

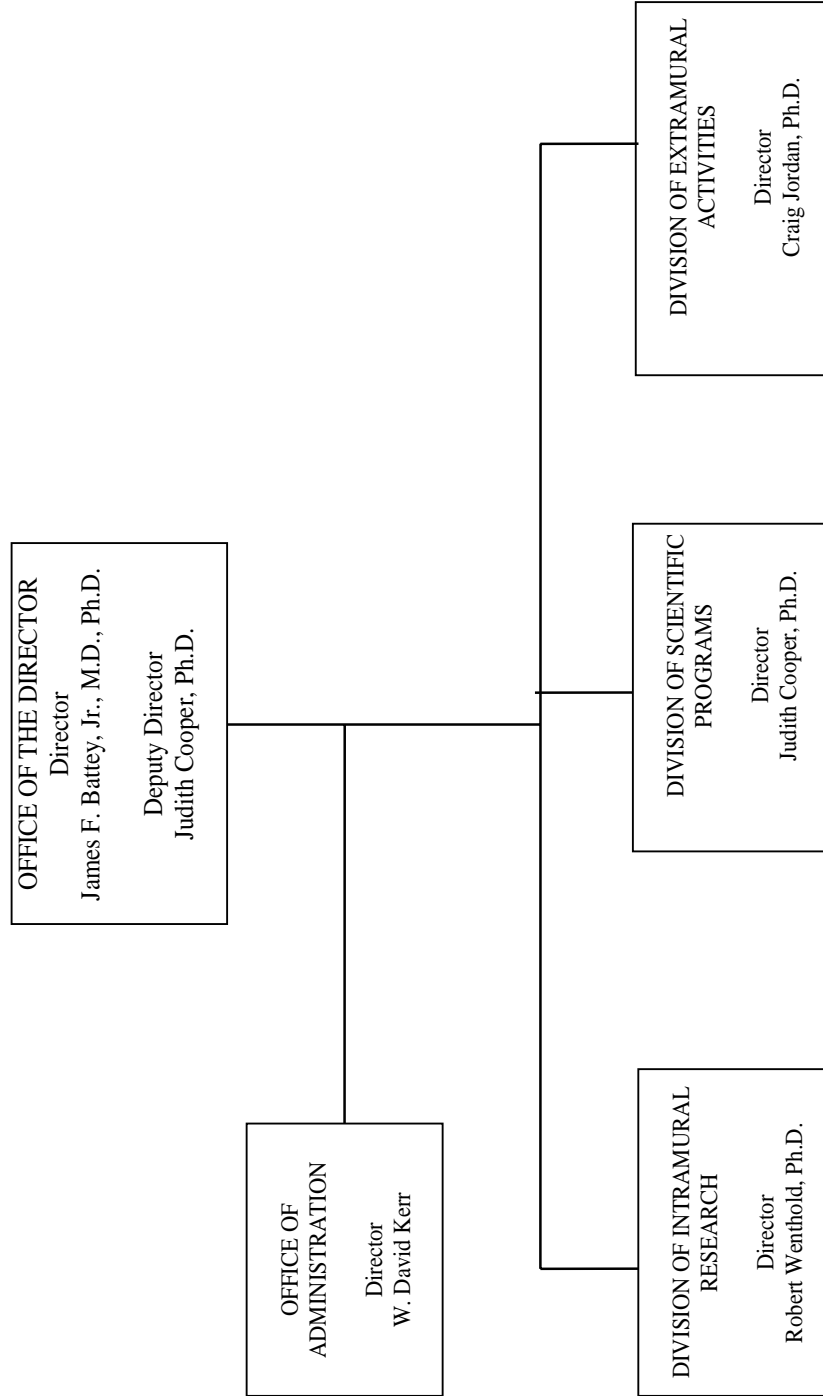
DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

National Institute on Deafness and Other Communication Disorders

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**NATIONAL INSTITUTES OF HEALTH
National Institute on Deafness and Other Communication Disorders**



FY 2008 Proposed Appropriation Language

NATIONAL INSTITUTES OF HEALTH

National Institute on Deafness and Other Communication Disorders

For carrying out section 301 and title IV of the Public Health Services Act with respect to deafness and other communication disorders \$393,682,000

Supplementary Exhibit

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

NATIONAL INSTITUTES OF HEALTH

National Institute on Deafness and Other Communication Disorders

For carrying out section 301 and title IV of the Public Health Services Act with respect to deafness and other communication disorders [~~\$397,432,000~~]**\$393,682,000** (Department of Health and Human Services Appropriation Act, 2006)

**National Institutes of Health
National Institute on Deafness and Other Communication Disorders**

Amounts Available for Obligation 1/

Source of Funding	FY 2007		
	FY 2006 Actual	Continuing Resolution	FY 2008 Estimate
Appropriation	\$397,432,000	\$393,458,000	\$393,682,000
Enacted Rescissions	-3,974,000	0	0
Subtotal, Adjusted Appropriation	393,458,000	393,458,000	393,682,000
Real Transfer under Roadmap Authority	-3,516,000		
Real Transfer under Secretary's One-percent transfer authority	-270,000		
Comparative transfer from OD for NIH Roadmap	3,516,000		
Comparative Transfer to NIBIB	-18,000	-18,000	
Comparative transfer to OD	-8,000	-8,000	
Comparative Transfer to NCRR	-50,000	-101,000	
Comparative Transfers to the Office of the Assistant Secretary for Admin. And Mgmt. and to the Office of the Assistant Secretary for Public Affairs	-1,000	-1000	
Comparative Transfer to the Office of Public Health Emergency Preparedness	0	0	
Comparative Transfer from the PHSSEF	0	0	
Comparative Transfer to DHHS for PHS Historian	0	0	
Subtotal, adjusted budget authority	393,111,000	393,330,000	393,682,000
Unobligated Balance, start of year	0	0	0
Revenue from Breast Cancer Stamp ^{2/}	0		
Unobligated Balance, end of year	0	0	0
Subtotal, adjusted budget authority	393,111,000	393,330,000	393,682,000
Unobligated balance lapsing	-48,000	0	0
Total obligations	393,063,000	393,330,000	393,682,000

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

FY 2006 - \$1,656,000 FY 2007 - \$2,000,000 FY 2008 - \$2,000,000

Excludes \$82,000 in FY 2007 and \$114,000 in FY 2008 for royalties.

NATIONAL INSTITUTES OF HEALTH
National Institute on Deafness and Other Communication Disorders

(Dollars in Thousands)

Budget Mechanism - Total

MECHANISM	FY 2006 Actual		FY 2007 Cont. Resolution		FY 2008 Estimate		Change	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Research Grants:								
<u>Research Projects:</u>								
Noncompeting	641	\$204,391	633	\$199,249	625	\$198,134	(8)	-\$1,115
Administrative supplements	(22)	1,053	(23)	1,100	(23)	1,050	(0)	-50
<u>Competing:</u>								
Renewal	74	27,288	77	28,280	78	28,750	1	470
New	139	34,668	144	35,928	147	36,525	3	597
Supplements	0	0	0	0	0	0	0	0
Subtotal, competing	213	61,956	221	64,208	225	65,275	4	1,067
Subtotal, RPGs	854	267,400	854	264,557	850	264,459	(4)	-98
SBIR/STTR	30	9,716	30	9,600	28	9,000	(2)	-600
Subtotal, RPGs	884	277,116	884	274,157	878	273,459	(6)	-698
<u>Research Centers:</u>								
Specialized/comprehensive	20	17,243	20	17,157	20	16,985	0	-172
Clinical research	0	0	0	0	0	0	0	0
Biotechnology	0	0	0	0	0	0	0	0
Comparative medicine	0	98	0	95	0	94	0	-1
Research Centers in Minority Institutions	0	0	0	0	0	0	0	0
Subtotal, Centers	20	17,341	20	17,252	20	17,079	0	-173
<u>Other Research:</u>								
Research careers	38	6,657	40	6,999	44	7,289	4	290
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	18	2,714	21	2,700	21	2,673	0	-27
Subtotal, Other Research	56	9,371	61	9,699	65	9,962	4	263
Total Research Grants	960	303,828	965	301,108	963	300,500	(2)	-608
<u>Research Training:</u>								
Individual awards	138	5,209	143	5,473	141	5,418	(2)	-55
Institutional awards	192	7,228	182	7,492	180	7,417	(2)	-75
Total, Training	330	12,437	325	12,965	321	12,835	(1)	(130)
Research & development contracts (SBIR/STTR)	47 (0)	21,638 (21)	50 (0)	21,756 (21)	50 (0)	21,961 (21)	0 (0)	205 (0)
<u>Intramural research</u>								
FTEs	65	33,965	68	34,775	70	35,032	2	257
Research management and support	68	17,727	68	17,999	68	18,179	0	180
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	0	3,516	0	4,727	0	5,175		448
Total, NIDCD	133	393,111	136	393,330	138	393,682	2	352

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

NATIONAL INSTITUTES OF HEALTH
National Institute on Deafness and Other Communication Disorders
Budget Authority by Program
(Dollars in thousands)

NIDCD -6-

	FY 2004 Actual		FY 2005 Actual		FY 2006 Actual		FY 2006 Comparable		FY 2007 Continuing Resolution		FY 2008 Estimate		Change	
	<u>FTEs</u>	<u>Amount</u>	<u>FTEs</u>	<u>Amount</u>	<u>FTEs</u>	<u>Amount</u>	<u>FTEs</u>	<u>Amount</u>	<u>FTEs</u>	<u>Amount</u>	<u>FTEs</u>	<u>Amount</u>	<u>FTEs</u>	<u>Amount</u>
Extramural Research														
<u>Detail:</u>														
Hearing & Balance		\$194,271		\$199,835		\$195,197		\$195,147		\$193,950		\$193,640		-\$310
Smell & Taste		60,659		62,095		62,747		62,747		62,360		62,260		-100
Voice, Speech, and Language		78,187		78,963		80,009		80,009		79,519		79,396		-123
														0
														0
														0
														0
Subtotal, Extramural		333,117		340,893		337,953		337,903		335,829		335,296		-533
Intramural research	83	32,470	72	34,166	65	33,980	65	33,965	68	34,775	70	35,032	2	257
Res. management & support	65	15,209	68	16,709	68	17,739	68	17,727	68	17,999	68	18,179	0	180
NIH Roadmap for Medical Research		1,257		2,492		3,516		3,516		4,727		5,175	0	448
TOTAL	148	382,053	140	394,260	133	393,188	133	393,111	136	393,330	138	393,682	2	352

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 NIDCD, which is \$0.352 million more than the FY 2007 Estimate, for a total of \$393.682 million.

Research Project Grants (-\$0.7 million; total \$273.5 million). NIDCD will support a total of 878 Research Project Grant (RPG) awards in FY 2008. Noncompeting RPGs will decrease by 8 awards and decrease by \$1.1 million. Competing RPGs will increase by 4 awards and increase by \$1.1 million

Research Careers (+\$0.3 million; total \$7.3 million): NIDCD will support the Pathway to Independence program, by funding an additional 4 awards in FY 2008. Total support for the Pathway program in FY 2008 is 8 awards and \$0.7 million.

NIH Roadmap for Biomedical Research (+\$0.4 million; total \$5.2 million): NIDCD 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.

AIDS-related Research (-\$1.4 million; total \$0.0 million): The grant that NIDCD had been supporting in its own portfolio ends in FY 2007, and NIDCD will no longer co-fund an AIDS-related project with the National Institute of Child Health and Human Development. Over the past several years, NIDCD has not received any grant applications which involve AIDS-related research, and does not anticipate any in FY 2008.

NATIONAL INSTITUTES OF HEALTH
National Institute on Deafness and Other Communication Disorders
Summary of Changes

FY 2007 Continuing Resolution		\$393,330,000	
FY 2008 Estimated Budget Authority		393,682,000	
Net change		352,000	
CHANGES	FY 2007		
	Continuing Resolution	Change from Base	
	Budget		Budget
	FTEs	Authority	FTEs
		Authority	Authority
A. Built-in:			
1. Intramural research:			
a. Annualization of January 2007 pay increase			
		\$10,400,000	94,000
b. January 2008 pay increase			
		10,400,000	321,000
c. Two extra days of pay			
		10,400,000	107,000
d. Payment for centrally furnished services			
		5,849,000	58,000
e. Increased cost of laboratory supplies, materials, and other expenses			
		18,526,000	445,000
Subtotal		1,025,000	
2. Research Management and Support:			
a. Annualization of January 2007 pay increase			
		\$8,536,000	\$96,000
b. January 2008 pay increase			
		8,536,000	284,000
c. Two extra days of pay			
		8,536,000	94,000
d. Payment for centrally furnished services			
		3,120,000	31,000
e. Increased cost of laboratory supplies, materials, and other expenses			
		6,343,000	152,000
Subtotal		657,000	
Subtotal, Built-in		1,682,000	

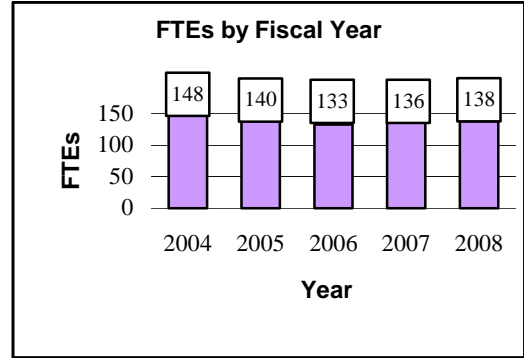
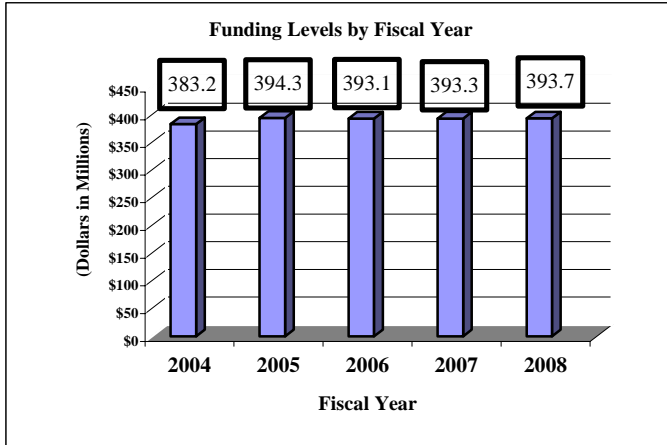
NATIONAL INSTITUTES OF HEALTH
National Institute on Deafness and Other Communication Disorders

Summary of Changes--continued

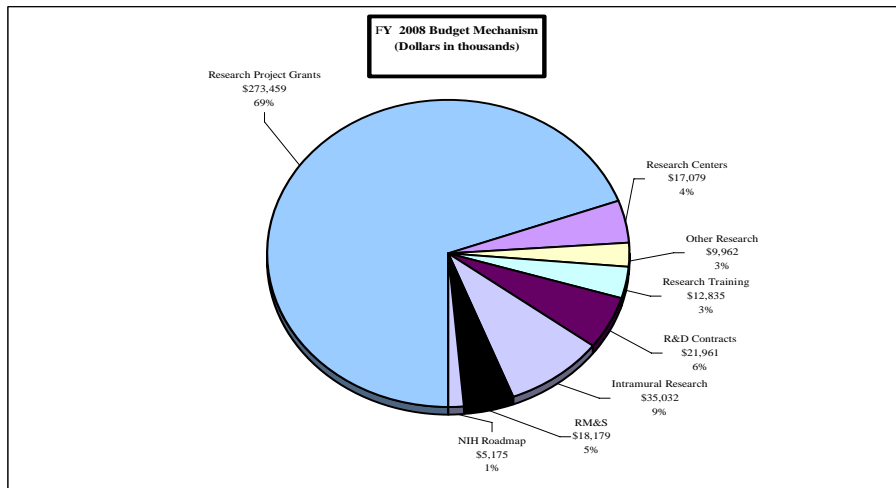
CHANGES	FY 2007			
	Continuing Resolution		Change from Base	
	No.	Amount	No.	Amount
B. Program:				
1. Research project grants:				
a. Noncompeting	633	\$200,349,000	(8)	-\$1,165,000
b. Competing	221	64,208,000	4	1,067,000
c. SBIR/STTR	30	9,600,000	(2)	-600,000
Total	884	274,157,000	(6)	-698,000
2. Research centers	20	17,252,000	0	-173,000
3. Other research	61	9,699,000	4	263,000
4. Research training	325	12,965,000	(4)	-130,000
5. Research and development contracts	50	21,756,000	0	205,000
Subtotal, extramural				-533,000
6. Intramural research	<u>FTEs</u> 68	34,775,000	<u>FTEs</u> 2	-768,000
7. Research management and support	68	17,999,000	0	-477,000
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	0	4,727,000	0	448,000
Subtotal, program		393,330,000		-1,330,000
Total changes	136		2	352,000

Fiscal Year 2008 Budget Graphs

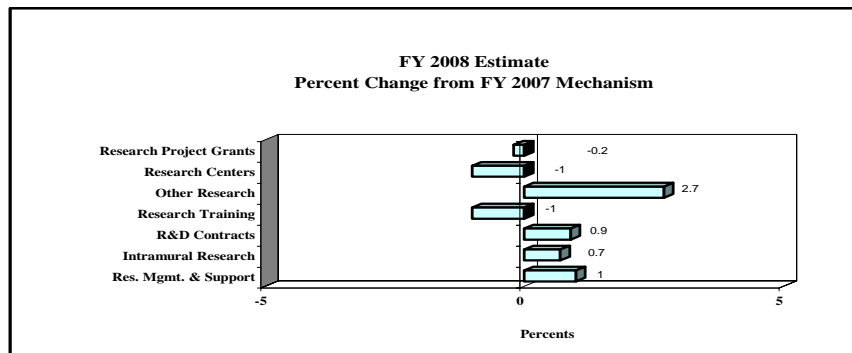
History of Budget Authority and FTEs:



Distribution by Mechanism:



Change by Selected Mechanism:



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

Budget Authority:

FY 2006 Actual		FY 2007 Continuing Resolution		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>
133	393,188,000	136	393,330,000	138	393,682,000	2	352,000

This document provides justification for the Fiscal Year (FY) 2008 activities of the National Institute on Deafness and Other Communication Disorders (NIDCD), including NIH/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 Roadmap/Common Fund are located in the Overview, Volume One.

DIRECTOR’S OVERVIEW

We depend on our ability to communicate effectively to function in modern society. The processes of sensing, interpreting, and responding are fundamental to the way we perceive the world and to our ability to communicate. Yet, approximately one of every six Americans experiences some form of communication disorder in their lifetime. The National Institute on Deafness and Other Communication Disorders (NIDCD) is committed to advancing the science of human communication and its associated disorders by conducting and supporting research and research training in the normal and disordered processes of hearing, balance, smell, taste, voice, speech, and language. These processes are fundamental to the way we perceive the world and to our ability to communicate effectively and efficiently.

NIDCD ACCOMPLISHMENTS. In the past year, NIDCD has supported important activities in the following key areas of communication research:

Genes and communication disorders. NIDCD recognizes that one of the most rapidly developing areas of research involves determining the identity, structure, and function of genes, also called functional genomics. The Human Genome Project has fueled considerable progress to be made in identifying the genes involved in human communication and how these genes are altered in individuals with communication disorders (such as hearing loss, stuttering, speech-sound disorders, autism, and dyslexia). Hereditary or genetic causes account for approximately 50-60 percent of the severe to profound cases of childhood hearing loss¹. NIDCD hopes that the investment in research efforts to understand the genetic basis of communication disorders will eventually help clinicians develop diagnostic tests and more effective treatments for millions of Americans with hereditary hearing impairment.

¹ Morton CC and Nance WE. Newborn hearing screening--a silent revolution. N Engl J Med 354: 2151-2164, 2006.

Improving hearing aid technology. Approximately 32.5 million American adults report some degree of hearing loss². Although almost 95 percent of Americans with hearing loss could have their hearing treated with hearing aids, only about 20% of Americans with hearing loss have hearing aids and many who wear them are dissatisfied with their aids³. Hearing in noisy environments is a major unsolved problem faced by hearing aid users and, of all available technologies, directional microphones currently show the most promise for addressing this problem. In the effort to improve hearing aid technology so that users can better understand speech in a noisy background, NIDCD-supported scientists successfully completed a prototype of a low-power, highly directional microphone small enough to fit into a hearing aid.

NIDCD PLANS AND PRIORITIES. Driven by the compelling public health need and scientific opportunity identified in the NIDCD Strategic Plan, NIDCD prioritizes its research investment to keep current with the state-of-the-science and to identify the most promising scientific opportunities in diagnosis and treatment of communication disorders. Therefore, NIDCD intends to emphasize its efforts in several priority areas, including:

Translational research. NIDCD believes that emphasis on translational research will advance its mission by encouraging collaborative partnerships between scientists who study basic biological and behavioral processes and those who study the cause, diagnosis, treatment, and prevention of deafness and other communication disorders. The Institute established a new Translational Research Branch (TRB) to facilitate the translation of basic biomedical and behavioral research discoveries into new clinical and research tools; prosthetics and assistive devices; and behavioral, pharmaceutical, and surgical therapies. This branch will expand the existing clinical trials program and develop a strong cadre of scientists who can lead and implement multi-site clinical trials. To oversee these operations, the NIDCD is currently recruiting an administrator to provide management and oversight for the TRB. In conjunction with these efforts, the NIDCD will continue to fund initiatives related to patient-oriented research, translational research, epidemiology, research resources, and clinical trials.

Developing assistive technology/devices. Advances in technology and science have created new opportunities to design devices that restore or improve lost function for individuals with communication disorders. Improvements have been made in technologies such as cochlear implants, hearing aids, vestibular implants (to assist individuals with a balance disorder), electronic larynxes (to enhance voice production), and computer-aided speech devices. NIDCD-supported scientists created a new device, called the EarPopper, which effectively drains fluid buildup from the middle ear caused by ear infections and other disorders. The scientists received a Tibbetts Award for their technological innovation related to the federal Small Business Innovation Research Program. Using lessons learned from the extensive NIDCD-supported cochlear implant research, scientists have developed a prototype vestibular implant that may benefit a subset of over 90 million Americans, age 17 and older, that have experienced a dizziness or balance problem at one point in their lifetimes⁴. NIDCD plans to capitalize on emerging technologies to design and improve devices that enhance communication,

² Based on NCHS/NHIS data for 2003.

³ Kochkin, S. Customer Satisfaction with Hearing Aids in the Digital Age, The Hearing Journal 58: 30-37, 2005.

⁴ Dizziness, Vertigo, and You NIDCD Fact Sheet

to determine the best techniques for assessing performance, and to evaluate which devices can help specific groups of people who have a communication disorder.

Training new scientists. Disorders of human communication impose a significant economic, social, and personal cost for millions of Americans. It is critical that a significant pool of qualified scientists be developed to address the growing problem of human communication disorders, especially when the number of Americans with communication disorders continues to increase as the population increases in age. NIDCD hopes to preserve its focus on new investigators, particularly in times of declining research budgets. In response to this need, NIDCD implemented program changes to allow the Institute to broadly attract more exceptional individuals toward basic and clinical research training opportunities, and to sustain new investigators whose research is directed to understanding normal and disordered communication. These changes include an expedited fellowship review and award process that enables new, highly promising scientists to receive funding for their research sooner and provides the opportunity for those unfunded applicants who received critiques that are readily addressable to revise and reapply more rapidly. This flexible process responds to the differing needs of trainees with various academic backgrounds and aims to maximize the entry of new scientists into research within the mission areas of the Institute. These efforts facilitate the transition of fellows, trainees, and new investigators to becoming independent Principal Investigators.

JUSTIFICATION OF THE FY 2008 BUDGET BY ACTIVITY

Overall Budget Policy: Investigator-initiated research projects—particularly those from new investigators, research training, and career development are NIDCD’s highest priorities.

In FY 2008, NIDCD plans to renew its support for the following cross-cutting initiative for three more years. Since 2001, NSF and NIH—including NIDCD-- have jointly supported interdisciplinary research projects in Collaborative Research in Computational Neuroscience (CRCNS), but in FY 2006 this initiative expired. CRCNS projects cross traditional academic disciplinary boundaries and bring about increased productivity and creativity when biological scientists and engineers combine their experience and training. Such novel and innovative computational approaches have broad appeal for advancing research progress within the three NIDCD program areas.

Hearing and Balance Program

Hearing impairment, deafness, and balance disorders can impose a heavy social and economic burden on individuals, their families, and their communities. Millions of Americans experience some form of hearing or balance disorder at some point in their lifetime, especially in early childhood or old age. Accordingly, research projects within the NIDCD Hearing and Balance program encompass a significant portion of NIDCD’s portfolio. With its receptor organs located in the inner ear, both hearing and balance disorders are prevalent, bear substantial burden to quality of life, and cross all ethnic and socioeconomic lines. Approximately 15 percent (32.5 million) of American adults report some degree of hearing loss⁵. Balance disorders affect a large proportion of the population, particularly the elderly. Approximately four percent (almost eight million) of American adults report a chronic problem with balance, while an additional 1.1 percent (2.4 million) of American adults report a chronic problem with dizziness alone⁶. To study the auditory and vestibular systems, NIDCD uses a wide range of research approaches, such as molecular genetics, the development of assistive and augmentative devices, biomedical imaging, nanotechnology, linguistics, psychoacoustics, and structural biology. As the “baby boomer” generation ages, scientists hope to develop therapies to restore hearing and balance lost due to infection, injury, noise, and the aging process. NIDCD is committed to support of research that will lead to the amelioration or prevention of these disorders.

Budget Policy: The 2008 budget estimate for the Hearing and Balance program is \$193.640 million, a decrease of \$0.310 million or 0.2 percent from the FY 2007 estimate. Funding for Hearing and Balance related noncompeting Research Project Grants will decrease slightly. The program plans for 2008, along with expected accomplishments are as follows:

Two new RFAs are planned for FY 2008, involving interventions and outcomes for children with hearing loss, and collaborative efforts in tinnitus research. The first initiative focuses on

⁵ Based on NCHS/NHIS data for 2003.

⁶ Based on prevalences from the 1994–95 Disability Supplement to the NHIS and current US population estimates.

prospective and longitudinal research, and will be one element of a broad collaboration with several other federal agencies. With the advent of newborn hearing screening, children are identified with hearing loss immediately after birth. The power of newborn screening lies in early intervention—to avoid delays in speech and language development during critical formative years. However, given this new population of children with hearing loss, we are sorely lacking in information regarding which interventions provide the best outcomes. Research which considers not just the intervention strategy but such things as the parent-child interaction, socio-economic factors, and language exposure is needed. Current intervention and outcome data are limited to those children whose hearing loss was detected later in life. [See PROGRAM PORTRAITS: Early Detection and Hearing Intervention (EDHI), which follows.]

The second planned RFA, collaborative efforts in tinnitus research, emerges from opportunities identified at a NIDCD-sponsored workshop conducted in December, 2005. This workshop summarized current research in the central mechanisms and treatments of tinnitus, the debilitating effects of this disorder, and some promising results that have been observed in patients receiving a variety of treatments. Of note, presenters from outside the traditional field of tinnitus research and clinical practice provided information that was deemed useful and in some cases, surprising, to those in the field of tinnitus research and clinical practice. Workshop participants overwhelmingly agreed that there were opportunities for research advances if collaborations across disciplines were encouraged.

As outlined in the “NIDCD Plans and Priorities” section, the Institute will continue to emphasize translational research, development of assistive technology/devices, and training of new scientists in the hearing and balance program area.

PROGRAM PORTRAITS: Early Detection and Hearing Intervention (EHDI)

FY 2007 Level: \$17.784 million

FY 2008 Level: \$17.962 million

Change +\$0.178 million

Each year, approximately two to three out of 1,000 babies born in the United States have a detectable hearing loss, which can affect their speech, language, social, and cognitive development⁷. Because hearing loss is among the most common human birth defects and early intervention during the critical period for learning language (<18 months of age) is important, more than 35 states have adopted mandatory Early Detection and Hearing Intervention (EHDI) programs. As a result of the EHDI programs, a new population of infants, i.e., those who have been identified with hearing impairment soon after birth, has rapidly emerged.

Research has established that infants who are born deaf or hard-of-hearing have a better chance of learning language if the hearing loss is found immediately after they are born and if they learn a spoken or signed language as early as possible. Given this information, NIDCD has placed a high priority on understanding causes, possible treatments, and progression of hearing loss during early childhood. In May 2005, NIDCD took part in a multi-agency meeting on “Closing the Gaps in Programs and Services for Infants and Young Children with Hearing Loss,” which addresses the goals and objectives of the New Freedom Initiative for Americans with Disabilities and the Healthy People 2010 Objectives for the Nation. NIDCD held a workshop on the “Outcomes in the Child with Hearing Loss” in December 2006. Based on insight gained from this workshop, NIDCD is developing a FY 2008 initiative focused on prospective and longitudinal research to assess interventions and outcomes in children with hearing loss.

Cytomegalovirus (CMV) is a common congenital (at birth) infection and a leading cause of progressive hearing loss in children in the United States. Based on the recommendations from a NIDCD-sponsored workshop, NIDCD published a Request for Proposals (RFP) and, in 2005, funded a multicenter study, entitled the CMV & Hearing Multicenter Screening (CHIMES) study, on the role of congenital CMV in the development of hearing loss in children. Starting in FY 2008, CHIMES will screen approximately 100,000 children for CMV infection at birth. The study will identify CMV-infected children with normal hearing and follow their progress to determine the frequency of hearing developing later in childhood. Because scientists will test the children’s hearing several times during early childhood, CHIMES will help scientists determine how many of them develop hearing loss, and at what age. These data will help to determine whether it is cost-effective to screen newborns for CMV infection.

⁷ White KR. The scientific basis for newborn hearing screening: Issues and evidence. Invited keynote address to the Early Hearing Detection and Intervention (EHDI) Workshop sponsored by the Centers for Disease Control and Prevention, Atlanta, Georgia, October 1997.

PROGRAM PORTRAITS: Hair Cell Regeneration

FY 2007 Level: \$1.988 million

FY 2008 Level: \$2.008 million

Change +\$0.020 million

The inability of humans to regenerate lost sensory cells, called hair cells, in the inner ear can lead to permanent hearing loss and is an important aspect of NIDCD's research portfolio. Until recently, scientists believed that these hair cells, which are critical for both hearing and balance, could never be replaced in mammals if they were injured or destroyed. However in 2005, scientists reported the first successful demonstration of gene therapy that improves hearing in formerly deaf animals. Using a guinea pig model, they discovered that mammalian hair cells can be regenerated from nearby supporting cells if certain genes are turned on in that region of the ear. This finding shows that gene therapy may help regenerate hair cells and restore lost hearing, inspiring hope that hair cell regeneration may be accomplished in humans in the future.

Following this landmark discovery, NIDCD-supported scientists are working to determine if the gene therapy approach used to deliver the corrected genes to the inner ear is safe. Determining long-term safety of gene therapy for hearing loss is a complex challenge that requires multifaceted approaches. Scientists are working to identify the key groups of cells, their interactions, and the molecules necessary to coordinate and regulate hair cell regeneration. One group of scientists is documenting the ability of supporting cells to "transdifferentiate," or change their identities to become hair cells.

At present, there is no perfect treatment for lost hearing function. While cochlear implants and hearing aids are of great benefit, the best treatment may be to prompt the body to generate its own new sensory hair cells. In FY 2008, NIDCD plans to continue its support of research directed at regenerating hair cells and cochlear implant use. For example, NIDCD participated in several research initiatives to enable scientists to study how supporting cells or stem cells in the inner ear interact with their immediate microenvironment. By understanding what molecular and cellular events stimulate hair cell regeneration, NIDCD-supported scientists hope to restore the ability to detect sound to individuals who have lost some or all of their hearing.

Smell and Taste Program

More than 200,000 people visit a physician for problems with the chemical senses of olfaction (smell) and gustation (taste) each year. Many more smell and taste disorders go unreported. The NIDCD Smell and Taste program supports the study of the chemical senses (smell and taste) to enhance our understanding of how individuals interact with their environment and how chemosensory disorders can be identified and treated. Smell and taste play important roles in preferences and aversions for aromas, specific foods, and flavors. Serious health problems like obesity, diabetes, hypertension, malnutrition, Parkinson's disease, Alzheimer's disease, and multiple sclerosis are all accompanied or signaled by chemosensory problems. An estimated 25 percent (approximately 15 million) of Americans 55 years old or older suffer olfactory impairment, which increases with age⁸. NIDCD supports research on the molecular biology of smell and taste receptor cells that has provided essential information about the sensitivities of the chemical senses. For example, scientists are discovering how smell and taste receptors in the nose and tongue recognize or code for a particular odorant or tastant and how this information is

⁸ Murphy C, Schubert CR, Cruickshanks KJ, Klein BEK, Klein R, Nondhal DM. Prevalence of olfactory impairment in older adults. *JAMA* 288: 2307-2312, 2002.

relayed to the brain. NIDCD also supports research on both the olfactory and gustatory systems because they offer special approaches for the understanding of the fundamental mechanisms of how the nervous system has the capacity to change (plasticity). Smell and taste receptor cells are continually replaced and have the capacity to regenerate rapidly in response to injury. NIDCD-supported research advances a basic understanding of the olfactory and gustatory systems to pave the way for improved diagnosis, prevention, and treatment of chemosensory disorders.

Budget Policy: The 2008 budget estimate for the Smell and Taste program is \$62.260 million, a decrease of \$0.100 million or 0.2 percent from the FY 2007 estimate. Funding for Smell and Taste related noncompeting Research Project Grants will decrease slightly. In FY 2008, NIDCD plans to fund a new R&D contract to develop a quick, validated smell and taste test to be acceptable for a national epidemiologic survey. Such tests would enable NIDCD to get a more accurate prevalence data on individuals suffering from smell and taste loss, and the association of smell and taste loss with major health risk factors.

As outlined in the “NIDCD Plans and Priorities” section, the Institute will continue to emphasize translational research, development of assistive technology/devices, and training of new scientists in the taste and smell program area.

Voice, Speech, and Language Program

Voice, speech, and language are tools that all individuals use to communicate or share thoughts, ideas, and emotions. The NIDCD Voice, Speech, and Language program supports research focused on the normal and disordered processes involved in human communication, including comprehension and generation of language, speech articulation and fluency, and voice. Approximately 7.5 million people in the United States have trouble using their voices⁹. A person’s voice is unique since it helps define personality, mood, and health. Approximately five percent of American children entering first grade have noticeable speech (phonological) disorders, ranging from a few substituted and missing sounds to serious impairments that make their speech difficult to understand. These speech disorders are about 1.5 times more prevalent in boys than girls. The majority of these speech disorders have no known cause¹⁰. NIDCD supports research in voice and speech disorders focusing on determining the nature, causes, treatment, and prevention of disorders such as stuttering, speech-sound acquisition disorders, and motor speech disorders. NIDCD also supports research to evaluate the physiologic, articulatory, acoustic, and phonologic characteristics of unimpaired speech production and speech perception as well as normal and disordered swallowing mechanisms. Between six and eight million people in the United States have some form of language impairment¹¹. NIDCD supports research on

⁹What Is Voice? What Is Speech? What Is Language? NIDCD Fact Sheet, http://www.nidcd.nih.gov/health/voice/whatis_vsl.htm

¹⁰ What Is Voice? What Is Speech? What Is Language? NIDCD Fact Sheet, http://www.nidcd.nih.gov/health/voice/whatis_vsl.htm

¹¹ What Is Voice? What Is Speech? What Is Language? NIDCD Fact Sheet, http://www.nidcd.nih.gov/health/voice/whatis_vsl.htm

language and language impairments across the age spectrum and within a variety of populations including individuals with aphasia, autism, or specific language impairment. In addition, NIDCD provides support for research focused on language acquisition and language skills in individuals with varying degrees of hearing loss. Current studies include correlation between brain lesion site and behavior, the genetic basis for disorders of voice, speech, and language, identification and treatment protocols, and characterization of the disorder. Voice, speech, or language disorders can have an overwhelming effect on the individual's health and the quality of life, regardless of their cause.

Budget Policy: The 2008 budget estimate for the Voice, Speech, and Language program is \$79.396 million, a decrease of \$0.123 million or 0.2 percent from the FY 2007 estimate. Funding for Voice, Speech, and Language related noncompeting Research Project Grants will decrease slightly. In FY2008, NIDCD plans to co-fund one or more Autism Centers of Excellence, or ACE. The focus of the ACE will be on the causes and best treatment of autism. A second planned initiative will support one or more R&D contracts in the area of assistive technology/devices to develop brain-computer interface capabilities for communication prostheses. This initiative is a result of a workshop organized by NIDCD and held in May, 2006 during which existing technology and its potential for this application were discussed, and participants agreed that the merit of this approach had been proven through a number of animal studies and a limited number of tests with human subjects.

As outlined in the "NIDCD Plans and Priorities" section, the Institute will continue to emphasize translational research and training of new scientists in the voice, speech, and language program area.

PROGRAM PORTRAITS: Stuttering Research

FY 2007 Level: \$4.417 million
FY 2008 Level: \$4.461 million
Change +\$0.044 million

NIDCD is enhancing its research in stuttering, a speech disorder in which the normal flow of speech is disrupted by frequent repetitions or prolongations of speech sounds, syllables, or words or by an individual's inability to start a word. The speech disruption may be accompanied by rapid eye blinks, tremors of the lips and/or jaw. Some individuals who stutter struggle with face or upper body movements while attempting to speak. Although not life threatening, stuttering is life altering and a communication burden to the speaker and listener. Stuttering occurs worldwide and across all ages in various languages and cultures. Boys are three times more likely to stutter than girls¹². It is estimated that over 3 million Americans stutter with approximately one million of those being children¹³. Stuttering occurs more frequently in young children between two and six years of age which is the period when they are developing speech and language skills.

¹² Yairi E. Epidemiologic Factors and Stuttering Research. In N. Ratner and C. Healey (Eds.), Stuttering Research and Treatment: Bridging the Gap. Mahwa, NJ: Earlbaum, 1999.

¹³ Conture EG. Stuttering. 3rd ed. New Jersey: Prentice Hall, 1990.

NIDCD, with co-sponsorship from private organizations interested in stuttering, held a two-day conference in March 2005 on the State of the Science in Stuttering. Scientists and scientist-clinicians knowledgeable in stuttering summarized the current state of the science and identified opportunities for future research. Based on the recommendations from the workshop, NIDCD plans to fund projects in FY 2007 in response to several initiatives focused on “Research Opportunities in Stuttering”. NIDCD expects these initiatives will stimulate research in the following areas: (1) research in the characteristics of the brain development during the period of stuttering onset, (2) animal model studies of the neural pathways involved in stuttering, (3) long-term studies of high risk families to identify factors that may predict the persistence and/or recovery of stuttering, (4) examination of genetic aspects of stuttering, and (5) examination of efficacy and validation of outcomes for treatments of stuttering. NIDCD plans to strengthen its stuttering research portfolio through these initiatives and other investigator-initiated research to improve the diagnosis and treatment of stuttering, and to identify its causes.

Intramural Research Program

The Division of Intramural Research (DIR) at NIDCD conducts distinctive high-risk and high-impact basic and clinical research in the areas of human communication. The DIR consists of research branches, sections, and laboratories with research projects that address the genetics of communication disorders in human and mouse models; elucidation of the sensory transduction mechanisms of hearing, balance, smell, and taste; structural, physiological, and developmental properties of the inner ear; neuroimaging of brain function in physiologic and pathophysiologic states; characterization of basic properties of neurotransmission and signal transduction; and development of vaccines against otitis media. The dominant subject of interest to NIDCD’s Intramural Program is hearing. Of the 17 Principal Investigators within the DIR, 13 study some form of hearing research and seven of these individuals focus on the genetic basis of this sensory system. This intense concentration on hearing research and its genetic underpinnings has allowed NIDCD intramural scientists to make significant research progress on this priority for NIDCD. DIR scientists collaborate with other federal agencies, academic institutions, and private organizations, which allows for shared resources to maximize the impact of the federal investment in research.

Budget Policy: The 2008 budget estimate for the Intramural program is \$35.032 million, an increase of \$0.257 million or 0.7 percent from the FY 2007 estimate. In FY 2007, NIDCD is recruiting a new Principal Investigator for its Intramural program—a tenure-track scientist to establish an independent research program to study molecular and/or cellular mechanisms of hearing and balance. Preference will be given to candidates whose experimental approaches complement NIDCD’s existing strong programs in the genetics, development and cell biology of hearing. In FY 2008, it is expected that his/her new laboratory will be fully functional, following the purchase of required equipment and the hiring of two postdoctoral fellows and one technician.

Research Management and Support (RMS)

NIDCD 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 over 1,000 research grants, training awards, and R&D contracts.

A unique and notable aspect of NIDCD's RMS is the coordination of trans-NIH administrative activities for the NIH Stem Cell Task Force. The NIDCD Director has been the Chairman of the Stem Cell Task Force since its establishment in 2002 and also oversees the NIH Stem Cell Implementation Committee. The NIDCD Science Policy and Planning Branch manages and coordinates the activities and meetings of these trans-NIH stem cell committees.

Budget Policy: The 2008 budget estimate for RMS is \$18.179 million, an increase of \$0.180 million or 1.0 percent from the FY 2007 estimate. NIDCD's WISE EARS! national public information campaign targets the prevention of noise induced hearing loss (NIHL) in children and workers in noisy environments. NIDCD has a long history of increasing awareness of NIHL by encouraging the use of appropriate ear protection and reducing the number of individuals who suffer from hearing loss through research and public education activities. In FY 2008, NIDCD plans to target its education efforts to youth, particularly "tweens" (9-13 year olds), by addressing key topics such as the use of personal stereo systems. NIDCD hopes to teach our nation's "tweens" to protect their hearing while still enjoying their music, movies, and video games.

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Budget Authority by Object

	FY 2007 Continuing Resolution	FY 2008 Estimate	Increase or Decrease
Total compensable workyears:			
Full-time employment	136	138	2
Full-time equivalent of overtime & holiday hours	0	0	0
Average ES salary	\$155,228	\$158,332	\$3,104
Average GM/GS grade	12.2	12.2	0.0
Average GM/GS salary	\$91,464	\$93,476	\$2,012
Average salary, grade established by act of July 1, 1944 (42 U.S.C. 207)	\$138,900	\$141,955	\$3,056
Average salary of ungraded positions	117,096	119,672	2,576
OBJECT CLASSES	FY 2007 Estimate	FY 2008 Estimate	Increase or Decrease
Personnel Compensation:			
11.1 Full-Time Permanent	\$8,988,000	\$9,506,000	\$518,000
11.3 Other than Full-Time Permanent	3,724,000	3,851,000	127,000
11.5 Other Personnel Compensation	169,000	183,000	14,000
11.7 Military Personnel	146,000	149,000	3,000
11.8 Special Personnel Services Payments	2,366,000	2,518,000	152,000
Total, Personnel Compensation	15,393,000	16,207,000	814,000
12.0 Personnel Benefits	3,490,000	3,670,000	180,000
12.2 Military Personnel Benefits	52,000	55,000	3,000
13.0 Benefits for Former Personnel	0	0	0
Subtotal, Pay Costs	18,935,000	19,932,000	997,000
21.0 Travel & Transportation of Persons	440,000	440,000	0
22.0 Transportation of Things	48,000	48,000	0
23.1 Rental Payments to GSA	0	0	0
23.2 Rental Payments to Others	5,000	5,000	0
23.3 Communications, Utilities & Miscellaneous Charges	280,000	280,000	0
24.0 Printing & Reproduction	120,000	120,000	0
25.1 Consulting Services	223,000	223,000	0
25.2 Other Services	1,891,000	1,796,000	-95,000
25.3 Purchase of Goods & Services from Government Accounts	34,756,000	34,547,000	-209,000
25.4 Operation & Maintenance of Facilities	131,000	131,000	0
25.5 Research & Development Contracts	10,860,000	11,065,000	205,000
25.6 Medical Care	575,000	575,000	0
25.7 Operation & Maintenance of Equipment	568,000	568,000	0
25.8 Subsistence & Support of Persons	0	0	0
25.0 Subtotal, Other Contractual Services	49,004,000	48,905,000	-99,000
26.0 Supplies & Materials	3,248,000	3,090,000	-158,000
31.0 Equipment	2,450,000	2,352,000	-98,000
32.0 Land and Structures	0	0	0
33.0 Investments & Loans	0	0	0
41.0 Grants, Subsidies & Contributions	314,073,000	313,335,000	-738,000
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	369,668,000	368,575,000	-1,093,000
NIH Roadmap for Medical Research	4,727,000	5,175,000	448,000
Total Budget Authority by Object	393,330,000	393,682,000	352,000

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

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Salaries and Expenses

OBJECT CLASSES	FY 2007 Continuing Resolution	FY 2008 Estimate	Increase or Decrease
Personnel Compensation:			
Full-Time Permanent (11.1)	\$8,988,000	\$9,506,000	\$518,000
Other Than Full-Time Permanent (11.3)	3,724,000	3,851,000	127,000
Other Personnel Compensation (11.5)	169,000	183,000	14,000
Military Personnel (11.7)	146,000	149,000	3,000
Special Personnel Services Payments (11.8)	2,366,000	2,518,000	152,000
Total Personnel Compensation (11.9)	15,393,000	16,207,000	814,000
Civilian Personnel Benefits (12.1)	3,490,000	3,670,000	180,000
Military Personnel Benefits (12.2)	52,000	55,000	
Benefits to Former Personnel (13.0)	0	0	0
Subtotal, Pay Costs	18,935,000	19,932,000	997,000
Travel (21.0)	440,000	440,000	0
Transportation of Things (22.0)	48,000	48,000	0
Rental Payments to Others (23.2)	5,000	5,000	0
Communications, Utilities and Miscellaneous Charges (23.3)	280,000	280,000	0
Printing and Reproduction (24.0)	120,000	120,000	0
Other Contractual Services:			
Advisory and Assistance Services (25.1)	223,000	223,000	0
Other Services (25.2)	1,891,000	1,796,000	(95,000)
Purchases from Govt. Accounts (25.3)	15,964,000	15,267,000	(697,000)
Operation & Maintenance of Facilities (25.4)	131,000	131,000	0
Operation & Maintenance of Equipment (25.7)	568,000	568,000	0
Subsistence & Support of Persons (25.8)	0	0	0
Subtotal Other Contractual Services	18,777,000	17,985,000	(792,000)
Supplies and Materials (26.0)	3,247,000	3,089,000	(158,000)
Subtotal, Non-Pay Costs	22,917,000	21,967,000	(950,000)
Total, Administrative Costs	41,852,000	41,899,000	47,000

**NATIONAL INSTITUTES OF HEALTH
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Authorizing Legislation

	PHS Act/ Other Citation	U.S. Code Citation	2007 Amount Authorized	FY 2007 Continuing Resolution	2008 Amount Authorized	FY 2008 Budget Estimate
Research and Investigation	Section 301	42§241	Indefinite	\$393,330,000	Indefinite	\$393,682,000
Other Communication Disorders	Section 402(a)	P.L. 109-482	Indefinite		Indefinite	
Total, Budget Authority				393,330,000		393,682,000

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Appropriations History

Fiscal Year	Budget Estimate to Congress	House Allowance	Senate Allowance	Appropriation <u>1/</u>
1999	213,184,000 <u>2/ 3/</u>	216,995,000	229,887,000	229,887,000
Rescission	0	0	0	(152,000)
2000	235,297,000 <u>2/</u>	251,218,000	261,962,000	265,185,000
Rescission				(1,414,000)
2001	276,418,000 <u>2/</u>	301,787,000	303,541,000	300,581,000
Rescission				(100,000)
2002	336,757,000	334,161,000	349,983,000	342,072,000
Rescission				(397,000)
2003	365,929,000	351,376,000	372,805,000	372,805,000
Rescission				(2,423,000)
2004	380,377,000	380,377,000	384,577,000	384,477,000
Rescission				(2,424,000)
2005	393,507,000	393,507,000	399,000,000	397,507,000
Rescission				(3,247,000)
2006	397,432,000	397,432,000	418,357,000	397,432,000
Rescission				(3,974,320)
2007	391,556,000	391,556,000	395,188,000	393,458,000 <u>4/</u>
2008	393,682,000			

1/ Reflects enacted supplementals, rescissions, and reappropriations.

2/ Excludes funds for HIV/AIDS research activities consolidated in the NIH Office of AIDS Research

3/ Reflects a decrease of \$650,000 for the budget amendment for Bioterrorism

4/ Annualized current rate

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Details of Full-Time Equivalent Employment (FTEs)

OFFICE/DIVISION	FY 2006 Actual	FY 2007 Continuing Resolution	FY 2008 Estimate
Office of the Director	4	4	4
Office of Administration	36	35	35
Division of Extramural Activities	15	15	15
Division of Scientific Programs	13	14	14
Division of Intramural Research	65	68	70
Total	133	136	138
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	12.2		
2005	12.4		
2006	12.2		
2007	12.2		
2008	12.2		

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Detail of Positions

GRADE	FY 2006 Actual	FY 2007 Continuing Resolution	FY 2008 Estimate
Total, ES Positions	1	1	1
Total, ES Salary	152,184	155,228	158,332
GM/GS-15	23	23	23
GM/GS-14	10	10	10
GM/GS-13	17	17	17
GS-12	19	20	21
GS-11	7	8	8
GS-10	1	1	1
GS-9	11	12	13
GS-8	4	4	4
GS-7	2	2	2
GS-6	0	0	0
GS-5	2	2	2
GS-4	0	0	0
GS-3	0	0	0
GS-2	0	0	0
GS-1	0	0	0
Subtotal	96	99	101
Grades established by Act of July 1, 1944 (42 U.S.C. 207):			
Assistant Surgeon General	0	0	0
Director Grade	1	1	1
Senior Grade	0	0	0
Full Grade	0	0	0
Senior Assistant Grade	0	0	0
Assistant Grade	0	0	0
Subtotal	1	1	1
Ungraded	49	49	49
Total permanent positions	96	99	101
Total positions, end of year	145	148	150
Total full-time equivalent (FTE) employment, end of year	133	136	138
Average ES salary	152,184	155,228	158,332
Average GM/GS grade	89,495	91,464	93,476
Average GM/GS salary	12	12	12

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