DEPARTMENT OF HEALTH AND HUMAN SERVICES

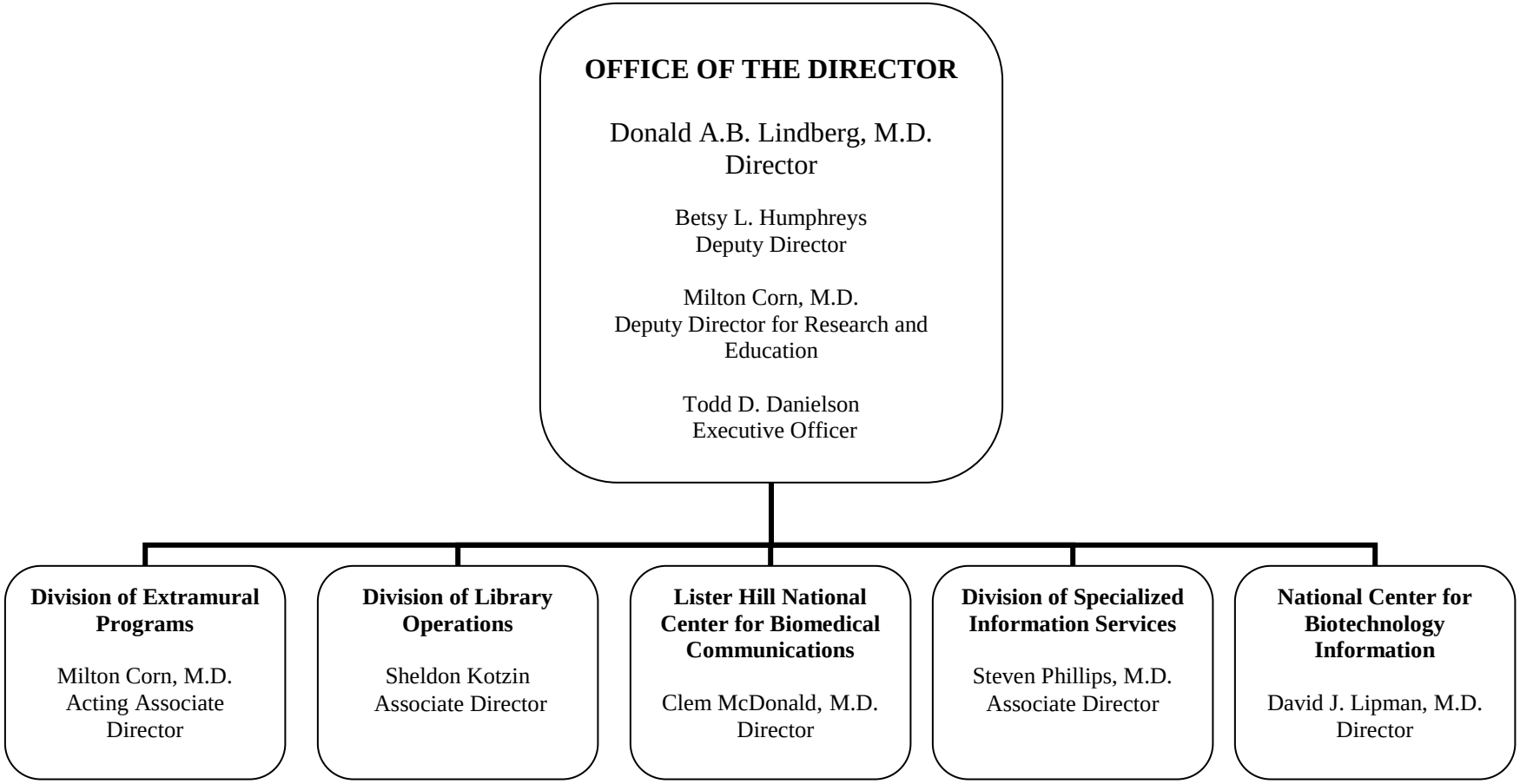
NATIONAL INSTITUTES OF HEALTH

National Library of Medicine (NLM)

NATIONAL INSTITUTES OF HEALTH

NATIONAL LIBRARY OF MEDICINE

ORGANIZATION STRUCTURE



FY 2011 Proposed Appropriation Language

NATIONAL INSTITUTES OF HEALTH

National Library of Medicine

For carrying out section 301 and title IV of the Public Health Service Act ("PHS Act") with respect to health information communications, [$339,716,000] *$364,802,000,* of which $4,000,000 shall be available until expended for improvement of information systems: Provided, that in fiscal year [2010] *2011*, the National Library of Medicine may enter into personal services contracts for the provisions of services in facilities owned, operated, or constructed under the jurisdiction of the National Institutes of Health: Provided further, that in addition to amounts provided herein, $8,200,000 shall be available from amounts available under section 241 of the PHS Act to carry out the purposes of the National Information Center on Health Services Research and Health Care Technology established under section 478A of the PHS Act and related health services. (Department of Health and Human Services Appropriations Act, 2011)

National Institutes of Health
National Library of Medicine

Amounts Available for Obligation 1/

Source of Funding	FY 2009 Actual	FY 2010 Enacted	FY 2011 PB
Appropriation	$330,771,000	$339,716,000	$364,802,000
Type 1 Diabetes	0	0	0
Rescission	0	0	0
Supplemental	0	0	0
Subtotal, adjusted appropriation	330,771,000	339,716,000	364,802,000
Real transfer under Director's one-percent transfer authority (GEI)	720,000	0	0
Real transfer to the Global Fund to fight HIV/AIDS, Malaria and Tuberculosis	0	0	0
Comparative transfer to/from (NCBI)	4,711,000	7,262,000	0
Comparative transfer under Director's one-percent transfer authority (GEI)	-720,000	0	0
Comparative transfer to the Public Access	3,360,000	3,629,000	0
Comparative transfer from DHHS for Autism	0	0	0
Subtotal, adjusted budget authority	338,842,000	350,607,000	364,802,000
Unobligated balance, start of year	0	0	0
Unobligated balance, end of year	0	0	0
Subtotal, adjusted budget authority	338,842,000	350,607,000	364,802,000
Unobligated balance lapsing	-1,877,000	0	0
Total obligations	336,965,000	350,607,000	364,802,000

1/ Excludes the following amounts for reimbursable activities carried out by this account:
FY 2009 - $35,935,000 FY 2010 - $40,000,000 FY 2011 - $40,000,000
Excludes $8,500.00 in FY 2010 and $850.00 in FY 2011 for royalties.

NATIONAL INSTITUTES OF HEALTH
National Library of Medicine
(Dollars in Thousands)
Budget Mechanism - Total

MECHANISM	FY 2009 Actual		FY 2009 Recovery Act Actual		FY 2010 Recovery Act Estimated		FY 2010 Enacted		FY 2011 PB		Change	
Research Grants:	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Research Projects:												
Noncompeting	61	$19,483	$0	$0	53	$29,301	61	$19,873	56	$18,689	(5)	-$1,184
Administrative supplements	(1)	51	(42)	5,621	(3)	500	(1)	52	(1)	53	0	1
Competing	21	6,563	47	22,798	2	960	24	7,650	25	8,128	1	478
Subtotal, RPGs	82	26,097	47	28,419	55	30,761	85	27,575	81	26,870	(4)	-705
SBIR/STTR	4	806	2	326	5	2,600	4	822	4	838	0	16
Subtotal, RPGs	86	26,903	49	28,745	60	33,361	89	28,397	85	27,708	(4)	-689
Research Centers:												
Specialized/comprehensive	0	0	0	0	0	0	0	0	0	0	0	0
Clinical research	0	0	0	0	0	0	0	0	0	0	0	0
Biotechnology	0	0	0	0	0	0	0	0	0	0	0	0
Comparative medicine	0	0	0	0	0	0	0	0	0	0	0	0
Research Centers in Minority Institutions	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, Centers	0	0	0	0	0	0	0	0	0	0	0	0
Other Research:												
Research careers	6	629	1	50	1	50	6	638	6	657	0	19
Cancer education	0	0	0	0	0	0	0	0	0	0	0	0
Cooperative clinical research	0	0	0	0	0	0	0	0	0	0	0	0
Biomedical research support	5	2,783	6	1,464	0	0	5	2,825	5	2,910	0	85
Minority biomedical research support	0	0	0	0	0	0	0	0	0	0	0	0
Other	63	19,273	25	6,662	1	95	63	19,562	63	20,149	0	587
Subtotal, Other Research	74	22,685	32	8,176	2	145	74	23,025	74	23,716	0	691
Total Research Grants	160	49,588	81	36,921	62	33,506	163	51,422	159	51,424	(4)	2
Research Training:	FTTPs		FTTPs		FTTPs		FTTPs		FTTPs			
Individual awards	0	0	0	0	0	0	0	0	0	0	0	0
Institutional awards	0	0	0	0	0	0	0	0	0	0	0	0
Total, Training	0	0	0	0	0	0	0	0	0	0	0	0
Research & development contracts	14	16,482	0		4	11,125	14	17,751	14	18,624	0	873
(SBIR/STTR)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	FTEs		FTEs		FTEs		FTEs		FTEs		FTEs	
Intramural research	666	259,313	0	0	0	418	666	267,734	674	280,369	8	12,635
Research management and support	88	13,459	0	150	0	1,523	80	13,700	106	14,385	26	685
Construction		0		0		0		0		0		0
Buildings and Facilities		0		0		0		0		0		0
Total, NLM	754	338,842	0	37,071	0	46,572	746	350,607	780	364,802	34	14,195

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

NATIONAL INSTITUTES OF HEALTH
National Library of Medicine
BA by Program
(Dollars in thousands)

Extramural Research	FY 2007 Actual FTEs	FY 2007 Actual Amount	FY 2008 Actual FTEs	FY 2008 Actual Amount	FY 2009 Actual FTEs	FY 2009 Actual Amount	FY 2009 Comparable FTEs	FY 2009 Comparable Amount	FY 2010 Enacted FTEs	FY 2010 Enacted Amount	FY 2011 PB FTEs	FY 2011 PB Amount	Change FTEs	Change Amount
Detail:														
Health Information for Health Professionals and Public (NN/LM)		$13,201		$12,585		$12,137		$12,137		$12,319		$12,319		
Informatics Infrastructure		25,813		24,311		23,081		23,081		23,957		24,118		161
Informatics Research		32,573		32,217		30,856		30,852		32,897		33,611		714
Subtotal, Extramural		71,587		69,113		66,074		66,070		69,173		70,048		875
Intramural research	598	237,646	621	241,979	621	250,263	666	259,313	666	267,734	674	280,369	8	12,635
Res. management & support	78	12,121	78	12,307	78	13,277	88	13,459	80	13,700	106	14,385	26	685
TOTAL	676	321,354	699	323,399	699	329,614	754	338,842	746	350,607	780	364,802	34	14,195

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

Major Changes in the Fiscal Year 2011 Budget Request

Major changes by budget mechanism and/or budget activity detail are 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 2011 budget request for NLM, which is $14.195 million more than the FY 2010 Estimate, for a total of $364.802 million.

Intramural Programs (+$12.635 million; total $280.369 million): NLM will support salary increases, incremental cost of literature purchases, and contractual services in order to maintain its national biomedical information services, including the development and dissemination of molecular biology and genomic information and other services that provide access to the results of cancer research. An increase in FTE is requested to allow NLM's Intramural Programs to continue and build upon the processing of data and provision of services to the Library's national collection of biomedical information and electronic databases. Additional funds have been specifically added to NLM's budget request to allow the National Center for Biotechnology Information (NCBI) to meet the challenge of collecting, organizing, analyzing, and disseminating the deluge of data emanating from NIH-funded high-throughput genomic sequencing initiatives.

NATIONAL INSTITUTES OF HEALTH
National Library of Medicine
Summary of Changes

FY 2010 estimate				$350,607,000
FY 2011 estimated budget authority				364,802,000
Net change				14,195,000
	2010 Current Estimate Base		Change from Base	
CHANGES	FTEs	Budget Authority	FTEs	Budget Authority
A. Built-in:				
1. Intramural research:				
a. Annualization of January 2010 pay increase		$82,552,000		$499,000
b. January FY 2011 pay increase		82,552,000		867,000
c. Zero less days of pay (n/a for 2011)		82,552,000		0
d. Payment for centrally furnished services		8,000		0
e. Increased cost of laboratory supplies, materials, and other expenses		185,174,000		2,963,000
Subtotal				4,329,000
2. Research management and support:				
a. Annualization of January 2010 pay increase		$7,358,000		$45,000
b. January FY 2011 pay increase		7,358,000		77,000
c. Zero less days of pay (n/a for 2011)		7,358,000		0
d. Payment for centrally furnished services		0		0
e. Increased cost of laboratory supplies, materials, and other expenses		6,342,000		101,000
Subtotal				223,000
Subtotal, Built-in				4,552,000

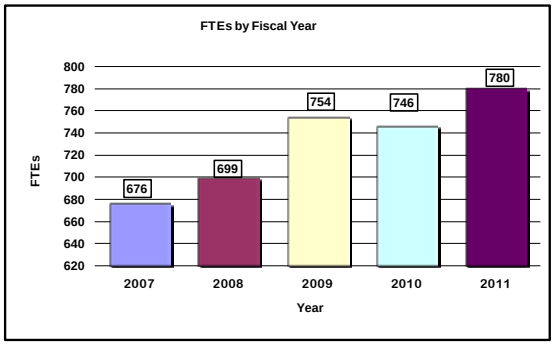
NATIONAL INSTITUTES OF HEALTH
National Library of Medicine

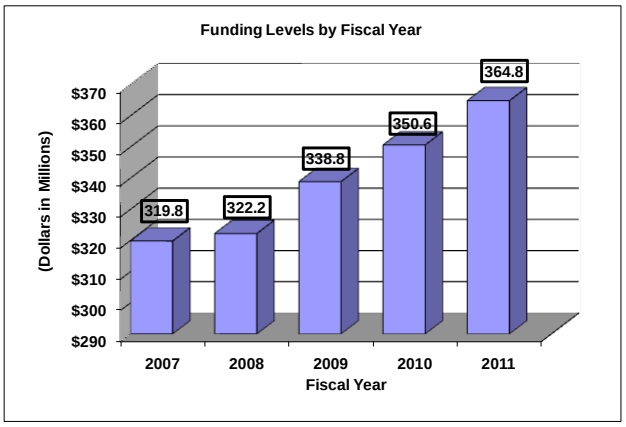
Summary of Changes--continued

CHANGES	2010 Current Estimate Base		Change from Base	
	No.	Amount	No.	Amount
B. Program:				
1. Research project grants:				
a. Noncompeting	61	$19,925,000	(5)	($1,183,000)
b. Competing	24	7,650,000	1	478,000
c. SBIR/STTR	4	822,000	0	16,000
Total	89	28,397,000	(4)	(689,000)
2. Research centers	0	0	0	0
3. Other research	74	23,025,000	0	691,000
4. Research training	0	0	0	0
5. Research and development contracts	14	17,751,000	0	873,000
Subtotal, extramural				875,000
	FTEs		FTEs	
6. Intramural research	666	267,734,000	8	8,306,000
7. Research management and support	80	13,700,000	26	462,000
8. Construction		0		0
9. Buildings and Facilities		0		0
Subtotal, program		350,607,000		9,643,000
Total changes	746		34	14,195,000

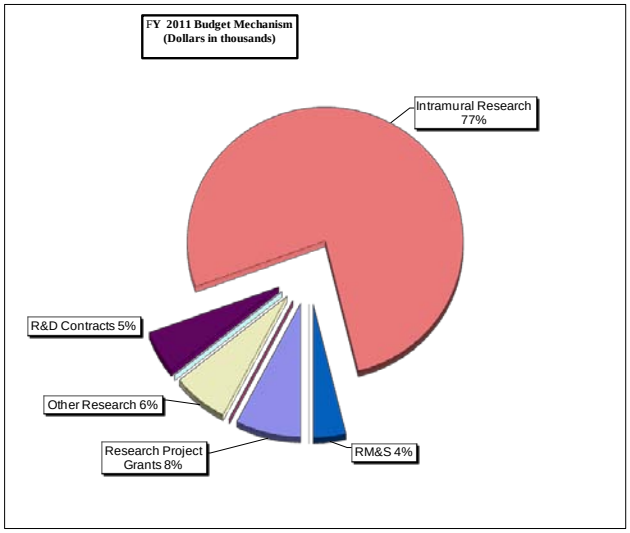
Fiscal Year 2011 Budget Graphs

History of Budget Authority and FTEs:

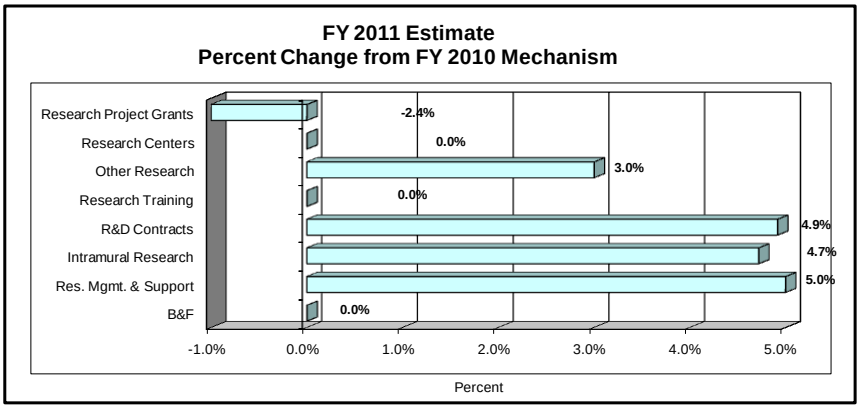




Distribution by Mechanism:



Change by Selected Mechanisms:



Justification
National Library of Medicine

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

Budget Authority:

	FY 2009 Omnibus	FY 2010 Appropriation	FY 2011 President's Budget	FY 2011 +/- 2010 Appropriation
BA	$338,842,000	$350,607,000	$364,802,000	+$14,195,000
FTE	754	746	780	+34

This document provides justification for the Fiscal Year 2011 activities of the National Library of Medicine (NLM), including HIV/AIDS activities. Details of the FY 2011 HIV/AIDS activities are in the "Office of AIDS Research (OAR) section of the Overview. Details on the NIH Common Fund are located in the Overview, Volume One. Program Funds are allocated as follows: Competitive Grants/Cooperative Agreement; Contracts; Direct Federal/Intramural and Other.

DIRECTOR'S OVERVIEW

The National Library of Medicine (NLM) is the world's largest biomedical library and the producer of electronic information services used by millions of users to obtain trillions of bytes of data every day. Scientists, health professionals, and the public search the Library's resources more than two billion times each year. For 173 years, NLM has played a pivotal role in translating research into new therapies, improved practice, and decision support for health professionals and patients. Today, the Library:

- Acquires, organizes, and works to preserve the world's scholarly biomedical literature and to address the challenges of making digital information permanent;
- Provides nationwide access to biomedical and health information in partnership with the 5,800-member National Network of Libraries of Medicine;
- Receives the output of high throughput screening technologies and serves as a leading international resource for building, curating, and providing sophisticated access to molecular biology and genomic databases via its National Center for Biotechnology Information (NCBI);
- Creates high quality information services on toxicology, environmental health, health services research, public health, and disaster management;
- Aids national disaster management efforts by developing relevant information systems and resources, ensuring uninterrupted access to critical health information resources when disasters occur;
- Supports and conducts advanced informatics research and development in biomedical informatics and health information technology;
- Develops and supports health data standards for electronic health records to enable efficient health information exchange and support health care reform; and

- Works to reinvigorate the research community through outreach programs to interest young people in scientific and health careers and as the primary supporter of research training in biomedical informatics at 18 U.S. universities.

The Library stands at the center of biomedical research: receiving, storing, disseminating, and connecting the biomedical literature - including articles deposited In PubMed Central in response to the NIH Public Access Policy - with biological, biochemical, genomic and clinical research data. Equally important, NLM provides accurate, understandable information to help patients and the public play an active role in managing their health. Heavily used Web-based information services and the NIH MedlinePlus magazine (with a new Spanish edition in 2009) transmit the latest useful research findings in lay language. NLM partners with libraries and community organizations to increase public awareness and use of these valuable resources.

Clinical trials play a critical role in translating research discoveries into effective treatments. With more than 83,000 research studies in 171 countries, NLM's ClinicalTrials.gov is the most comprehensive source of information about clinical trials for researchers, health professionals, and the public. NLM enhanced ClinicalTrials.gov to accommodate summary results and, in 2009, mandatory adverse events data in response to the Food and Drug Administration (FDA) Amendments Act of 2007.

NLM's NCBI promotes scientific discovery by organizing and providing rapid access to the flood of data resulting from new high throughput sequencing technologies that allow complete genomes to be sequenced in days rather than years. NCBI's database of Genotype and Phenotype (dbGaP) contains the results of Genome Wide Association Studies, which links genomic and clinical data for the same patients to help identify genetic variations that may affect predisposition to disease or response to therapy.

NLM continues to focus on the goals of its 2006-2016 Long Range Plan, including key activities to support interoperable health information technology, more effective response to disasters and emergencies, development of a robust knowledge base for personalized health care, reduction of health disparities, and improved health literacy. NLM's personal health records initiative contributes to all of these goals, building on more than two decades of NLM work on standard medical terminologies in the Unified Medical Language System. As the Department of Health and Human Services (HHS) central coordinating body for clinical terminologies, NLM is supporting and enhancing standards to enable meaningful use of electronic health records.

NLM is committed to improving the nation's ability to prepare for and respond to disasters and to ensure uninterrupted access to critical health information resources when disasters occur. As part of the Bethesda Hospital Emergency Preparedness Partnership, NLM's Disaster Information Management Research Center is developing backup communication systems for patient tracking, information sharing, and responder training to serve as a model for hospitals across the nation. The Center also produces information systems for first-responders and others engaged in disaster management.

Working with libraries and other partners across the country, NLM develops and tests new methods for increasing awareness and use of NIH information services. Twitter, handholds, travelling exhibitions, information prescriptions, and games are some of the tools NLM employs to ensure that everyone in the U.S. has a known, accessible and understandable source of high quality health information.

Overall Budget Policy: NLM's highest priority is maintaining the quality and integrity of the Library's national collection of biomedical information and its many heavily used electronic databases. NLM's intramural program focuses on building and providing access to these essential services, and comprises 77 percent of the NLM budget. Funds are allocated to cover most of the pay and benefits increases associated with NLM services and processing some of the deluge of data from high throughput technologies. Funds for extramural grants remain level in FY 2011 and the Library will continue to support the National Network of Libraries of Medicine and its role in improving US-wide access and use of health information in communities across the nation; to support pre- and post-doctoral informatics research training for the biomedical community; and to invest in new investigators and competing RPGs through informatics research grants. Funds are included in R&D contracts to support several trans-NIH initiatives, such as the Therapies for Rare and Neglected Diseases program (TRND), the Basic Behavioral and Social Sciences Opportunity Network (OppNet), and support for a new synchrotron at the Brookhaven National Laboratory, as well as increased support for other HHS agencies through the program evaluation set-aside.

FY 2011 JUSTIFICATION BY PROGRAM

Program Descriptions and Accomplishments

INTRAMURAL PROGRAMS

NLM's intramural programs acquire, organize, preserve, and provide access to the world's biomedical literature. NLM also serves as a leading resource for molecular biology, genomic, and clinical trials information; provides information services on toxicology, disaster preparedness, and environmental health; and conducts research and development on systems, technologies and networks for information access by researchers, health professionals, patients and the general public.

Delivering Reliable, High Quality Biomedical and Health Information Services

At the core of the National Library of Medicine (NLM) are the world's largest, continually expanding collection of biomedical literature and a broad array of authoritative databases for health professionals, researchers, the public, and librarians and information specialists who serve them. NLM develops and uses sophisticated information systems to support the complex, high volume operations necessary to acquire, describe, and provide rapid access to materials in its collections and to build and refine electronic databases and services for many different audiences. In FY 2009, NLM greatly expanded the quantity and range of high quality information readily available to researchers, health professionals, and the general public. Major advances

included: launch of the Sequence Read Archive, which enables researchers to access and compute on the enormous quantities of data coming from genomic studies which employ next-generation sequencing platforms; the addition of clinical phenotype and genomic data from more than 20 new Genome Wide Association Studies to dbGaP, a database that promises to fuel discovery of genetic variations associated with common diseases; a significant increase in the number of full text articles in PubMed Central, which now provides public access to more than 1.87 million research articles, including those produced by NIH-funded researchers; rapid creation of new H1N1 information services for researchers, health professionals, and the public; new search tools to improve access to the results of comparative effectiveness research; the launching of medlineplus4you on Twitter as a companion to NLM's popular and respected consumer health Web site, MedlinePlus.gov, as one of several initiatives to use social media to reach new audiences that can benefit from high quality, understandable health information; the expansion of ClinicalTrials.gov to include summary results and adverse event information about clinical trials of FDA-regulated products; and development of new information services on H1N1 flu, women's health issues, disaster preparation and response, and other important topics. Furthermore, approximately 825,000 new citations were added to PubMed a database of biomedical journal literature used by one million people each day.

Budget Policy: The FY 2011 Budget request is $118.843 million, an increase of $3.776 million or 3.3 percent from the FY 2010 appropriation of $115.067 million. In FY 2011, the Library will concentrate on maintaining its current level of services and enhancing and expanding some of its most heavily used resources, including Medline/PubMed and PubMed Central, which provide critical access to published biomedical research results worldwide. Another key service, MedlinePlus, contains a wide range of information written and formatted for consumers. Keeping MedlinePlus current with new information (in English, Spanish and other languages) from NIH and other reliable sources is a high priority in FY 2011. NLM will support the expansion of ClinicalTrials.gov in FY 2011 to accommodate the reporting provisions of the Food and Drug Administration Amendments Act of 2007.

Portrait of a Program: Health Data Standards for Interoperable Health Information Technology
FY 2010 Level: $15.041 million
FY 2011 Level: $15.522 million
Change: +$0.481 million

As the central coordinating body for clinical terminology standards within the Department of Health and Human Services, NLM works closely with the Office of the National Coordinator for Health Information Technology (ONC) to support nationwide implementation of an interoperable health information technology infrastructure. NLM provides ongoing funding for the clinical terminologies designated as US standards for meaningful use of electronic health records (EHRs) and health information exchange. NLM's support allows these clinical terminology standards to be regularly updated to reflect new drugs, tests, and changes in biomedical knowledge and health practice – and also allows them to be used free-of-charge in US systems that support health care, public health, and biomedical research. Implementing the use of terminology standards can be a daunting task. In FY 2009, NLM released two new tools to make it easier: a subset of standard terminology for very frequently occurring patient problems and an online guide to standard codes and terms for all the key tests and conditions associated with newborn screening. The inclusion of standard terminology in EHRs will enable more effective clinical decision support by making it easier to link information in a patient's record to the knowledge relevant to that record. NLM's Unified Medical Language System (UMLS) resources provide essential infrastructure for advanced clinical decision support by connecting standard clinical terminologies to billing codes and more than 100 other important biomedical vocabularies, such as those used in information retrieval and gene annotation. By linking the many different terms that are used to represent the same concepts and by providing associated natural language processing programs, NLM's UMLS resources help computer programs to interpret biomedical text correctly. Systems that make use of the UMLS are heavily used to extract meaning from physician notes, to index biomedical literature, to enhance information retrieval, and to support the integration of many different kinds of information needed to help health professionals and patients make informed decisions.

Promoting Public Awareness and Access to Information

The NLM has extensive outreach programs to make biomedical researchers, health professionals, librarians, patients, their families, and other members of the public aware of NLM's diverse information services. To improve access to high quality health information heavy use is made of the National Network of Libraries of Medicine and other formal partnerships including the Partners in Information Access for the Public Health Workforce, Environmental Health Information Outreach Program with Historically Black Colleges and Universities, tribal colleges, and other minority serving institutions. NLM also fosters informal partnerships, such as the Information Rx program to promote MedlinePlus usage by encouraging physicians to write "information prescriptions" for their patients, and uses exhibitions, the media, and new technologies in its efforts to reach underserved populations. As part of its outreach efforts, NLM continually solicits feedback from users on how existing resources can be improved. In FY 2009, dozens of community-based projects were funded across the country to enhance awareness and access to health information, using a combination of high tech and "high touch" approaches. In addition to its longstanding partnership with the National Network of Libraries of Medicine, NLM developed relationships with numerous groups in the public and private sectors, to provide vital health information resources to health professionals

and the general public in the U.S. and around the world. With assistance from other NIH components and outside partners, NLM continues to increase the distribution of the NIH MedlinePlus magazine. To broaden our audience, the NIH joined the NLM, the friends of the NLM, and the National Alliance for Hispanic Health in launching a Spanish/English version of the NIH MedlinePlus magazine in January 2009. The pilot issue of NIH MedlinePlus Salud was NIH's first general interest consumer magazine in Spanish. Distribution has increased from 50,000 copies of each issue in 2006 to a distribution of over 600,000 English and Spanish copies for the spring 2009 issue. NLM expanded its successful traveling exhibitions program as another means of highlighting the Library's collections and services and promoting interest in careers in science and medicine in public libraries and other venues across the country. The exhibitions are free, but recipients pay the cost of shipping. A recent addition is *Harry Potter's World: Renaissance Science, Magic, and Medicine*, already fully booked through 2012.

Budget Policy: The FY 2011 Budget request is $8.341 million, an increase of $0.124 million or 1.5 percent from the FY 2010 appropriation of $8.217 million. In FY 2011, NLM will continue its outreach programs with a special emphasis on those aimed at underserved and minority populations. As recommended by the 2006-2016 Long Range Plan, NLM will develop and test innovative outreach methods, including infrastructure improvements (for example, PDAs, intelligent agents, and network techniques) to "enable ubiquitous health information access in homes, schools, public libraries, and work places." Also as recommended in the Plan, the Library will continue to use its major historical exhibitions as a means for improving science and health literacy and promoting interest in biomedical careers, as well as increasing awareness and use of NLM information services.

Developing Advanced Information Systems, Standards and Research Tools

The NLM's advanced information services have long benefitted from its intramural research and development (R&D) programs. The Library has two organizations that conduct advanced R&D on different aspects of biomedical communication—the Lister Hill National Center for Biomedical Communications (LHC) and the National Center for Biotechnology Information (NCBI). The LHC, established in 1968, conducts and supports research in such areas as the development and dissemination of health information technology standards, the dissemination, processing, and use of high quality imagery; medical language processing; high-speed access to biomedical information; and advanced technology for emergency and disaster management. The NCBI, created in 1988, conducts research and development on the representation, integration, and retrieval of molecular biology data and biomedical literature; provides an integrated, genomic information resource for biomedical researchers at NIH and around the world; and conducts basic research in computational biology. In FY 2009, NLM's LHC made several advances that will facilitate health information exchange and meaningful use of electronic health records in addition to continuing ground-breaking research in natural language processing and medical image processing. LHC researchers used frequency data from multiple health care organizations to produce

more useful, manageable subsets of large standard clinical vocabularies; worked with other HHS agencies to produce and release a web *Newborn Screening Coding and Terminology Guide*, an important step toward standardizing newborn screening data; and established partnerships to test the use and impact of personal health records. NLM's NCBI continued to expand its resource of 40 integrated biomedical databases that supports the rapid advances in research made possible by new technologies such as NextGen DNA sequencing, microarrays, and small molecule screening. NCBI's new Sequence Read Archive (SRA), which is absorbing the data from the 1000-genome project, is one of the fastest growing biological databases in history, with more than ten terabytes of sequence data currently under management and a growth rate of about one terabyte per month. Access to these data and associated NCBI databases -- such as dbGaP, which connects clinical information to genetic variations, PubChem, which provides bioactivity results from more than 50 million tests of small molecules, the new Peptidome database of mass spectrometry peptide and protein data, and numerous DNA, protein and gene databases, all linked to the scientific literature – provide the foundation for researchers to make the kinds of scientific connections that lead to discoveries and facilitate the translation of basic science into new diagnostics and treatments.

Budget Policy: The FY 2011 Budget request is $153.185 million, an increase of $8.735 million or 6.0 percent from the FY 2010 appropriation of $144.450 million. Some of the additional funds will be used to reduce the amount of funding that the National Center for Biotechnology Information (NCBI) must obtain from other NIH sources in order to process the enormous quantities of data emanating from new NIH-funded sequencing, microarray, and small molecule screening technologies. In accordance with the 2006-2016 Long Range Plan, NLM's research divisions will engage in critical research and development projects that are important to today's scientific community and that will have even greater influence in the future. In addition to NCBI's trans-NIH collaborations, other NLM intramural researchers will continue to improve access to clinical trials data; pursue disaster management information research in partnership with the NIH Clinical Center, the Department of Defense, and Suburban Hospital; to develop advanced imaging tools for cancer diagnosis in cooperation with the National Cancer Institute; and to work with NIH-funded Clinical and Translational Research Centers on health data standardization issues. The Library will continue to serve as an HHS coordinating center for standard clinical vocabularies; to support, develop, or license for US-wide use key clinical vocabularies, including SNOMED CT®; and to develop and test tools and subsets to promote meaningful use of electronic health records.

Portrait of a Program: Meeting the Data Challenges of New Genomic Technologies at the National Center of Biotechnology Information (NCBI)

FY 2010 Level: $95.958 million
FY 2011 Level: $103.097 million
Change: +$7.139 million

There is clearly a window of opportunity through which the application of genomics and other high throughput technologies can lead to a better understanding of biology and to discovering the causes of specific diseases. New sequencing, microarray, and small molecule screening technologies are resulting in exponential increases in the genomic data analyzed, stored and distributed at NCBI. For example, 10 trillion base pairs of high-throughput sequence data were submitted to NCBI during 2009 and placed in a new database (Sequence Read Archive). To put that number in perspective, these data are already 40 times greater than the 250 billion base pairs that were deposited over the last 20 years in NCBI's GenBank DNA sequence database. This exponential growth in sequencing data is expected to continue as sequencing gets less expensive, a greater proportion of research focuses on genomics, and the infusion of resources from the American Recovery and Reinvestment Act support new genetic research. NCBI's role in organizing, analyzing and making this voluminous data accessible represents a critical link in the discovery chain that detects important new associations between genes and then translates that information into better diagnoses and treatments.

With over a million users a day accessing NCBI's databases and downloading over 3 terabytes of data per day, NCBI has become the hub of a national and international network for molecular biology information. This critical role in the support of biology research was noted by Representative David Obey in marking the 20th anniversary of the founding of NCBI, "NCBI's molecular biology information resources are empowering hundreds of thousands of researchers around the world to identify disease-related genes and develop strategies for treating and preventing disease."

EXTRAMURAL PROGRAMS

NLM's Extramural programs focus on two priority areas: (1) the creation and enhancement of informatics infrastructure for biomedicine and health whose components include sophisticated computational tools, knowledge resources and skilled informaticians and (2) informatics research. To accomplish its extramural goals in 2011, NLM will offer new grants in five categories: training support; career transition awards; research project grants; resource grants; and SBIR/STTR grants. In FY 2009, NLM made 189 grant awards, of which 28% were new awards, using its base appropriation. In addition, NLM made 53 new grants and 78 supplements to existing grants in FY 2009 using funds from the American Recovery and Reinvestment Act (ARRA). NLM will continue to fund meritorious extramural projects relating to cancer that are received through its grant programs or undertaken by its informatics research trainees.

Informatics Infrastructure for Biomedicine and Health

For more than 40 years the NLM has funded programs to develop the U.S. biomedical informatics infrastructure, including the informatics research workforce, advanced telecommunications capabilities, and cutting edge information resources. Many of today's Health IT leaders are graduates of NLM-funded university-based informatics

research training programs, training nearly 250 people annually at 18 institutions across the country. In years past, NLM grants supported the first Internet connections for many health sciences libraries, hospitals, local public health departments, and community organizations. In FY 2009, NLM funding supported 169 predoctoral and 70 postdoctoral informatics trainees, 17 diversity short-term slots, and awarded an additional 33 predoctoral and 23 postdoctoral 2-year training slots using ARRA funds. Three new career transition awards were issued in FY 2009, along with eleven new awards for knowledge management or scholarly works.

Budget Policy: The FY 2011 Budget request is $24.118 million, a $0.161 million increase or 0.7% compared to the FY 2010 appropriation of $23.957 million. This program builds the informatics expertise and information resources needed to support biomedical scientists, health care providers, public health administrators and health services researchers. In FY 2011, NLM will continue extramural funding support for its core resource grant and career transition grant programs, and for its highly regarded university-based training of research informaticians and information specialists.

Portrait of a Program: Training Tomorrow's Informatics and Health Information Technology Leaders

FY 2010 Level: $15,911 million
FY 2011 Level: $16,388 million
Change: +$0.477 million

For more than 30 years, NLM's Extramural Programs Division has been the principal source of NIH support for research training in biomedical informatics, which encompasses research areas from the application of high throughput sequencing technologies to individual patient genomes to the enhancement of electronic health records (EHR) to the use of aggregated data from individual patients for population health. Developing a cadre of cross-trained researchers is especially important as rapid advancement of health care and biomedical research requires investigators who understand biomedicine as well as fundamental problems of knowledge representation, decision support, translational research, human-computer interface, and social and organizational factors that influence effective adoption of health information technology.

NLM supports eighteen five-year institutional training grants for biomedical informatics across the US, which in recent years has supported approximately 240 pre-doctoral and post-doctoral trainees each year. Other NIH institutes often provided funds to support additional trainees in these programs. Given the critical need for additional highly trained informatics researchers, in FY 2009 NLM used ARRA funds to restore 45 previously unfunded slots, bringing the total number of trainees supported to nearly 290. To increase diversity in informatics, in 2009 NLM supported a special short-term training appointment for 17 underrepresented minorities at 12 of the training programs. ARRA funds were also allocated to provide summer research experiences for 67 people at 10 sites, including two of the university-based informatics training programs.

Informatics Research

NLM informatics research grants have supported pioneering research and development in bioinformatics, artificial intelligence in medicine, clinical decision support, biomedical ontology, imaging, electronic medical records, regional health data exchange, health applications of advanced telecommunications networks, automated bio-surveillance, and emergency management systems. These programs advance the science of biomedical informatics, which is the intersection of computer and information sciences with medicine, public health, and biological/behavioral sciences. Biomedical informatics research is fundamental to the sophisticated systems in which biological research and health data are stored, managed, and displayed. For example, NLM-funded research provided the foundation for the Microsoft Health Vault and Google Health personally controlled health record systems. NLM programs include basic or applied research; both large and small projects, ranging from major research resources to small business innovation research; and investigator-initiated projects as well as focused requests for applications in target areas important to NLM's mission. These grant programs also include funds for small business innovation research (SBIR/STTR) grants in informatics areas. In FY 2009, NLM issued 28 new research awards to organizations, including small businesses. NLM also awarded 50 new research grants and made supplements to 42 existing research grants projects using ARRA funds. Among the newly funded research awards made with appropriated funds are projects on using long-term surveillance in electronic health records to detect personalized risk, enhancing discharge instructions with graphics, and using natural language processing to generate patient record summaries. Other new research awards aim to advance translational research by developing tools for enabling privacy in medical databanks, genome-wide association studies, and signaling studies of complex phenotypes.

Budget Policy: The FY 2011 Budget request is $33.611 million, an increase of $0.714 million, or 2.2 percent, over the FY 2010 appropriation of $32.897 million. Informatics research is fundamental to the sophisticated systems in which research and health data are stored, managed and displayed. NLM plans to continue to strengthen its RPG portfolio by issuing RFAs in advanced informatics focus areas such as computational data mining, natural language understanding, and intelligent personal health records, and by participating in multi-IC initiatives on topics of interest to NLM, such as health literacy. NLM will continue to accept investigator-initiated grants through NIH parent grant FOAs for R01 and R21. These grant programs also include funds for support small business innovation research (SBIR/STTR) grants in informatics areas. In FY 2011, NLM will support new investigators on R01 equivalent awards at success rates equivalent to those of established investigators submitting new R01 equivalent applications.

RESEARCH MANAGEMENT AND SUPPORT

Research Management and Support (RMS) activities provide administrative, budgetary, logistical, and scientific support for basic library services, intramural research programs and the review, award and monitoring of research grants and training awards. RMS

functions also include strategic planning, coordination, and evaluation of NLM's programs, regulatory compliance, policy development, international coordination and liaison with other Federal agencies, Congress, and the public. Included within this activity are: the Director and his immediate staff, the Office of Extramural Programs, the Office of Administrative Management, the Office of Health Information Programs Development, and the Office of Communications and Public Liaison.

Budget Policy: The FY 2011 Budget request is $14.385 million, an increase of $0.685 million or 5 percent above the FY 2010 appropriation of $13.700 million. The focus of RMS will continue to be the coordination of NLM's activities and policies and the development and administration of NLM's grant activities. NLM is a key participant in the NIH Roadmap's Molecular Libraries initiative through its development and distribution of the PubChem small-molecule database (ML2-1). This activity is supported in its entirety by the NIH Common Fund.

Program Portrait: Recovery Act Implementation

Recovery Act Funding: $83.643 million

In FY 2009, NLM received $83.643 million under the Recovery Act. Of this amount, $37.070 million was obligated in FY 2009 and $46.573 million will be obligated in FY 2010. These funds support more than 120 projects many focused in NLM's two signature areas: (1) Enhancing Electronic Health Records and (2) Training Tomorrow's Informatics Researchers and Health IT Leaders.

In Signature area (1), funded projects focus on clinical decision support, support for clinical research, and application of health data standards for interoperability. For example, one project is testing ways to use electronic health records to send alerts to physicians and patients, with the goal of improving childhood immunizations in an inner city neighborhood whose residents are primarily African American. This project created two new jobs. In another project, researchers are developing computer tools to monitor drug safety in clinical research studies, so unsafe medications can be identified more quickly. This project created 3 jobs, led to the purchase of new equipment and involved a company in the work.

In Signature area (2), funds were expended to create 44 new two-year training slots at NLM's university-based informatics training programs. These trainees will enter the job market with skills in clinical and public health informatics at a crucial time, as electronic health records are being deployed nationally.

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Budget Authority by Object

	FY 2010 Enacted	FY 2011 PB	Increase or Decrease	Percent Change
Total compensable workyears:				
Full-time employment	746	780	34	4.6
Full-time equivalent of overtime and holiday hour	4	4	0	0.0
Average ES salary	$188,847	$200,556	$11,709	6.2
Average GM/GS grade	10.9	10.9	0.0	0.0
Average GM/GS salary	$87,157	$88,900	$1,743	2.0
Average salary, grade established by act of July 1, 1944 (42 U.S.C. 207)	$80,790	$82,406	$1,616	2.0
Average salary of ungraded positions	130,465	133,074	2,609	2.0
OBJECT CLASSES	FY 2010 Estimate	FY 2011 Estimate	Increase or Decrease	Percent Change
Personnel Compensation:				
11.1 Full-time permanent	$42,628,000	$45,456,000	$2,828,000	6.6
11.3 Other than full-time permanent	25,286,000	26,811,000	1,525,000	6.0
11.5 Other personnel compensation	2,373,000	2,536,000	163,000	6.9
11.7 Military personnel	79,000	84,000	5,000	6.3
11.8 Special personnel services payments	1,722,000	1,824,000	102,000	5.9
Total, Personnel Compensation	72,088,000	76,711,000	4,623,000	6.4
12.0 Personnel benefits	17,785,000	18,913,000	1,128,000	6.3
12.2 Military personnel benefits	37,000	39,000	2,000	5.4
13.0 Benefits for former personnel	0	0	0	0.0
Subtotal, Pay Costs	**89,910,000**	**95,663,000**	**5,753,000**	**6.4**
21.0 Travel and transportation of persons	1,520,000	1,559,000	39,000	2.6
22.0 Transportation of things	138,000	141,000	3,000	2.2
23.1 Rental payments to GSA	0	0	0	0.0
23.2 Rental payments to others	83,000	86,000	3,000	3.6
23.3 Communications, utilities and miscellaneous charges	1,572,000	1,637,000	65,000	4.1
24.0 Printing and reproduction	744,000	775,000	31,000	4.2
25.1 Consulting services	37,065,000	38,496,000	1,431,000	3.9
25.2 Other services	46,283,000	48,147,000	1,864,000	4.0
25.3 Purchase of goods and services from government accounts	63,719,000	67,002,000	3,283,000	5.2
25.4 Operation and maintenance of facilities	3,936,000	4,103,000	167,000	4.2
25.5 Research and development contracts	13,171,000	13,019,000	(152,000)	-1.2
25.6 Medical care	6,000	6,000	0	0.0
25.7 Operation and maintenance of equipment	11,332,000	11,815,000	483,000	4.3
25.8 Subsistence and support of persons	0	0	0	0.0
25.0 Subtotal, Other Contractual Services	**175,512,000**	**182,588,000**	**7,076,000**	**4.0**
26.0 Supplies and materials	1,598,000	1,631,000	33,000	2.1
31.0 Equipment	28,083,000	29,272,000	1,189,000	4.2
32.0 Land and structures	0	0	0	0.0
33.0 Investments and loans	0	0	0	0.0
41.0 Grants, subsidies and contributions	51,422,000	51,424,000	2,000	0.0
42.0 Insurance claims and indemnities	0	0	0	0.0
43.0 Interest and dividends	25,000	26,000	1,000	4.0
44.0 Refunds	0	0	0	0.0
Subtotal, Non-Pay Costs	**260,697,000**	**269,139,000**	**8,442,000**	**3.2**
Total Budget Authority by Object	**350,607,000**	**364,802,000**	**14,195,000**	**4.0**

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

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Salaries and Expenses

OBJECT CLASSES	FY 2010 Enacted	FY 2011 PB	Increase or Decrease	Percent Change
Personnel Compensation:				
Full-time permanent (11.1)	$42,628,000	$45,456,000	$2,828,000	6.6
Other than full-time permanent (11.3)	25,286,000	26,811,000	1,525,000	6.0
Other personnel compensation (11.5)	2,373,000	2,536,000	163,000	6.9
Military personnel (11.7)	79,000	84,000	5,000	6.3
Special personnel services payments (11.8)	1,722,000	1,824,000	102,000	5.9
Total Personnel Compensation (11.9)	**72,088,000**	**76,711,000**	**4,623,000**	**6.4**
Civilian personnel benefits (12.1)	17,785,000	18,913,000	1,128,000	6.3
Military personnel benefits (12.2)	37,000	39,000	2,000	5.4
Benefits to former personnel (13.0)	0	0	0	0.0
Subtotal, Pay Costs	**89,910,000**	**95,663,000**	**5,753,000**	**6.4**
Travel (21.0)	1,520,000	1,559,000	39,000	2.6
Transportation of things (22.0)	138,000	141,000	3,000	2.2
Rental payments to others (23.2)	83,000	86,000	3,000	3.6
Communications, utilities and miscellaneous charges (23.3)	1,572,000	1,637,000	65,000	4.1
Printing and reproduction (24.0)	744,000	775,000	31,000	4.2
Other Contractual Services:				
Advisory and assistance services (25.1)	37,065,000	38,496,000	1,431,000	3.9
Other services (25.2)	46,283,000	48,147,000	1,864,000	4.0
Purchases from government accounts (25.3)	55,109,000	57,374,000	2,265,000	4.1
Operation and maintenance of facilities (25.4)	3,936,000	4,103,000	167,000	4.2
Operation and maintenance of equipment (25.7)	11,332,000	11,815,000	483,000	4.3
Subsistence and support of persons (25.8)	0	0	0	0.0
Subtotal Other Contractual Services	**153,725,000**	**159,935,000**	**6,210,000**	**4.0**
Supplies and materials (26.0)	1,598,000	1,631,000	33,000	2.1
Subtotal, Non-Pay Costs	159,380,000	165,764,000	6,384,000	4.0
Total, Administrative Costs	**249,290,000**	**261,427,000**	**12,137,000**	**4.9**

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Authorizing Legislation

	PHS Act/ Other Citation	U.S. Code Citation	2010 Amount Authorized	FY 2010 Estimate	2011 Amount Authorized	FY 2011 PB
Research and Investigation	Section 301	42§241	Indefinite	$350,607,000	Indefinite	$364,802,000
	Section 402(a)	42§281	Indefinite		Indefinite	
National Library of Medicine						
Total, Budget Authority				350,607,000		364,802,000

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Appropriations History

Fiscal Year	Budget Estimate to Congress	House Allowance	Senate Allowance	Appropriation
2002	275,725,000	273,610,000	281,581,000	277,658,000
Rescission				(1,567,000)
2003	313,534,000	313,534,000	331,443,000	302,099,000
Rescission				(1,964,000)
2004	315,401,000	315,401,000	319,396,000	311,635,000
Rescission				(2,520,000)
2005	316,947,000	316,947,000	316,900,000	317,947,000
Rescission				(2,801,000)
2006	318,091,000	318,091,000	327,247,000	318,091,000
Rescission				(3,181,000)
2007	313,269,000	313,269,000	315,294,000	320,850,000
Rescission				0
2008	312,562,000	325,484,000	327,817,000	326,669,000
Rescission				(5,707,000)
Supplemental				1,705,000
2009	323,046,000	331,847,000	329,996,000	330,771,000
Rescission				0
2010	334,347,000	342,585,000	336,417,000	339,716,000
Rescission				0
2011	364,802,000			

1/ Reflects enacted supplementals, rescissions, and reappropriations.
2/ Excludes funds for HIV/AIDS research activities consolidated in the NIH Office of AIDS Research.

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Details of Full-Time Equivalent Employment (FTEs)

OFFICE/DIVISION	FY 2009 Actual	FY 2010 Enacted	FY 2011 PB
Division of Library Operations	333	331	333
Lister Hill National Center for Biomedical Communications	64	72	72
National Center for Biotechnology Information	224	206	230
Division of Specialized Information Services	40	39	39
Office of the Director/Administration	78	83	91
Division of Extramural Programs	15	15	15
Total	754	746	780
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
2007	10.9
2008	10.9
2009	10.9
2010	10.9
2011	10.9

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Detail of Positions

GRADE	FY 2009 Actual	FY 2010 Enacted	FY 2011 PB
Total, ES Positions	3	5	5
Total, ES Salary	520,473	944,235	1,002,778
GM/GS-15	38	39	39
GM/GS-14	45	41	41
GM/GS-13	131	150	163
GS-12	135	147	160
GS-11	45	36	36
GS-10	1	1	1
GS-9	37	34	34
GS-8	56	59	59
GS-7	33	36	36
GS-6	2	6	6
GS-5	6	4	4
GS-4	14	10	10
GS-3	12	12	12
GS-2	6	7	7
GS-1	4	2	2
Subtotal	565	584	610
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	1	1	1
Senior Assistant Grade	0	0	0
Assistant Grade	0	0	0
Subtotal	1	1	1
Ungraded	257	217	217
Total permanent positions	540	568	594
Total positions, end of year	826	807	833
Total full-time equivalent (FTE) employment, end of year	754	746	780
Average ES salary	173,491	188,847	200,556
Average GM/GS grade	10.9	10.9	10.9
Average GM/GS salary	84,637	87,157	88,900

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

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New Positions Requested

	FY 2011		
	Grade	Number	Annual Salary
Technical Information Specialist	GS-13	17	$102,922
Technical Information Specialist	GS-12	17	86,552
Total Requested		34	