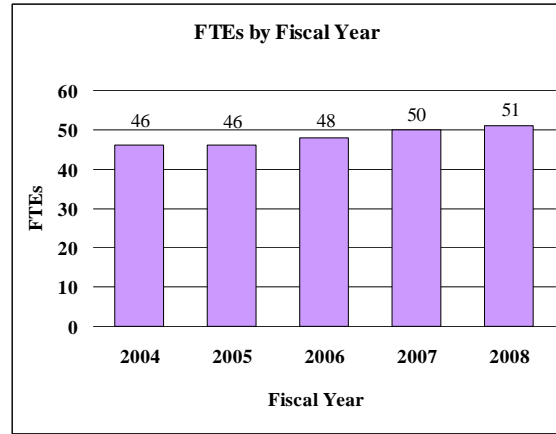
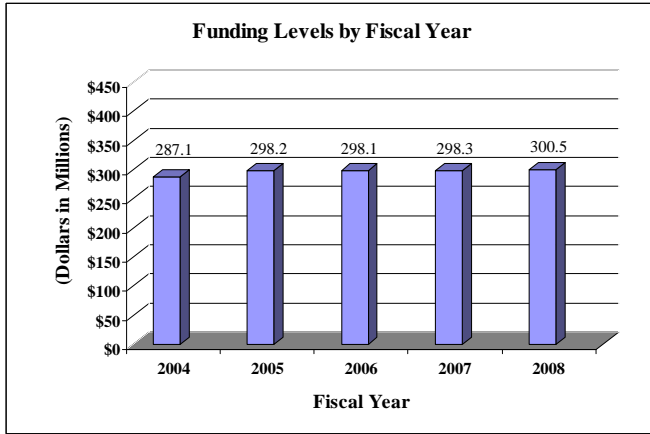
NATIONAL INSTITUTES OF HEALTH
National Institute of Biomedical Imaging and Bioengineering

Summary of Changes--continued

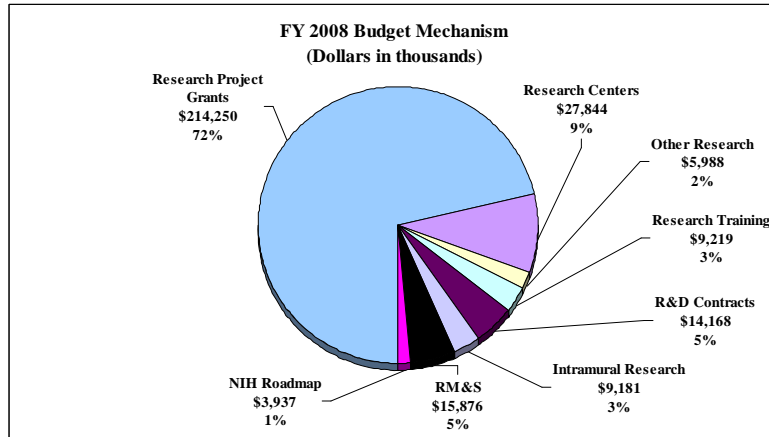
CHANGES	2007 Current Estimate Base		Change from Base	
	No.	Amount	No.	Amount
B. Program:				
1. Research project grants:				
a. Noncompeting	402	\$137,062,000	8	\$271,000
b. Competing	228	68,179,000	5	1,532,000
c. SBIR/STTR	37	7,302,000	(2)	(96,000)
Total	667	212,543,000	11	1,707,000
2. Research centers	24	27,750,000	1	94,000
3. Other research	71	5,842,000	(5)	146,000
4. Research training	219	9,719,000	15	(500,000)
5. Research and development contracts	16	13,936,000	0	232,000
Subtotal, extramural				1,679,000
6. Intramural research	<u>FTEs</u> 5	9,246,000	<u>FTEs</u> 1	(297,000)
7. Research management and support	43	15,719,000	0	(374,000)
8. Cancer control and prevention	0	0	0	0
9. Construction		0		0
10. Buildings and Facilities		0		0
11. NIH Roadmap for Medical Research	2	3,559,000	0	378,000
Subtotal, program		298,314,000		1,386,000
Total changes	50		1	2,149,000

Fiscal Year 2008 Budget Graphs

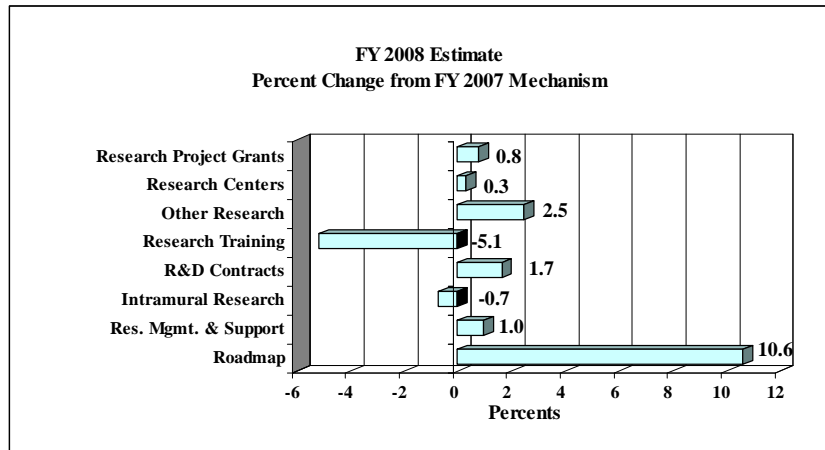
History of Budget Authority and FTEs:



Distribution by Mechanism:



Change by Selected Mechanisms:



Justification
National Institute of Biomedical Imaging and Bioengineering

Authorizing Legislation: Section 301 and title IV of the Public Health Service Act, as amended.

Budget Authority:

FY 2006 Actual		FY 2007 Estimate		FY 2008 Estimate		Increase or Decrease	
<u>FTE</u>	<u>BA</u>	<u>FTE</u>	<u>BA</u>	<u>FTE</u>	<u>BA</u>	<u>FTE</u>	<u>BA</u>
48	\$298,088,000	50	\$298,314,000	51	\$300,463,000	1	\$2,149,000

This document provides justification for the Fiscal Year (FY) 2008 activities of the National Institute of Biomedical Imaging and Bioengineering (NIBIB), including HIV/AIDS activities. Details of the FY 2008 HIV/AIDS activities are in the “Office of AIDS Research (OAR)” Section of the Overview. Details on the Common Fund are located in the Overview, Volume One.

Director’s Overview

The mission of the National Institute of Biomedical Imaging and Bioengineering (NIBIB) is to improve human health by leading the development of and accelerating the application of biomedical technologies. The NIBIB FY 2008 budget justification reflects a blend of continuing and new activities designed to highlight recent accomplishments and convey a strategic approach toward reaching future goals. NIBIB continues to allocate resources and link initiatives to program priorities outlined in our Strategic Plan.

A major focus of NIBIB since its inception is bridging and integrating the life, engineering, and physical sciences in order to improve human health. This focus was reinforced by House Report 108-188 accompanying the FY 2004 Appropriations Bill and culminated in a multi-agency “Conference on Research at the Interface of the Life and Physical Sciences: Bridging the Sciences” held in November 2004. The participating agencies included the National Science Foundation (NSF), the National Aeronautics and Space Administration (NASA), the National Institute of Standards and Technology (NIST), the U.S. Office of Science and Technology Policy (OSTP), the Department of Energy (DOE), the Food and Drug Administration (FDA), the United States Department of Agriculture (USDA), the National Oceanic and Atmospheric Administration (NOAA), and the Environmental Protection Agency (EPA). The final report noted that the ability to integrate organic and inorganic systems will enable advances in a broad range of biomedical applications. Based on continued meetings with the other agencies, NIBIB prepared a “White Paper” in the fall of 2006, which identifies demonstration projects that represent very high impact research at the interface of the life and physical sciences, and also create opportunities to work with other federal agencies. These projects reach beyond the

capabilities and mission of any single agency and adopt innovative management approaches for federal research.

NIBIB also launched the Quantum Grants Program in FY 2006 to further underscore our commitment to integrate the engineering and the physical sciences with the life sciences. This signature program supports interdisciplinary and large-scale research on targeted projects. The goal of this program is to develop innovative technologies and modalities for the diagnosis, treatment, or prevention of disease. The overall objective of the program is to produce a quantum improvement in healthcare by addressing a major disease or public health problem.

Early career investigators are the innovators of the future because they bring fresh ideas to existing biomedical research programs and pioneer new areas of investigation. The successful entry of these investigators into the ranks of independent and NIBIB-funded research is essential to the health of the Institute. NIBIB has also partnered with the Howard Hughes Medical Institute (HHMI) to support the HHMI-NIBIB Interfaces Initiative. This is a university-level program that provides Ph.D. scientists with the knowledge and skills needed to effectively conduct research across scientific disciplines. This new cadre of scientists will be at the forefront of progress in biomedical research that increasingly relies on input of new ideas, methodologies, and investigative strategies from the physical sciences, engineering, and mathematics.

NIBIB has identified several research priorities across the programs of the Institute through strategic planning retreats and National Advisory Council for Biomedical Imaging and Bioengineering (NACBIB) council discussions, including point-of-care technologies (POC). POC testing is defined as clinical testing at or near the site of patient care, oftentimes with immediate results. Empowering clinicians to make decisions at the POC can significantly impact healthcare delivery and address health disparity challenges. A recent workshop, co-sponsored by NIBIB, the National Heart, Lung, and Blood Institute (NHLBI), and NSF, identified several research gaps associated with the development and adoption of POC technologies. NIBIB released an initiative to support a POC Technologies Research Network to help bridge these gaps. The goal of this initiative is to facilitate collaborations among physical and computational scientists, engineers, clinicians, and health care practitioners to enable the development of technology systems that address recognized clinical needs in POC testing. The network will consist of individual centers that will be required to form multidisciplinary partnerships to cover all facets of the development of POC technologies, ranging from exploratory research through early clinical testing.

The objective of a federal inter-agency retreat, held in January 2006 and co-sponsored by NIBIB, was to identify important grand challenges in image-guided interventions (IGI) that could serve as goals to advance the field. Other participating agencies included NSF, NASA, DOE, NIST, the Department of Defense (DoD), and the Centers for Medicare and Medicaid Services (CMS), as well as 13 NIH Institutes and Centers. Immediate concerns focused on the need to foster research and development on a broad range of IGI technologies, particularly those capable of integrating multi-source and multi-dimensional data. NIBIB is also co-sponsoring with the National Cancer Institute (NCI) an initiative to develop high-impact, disruptive technologies for IGI to address the need to foster IGI technologies. A disruptive technology is a new innovation

that displaces the existing dominant technology. The focus here is to replace current invasive treatments with minimally invasive image-guided interventions.

Regenerative medicine is the process of creating living, functional tissues to repair or replace tissue or organ function lost due to age, disease, damage, or congenital defects. Engineered tissues can also be used to study disease pathogenesis and drug development. NIBIB staff met with leaders in the regenerative medicine community to garner input into future research opportunities. NIBIB, as well as five other NIH Institutes and Centers, NSF, and NIST, co-sponsored an initiative constructed to stimulate design or hypothesis-driven research applications that will promote the development of new technologies, tools, methods and devices, and generate advances in regenerative medicine.

Optical imaging is an emerging new biomedical technology with great potential for improving disease diagnosis and treatment. Rapid advances and developments in biophotonics (the science and technology of the interaction of photons within and on biological systems) during the past 15 years have resulted in promising innovations with broad applications in high-resolution imaging. More recent advances in genetics and genomics have spurred applications to image cellular activity, such as visualization of gene expression in real-time, as well as detection of protein synthesis during biologic processes. The ability to image, analyze, and manipulate living tissue at the cellular and molecular levels can enhance the practice of medicine, making it more predictive, personalized, and preemptive. However, optical imaging techniques are still primarily laboratory-based. The transfer of these new techniques into clinical tools remains a demanding problem and requires close collaboration between imagers, engineers, clinicians, mathematicians, and basic scientists. For this reason, NIBIB identified translational research of in vivo optical imaging as an important research focus during the development of our Strategic Plan, and we remain committed to funding research to advance this important field.

Justification of the FY 2008 Budget by Activity Detail

Overall Budget Policy:

NIBIB has adopted a funding policy that gives special consideration to grant applications that bridge and integrate the life and physical sciences. Our policy supports no inflationary increase on competing awards and no increases in training programs as we focus on enhancing support for new investigator and trans-NIH programs. NIBIB will also realign resources to program activities that have a high priority.

Applied Science and Technology (AST): The mission of this program is to support the development and application of innovative technologies, methods, products, and devices for research and clinical application that can transform the practice of medicine. This will, in turn, enable earlier diagnosis, better management of chronic disease, and more effective treatment of acute disorders. Research is conducted through research grants, cooperative agreements, and research and development contracts. The program supports the development, feasibility testing, and validation of novel biomedical imaging and health care technologies. Upon development and validation, these technologies are integrated into specific clinical applications in collaboration with disease-oriented NIH Institutes. In order to assess the technological needs in

this area, and to enhance the delivery of the new technologies into the national primary health care system, NIBIB supports workshops and conferences and research initiatives with other Institutes and Centers at NIH, other Federal agencies, private entities, and other organizations.

Budget Policy: The FY 2008 budget estimate for the AST program is \$152.1 million, a \$1.0 million increase (+0.6%) over the FY 2007 estimate. NIBIB will continue to support research for image-guided interventions, promoting the development of new, minimally-invasive, image-guided surgical techniques. Such techniques may replace current invasive surgical procedures. High priority will also continue to be given in FY 2008 to funding investigator-initiated research including exploratory research grants and Bioengineering Research Partnerships. The highest priority is given to new investigators and to research initiatives that bridge the physical and life sciences.

Program Portrait: Image-Guided Procedures

FY 2008 Level: \$13.1 million

FY 2007 Level: \$13.1 million

Change: \$0.0 million

It is becoming increasingly common to obtain three- and four-dimensional images from modern imaging modalities. Advances in imaging and image processing have been largely responsible for the development and proliferation of minimally-invasive surgical procedures as well as medical robotics. Image-guided interventions (IGI) can be defined as procedures that integrate imaging technologies with clinical treatment at the point of patient care. Image-guided interventions minimize trauma and improve patient outcomes. They include procedures such as biopsy, surgery, radiation treatment, vascular interventions, and guidance during delivery of devices, drugs, cells or genes. These improved capabilities are particularly important in light of the shifting trend in medicine toward a model of early, pre-symptomatic detection of disease.

The need to support research and development in the area of IGI has been identified at multiple workshops sponsored by the NIH and other Federal agencies. The purpose of the various workshops was to review technological advances, promote interdisciplinary team science, and to provide recommendations to ensure that agency programs address important research gaps and barriers. Workshop participants consistently identified as a major barrier the synergistic fusion of multimodality and multidimensional image datasets into a highly unified form that describes more accurately and extensively the complex nature of human anatomy, physiology, biology, and pathology. Other research challenges included the development of low-cost technologies and the development of standards and validation methods for IGI technologies. In response, in August 2006 NIBIB and NCI issued in a joint request for applications to support the first phase of a two-phase project that will deliver high-impact IGI. Multidisciplinary collaborations and partnerships with industry are encouraged, with the goal of developing multi-potential technologies with high clinical impact applicable across a range of diseases and disorders. Respondents will be required to have a clear plan detailing the development, validation and deployment of the technology into the clinical arena.

Discovery Science and Technology (DST): This program supports the discovery of innovative biomedical engineering and imaging principles and encourages the translation of those principles into applications for the benefit of public health. Scientific programs funded by the DST consist of investigator-initiated grants, contracts, and cooperative agreements. The program portfolio is complex and far-ranging in scope. It includes cutting-edge technological areas such as biomaterials, biomedical informatics, biomechanics, drug and gene delivery, mathematical modeling, simulation and analysis, molecular imaging agents, platform technologies, sensors, telemedicine, and tissue engineering. Within the scope of its scientific programs, the DST

program is committed to the development of revolutionary approaches that will change the face of medical care. As partners with industry, academia, government, and the public, the program supports the discovery of innovative and safe biomedical engineering technologies that promote better public health. The Division works to harness the power that comes from joining together the engineering and physical sciences with the life sciences. This integration will yield new disciplines, new ways of thinking, and stimulate the next generation of researchers that will accelerate discovery and technology development.

Budget Policy: The FY 2008 budget estimate for the DST program is \$98.1 million, a \$0.9 million increase (+0.9%) over the FY 2007 estimate. DST will give the highest priority to supporting investigator-initiated research grants. Particular emphasis will be given to new investigators. Investigator-initiated research is recognized as the foundation on which future advances in new biomedical technologies and improved patient care will be developed. Large grants, such as the Bioengineering Research Partnerships (BRP), and Center programs, such as the Biomedical Technology Resource Centers, will continue to receive support as will investment in other scientific opportunities and high priority areas. Funding of solicited research is also planned in two target areas: Point-of-Care Technologies and Enabling Technologies for Tissue Engineering and Regenerative Medicine.

Program Portrait: Regenerative Medicine

FY 2008 Level: \$28.0 million
FY 2007 Level: \$27.8 million
Change: +\$0.2 million

Regenerative medicine, oftentimes referred to as tissue engineering, represents a critical and highly-visible frontier in biomedical and clinical research, and is marked by recent unprecedented scientific advances. The creation of living, functional tissues to repair or replace lost tissue or organ function due to age, disease, damage, or congenital defects opens the door to the treatment of debilitating diseases and disorders for which current treatments are limited or nonexistent. Prior to the establishment of NIBIB, various communities sponsored scientific workshops and evaluation studies to review state-of-the-science in regenerative medicine and to identify global trends and research hurdles. In response, NIBIB issued an announcement in FY 2005 inviting research applications to address key research challenges in the field and funded 21 applications. Our initial investment yielded many advances and encouraged by these results, NIBIB met with scientific leaders in the field to discuss future opportunities. One recommendation, supported by the U. S. Department of Health and Human Services report “2020: A New Vision of the Future of Regenerative Medicine,” was to encourage research to promote the development of enabling technologies for tissue engineering. In response, several NIH Institutes, including NIBIB, co-sponsored with NSF and NIST an initiative inviting design and hypothesis-driven applications to promote enabling technologies for regenerative medicine. The ultimate goal of this federal initiative is to engineer functional tissue in the laboratory (in vitro) for implantation into humans (in vivo), or to foster tissue regeneration directly in vivo. Because tissue engineering is an emerging multidisciplinary field at the interface between the life and physical sciences, NIBIB plans to provide continued resources to foster the science needed for this field to mature and for translation of important breakthroughs from basic research to clinical studies and ultimately to patients.

Technological Competitiveness - Bridging the Sciences: This program has two principal aims. The first is to train engineers, physical scientists, life scientists, and clinical scientists in an interdisciplinary environment that will facilitate the integration of expertise from each of these groups to solve fundamental, technological, and biomedical problems related to improving human health. The second aim is to create research programs and environments to bring

established investigators and scientists from the physical, engineering, life, and clinical sciences together to address biomedical and health related questions. In this endeavor NIBIB works cooperatively with other Institutes, other Federal agencies, and private organizations.

Budget Policy: The FY 2008 budget estimate for the Technological Competitiveness – Bridging the Sciences program is \$21.3 million, a \$0.2 million decrease (-0.9%) from the FY 2007 estimate. In FY 2008, the highest priority is developing interdisciplinary training programs. In addition a research and development initiative, the Quantum Grants Program, will support the establishment of interdisciplinary research teams to address major health care problems. While maintaining a strong commitment for Research Training Awards in FY 2008, a portion of these resources have been shifted from the Technological Competitiveness – Bridging the Sciences program to other high priority programs in FY 2008.

Program Portrait: The Quantum Grants Program

FY 2008 Level: \$6.1 million

FY 2007 Level: \$6.0 million

Change: +\$0.1 million

This signature program supports multi-organizational, interdisciplinary, large-scale research on targeted projects that will develop new technologies and modalities for the diagnosis, treatment or prevention of disease. The goal of the program is to produce a profound—quantum level—improvement in healthcare by addressing a major human health problem. The concept stems directly from a goal outlined in our inaugural strategic plan entitled “Targeted research programs in areas of special opportunity or need that take advantage of novel technological advances and scientific discoveries.” In these “bench to bedside” partnerships, a team of multidisciplinary scientists will conduct collaborative research that will result in a prototype product that can be translated into clinical practice in a relatively short time frame.

The grant awarded in September 2006 supports an international collaboration between investigators in the United States and the United Kingdom. The three-year grant will support research on neurovascular regeneration, which involves creating brain tissue in the laboratory. The new brain tissue, which would have its own blood supply, could be placed into the damaged brains of stroke patients. Once implanted, the material will serve as a source of neural and vascular cells that will continue to develop and differentiate, leading to the repair of the stroke-injured tissue.

Intramural Research: In July 2005, NIBIB initiated a search for a Scientific Director to lead the Intramural Program. The search concluded with the appointment of the Director in October 2006. The new research program provides exciting opportunities to develop innovative imaging and bioengineering technologies related to both clinical and basic biomedical sciences. The program will serve as a point of focus for the current trans-NIH research initiative, "Imaging from Molecules to Cells," as well as a natural hub for new initiatives involving interdisciplinary research, such as nanotechnology and nanomedicine, and research training.

In FY 2007, the NIBIB Intramural program expanded to include the Division of Bioengineering and Physical Sciences (DBEP), originally a component of the NIH Office of the Director (OD), Office of Research Services (ORS). ORS staff members associated with DBEP transferred to NIBIB. The transfer of DBEP to NIBIB took place because DBEP staff has expertise that spans technologies ranging in scale from near-atomic resolution to intact organisms, expertise that supports NIBIB’s mission to integrate bioengineering with the life and physical sciences.

Budget Policy: The FY 2008 budget estimate for the Intramural Research Program is \$9.2 million, a \$0.1 million decrease (-0.7%) from the FY 2007 estimate. This decrease reflects NIH policy for Intramural Research in FY 2008. As part of the transfer from ORS in FY 2007, the DBEP budget – consisting of management funds and consulting fees from collaborating Institutes and Centers (IC) – will transfer to NIBIB.

Research Management and Support: NIBIB RMS activities provide administrative, budgetary, logistical, and scientific support in the review, award, and monitoring of research grants, training awards and research and development contracts. RMS functions also encompass strategic planning, coordination, and evaluation of the Institute's programs, regulatory compliance, international coordination, and liaison with other federal agencies, Congress, and the public. The Institute currently oversees more than 700 research project grants and centers.

Budget Policy: The FY 2008 budget estimate for Research Management and Support is \$15.9 million, a \$0.2 million increase (+1.0%) over the FY 2007 estimate. This increase reflects NIH policy for Research Management and Support in FY 2008.

**NATIONAL INSTITUTES OF HEALTH
National Institute of Biomedical Imaging and Bioengineering**

Budget Authority by Object

	FY 2007 Estimate	FY 2008 Estimate	Increase or Decrease
Total compensable workyears:			
Full-time employment	50	51	1
Full-time equivalent of overtime & holiday hours	0	0	0
Average ES salary	\$0	\$0	\$0
Average GM/GS grade	13.0	13.0	0.0
Average GM/GS salary	\$89,985	\$92,685	\$2,700
Average salary, grade established by act of July 1, 1944 (42 U.S.C. 207)	\$0	\$0	\$0
Average salary of ungraded positions	154,576	159,213	4,637
OBJECT CLASSES	FY 2006 Appropriation	FY 2007 Estimate	Increase or Decrease
Personnel Compensation:			
11.1 Full-Time Permanent	\$3,795,000	\$4,041,000	\$246,000
11.3 Other than Full-Time Permanent	1,313,000	1,395,000	82,000
11.5 Other Personnel Compensation	202,000	215,000	13,000
11.7 Military Personnel	0	0	0
11.8 Special Personnel Services Payments	155,000	163,000	8,000
Total, Personnel Compensation	5,465,000	5,814,000	349,000
12.0 Personnel Benefits	1,309,000	1,393,000	84,000
12.2 Military Personnel Benefits	0	0	0
13.0 Benefits for Former Personnel	0	0	0
Subtotal, Pay Costs	6,774,000	7,207,000	433,000
21.0 Travel & Transportation of Persons	337,000	353,000	16,000
22.0 Transportation of Things	51,000	51,000	0
23.1 Rental Payments to GSA	0	0	0
23.2 Rental Payments to Others	117,000	117,000	0
23.3 Communications, Utilities & Miscellaneous Charges	144,000	157,000	13,000
24.0 Printing & Reproduction	165,000	171,000	6,000
25.1 Consulting Services	1,626,000	1,758,000	132,000
25.2 Other Services	1,857,000	2,066,000	209,000
25.3 Purchase of Goods & Services from Government Accounts	22,273,000	22,293,000	20,000
25.4 Operation & Maintenance of Facilities	76,000	76,000	0
25.5 Research & Development Contracts	2,382,000	2,196,000	(186,000)
25.6 Medical Care	0	0	0
25.7 Operation & Maintenance of Equipment	509,000	498,000	(11,000)
25.8 Subsistence & Support of Persons	0	0	0
25.0 Subtotal, Other Contractual Services	28,723,000	28,887,000	164,000
26.0 Supplies & Materials	780,000	752,000	(28,000)
31.0 Equipment	1,810,000	1,530,000	(280,000)
32.0 Land and Structures	0	0	0
33.0 Investments & Loans	0	0	0
41.0 Grants, Subsidies & Contributions	255,854,000	257,301,000	1,447,000
42.0 Insurance Claims & Indemnities	0	0	0
43.0 Interest & Dividends	0	0	0
44.0 Refunds	0	0	0
Subtotal, Non-Pay Costs	287,981,000	289,319,000	1,338,000
NIH Roadmap for Medical Research	3,559,000	3,937,000	378,000
Total Budget Authority by Object	298,314,000	300,463,000	2,149,000

Includes FTEs which are reimbursed from the NIH Roadmap for Medical Research

NATIONAL INSTITUTES OF HEALTH
National Institute of Biomedical Imaging and Bioengineering

Salaries and Expenses

OBJECT CLASSES	FY 2007 Estimate	FY 2008 Estimate	Increase or Decrease
Personnel Compensation:			
Full-Time Permanent (11.1)	\$3,795,000	\$4,041,000	\$246,000
Other Than Full-Time Permanent (11.3)	1,313,000	1,395,000	82,000
Other Personnel Compensation (11.5)	202,000	215,000	13,000
Military Personnel (11.7)	0	0	0
Special Personnel Services Payments (11.8)	155,000	163,000	8,000
Total Personnel Compensation (11.9)	5,465,000	5,814,000	349,000
Civilian Personnel Benefits (12.1)	1,309,000	1,393,000	84,000
Military Personnel Benefits (12.2)	0	0	0
Benefits to Former Personnel (13.0)	0	0	0
Subtotal, Pay Costs	6,774,000	7,207,000	433,000
Travel (21.0)	337,000	353,000	16,000
Transportation of Things (22.0)	51,000	51,000	0
Rental Payments to Others (23.2)	117,000	117,000	0
Communications, Utilities and Miscellaneous Charges (23.3)	144,000	157,000	13,000
Printing and Reproduction (24.0)	165,000	171,000	6,000
Other Contractual Services:			
Advisory and Assistance Services (25.1)	1,626,000	1,758,000	132,000
Other Services (25.2)	1,857,000	2,066,000	209,000
Purchases from Govt. Accounts (25.3)	8,860,000	8,440,000	(420,000)
Operation & Maintenance of Facilities (25.4)	76,000	76,000	0
Operation & Maintenance of Equipment (25.7)	509,000	498,000	(11,000)
Subsistence & Support of Persons (25.8)	0	0	0
Subtotal Other Contractual Services	12,928,000	12,838,000	(90,000)
Supplies and Materials (26.0)	780,000	752,000	(28,000)
Subtotal, Non-Pay Costs	14,522,000	14,439,000	(83,000)
Total, Administrative Costs	21,296,000	21,646,000	350,000

**NATIONAL INSTITUTES OF HEALTH
National Institute of Biomedical Imaging and Bioengineering**

Authorizing Legislation

	PHS Act/ Other Citation	U.S. Code Citation	2007 Amount Authorized	FY 2007 Estimate	2008 Amount Authorized	FY 2008 Budget Estimate
Research and Investigation	Section 301	42§241	Indefinite	\$298,314,000	Indefinite	\$300,463,000
Imaging and Bioengineering	Section 402(a)	42§2XXX	Indefinite		Indefinite	
Total, Budget Authority					298,314,000	300,463,000

NATIONAL INSTITUTES OF HEALTH
National Institute of Biomedical Imaging and Bioengineering

Appropriations History

Fiscal Year	Budget Estimate to Congress	House Allowance	Senate Allowance	Appropriation <u>1/</u>
2002	40,206,000	39,869,000	140,000,000	111,984,000
Rescission				(33,000)
2003	120,502,000	270,494,000	283,100,000	280,100,000
Rescission				(1,821,000)
2004	282,109,000	282,109,000	289,300,000	288,900,000
Rescission				(1,771,000)
2005	297,647,000	297,647,000	300,800,000	300,647,000
Rescission				(2,438,000)
2006	299,808,000	299,808,000	309,091,000	299,808,000
Rescission				(2,998,000)
2007	296,810,000	294,850,000	297,606,000	296,810,000 <u>2/</u>
2008	300,463,000			

1/ Reflects enacted supplementals, rescissions, and reappropriations

2/ Annualized Current Rate

NATIONAL INSTITUTES OF HEALTH
National Institute of Biomedical Imaging and Bioengineering

Details of Full-Time Equivalent Employment (FTEs)

OFFICE/DIVISION	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate
Office of the Director	3	4	4
Extramural Research Program	14	14	14
Office of Research Administration	11	12	12
Office of Administrative Management	15	15	15
Intramural Science Program	5	5	6
Total	48	50	51
Includes FTEs which are reimbursed from the NIH Roadmap for Medical Research			
FTEs supported by funds from Cooperative Research and Development Agreements	(0)	(0)	(0)
FISCAL YEAR	Average GM/GS Grade		
2004	12.3		
2005	12.8		
2006	12.5		
2007	13.0		
2008	13.0		

NATIONAL INSTITUTES OF HEALTH
National Institute of Biomedical Imaging and Bioengineering

Detail of Positions

GRADE	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate
Total, ES Positions	0	0	0
Total, ES Salary	0	0	0
GM/GS-15	7	7	7
GM/GS-14	14	14	15
GM/GS-13	11	13	13
GS-12	4	4	4
GS-11	1	1	1
GS-10	1	1	1
GS-9	4	4	4
GS-8	0	0	0
GS-7	1	1	1
GS-6	0	0	0
GS-5	0	0	0
GS-4	1	1	1
GS-3	1	1	1
GS-2	0	0	0
GS-1	0	0	0
Subtotal	45	47	48
Grades established by Act of July 1, 1944 (42 U.S.C. 207):			
Assistant Surgeon General	0	0	0
Director Grade	0	0	0
Senior Grade	0	0	0
Full Grade	0	0	0
Senior Assistant Grade	0	0	0
Assistant Grade	0	0	0
Subtotal	0	0	0
Ungraded	7	7	7
Total permanent positions	43	47	48
Total positions, end of year	59	59	59
Total full-time equivalent (FTE) employment, end of year	48	50	51
Average ES salary	0	0	0
Average GM/GS grade	12	13	13
Average GM/GS salary	86,288	89,985	92,685

Includes FTEs which are reimbursed from the NIH Roadmap for Medical Research