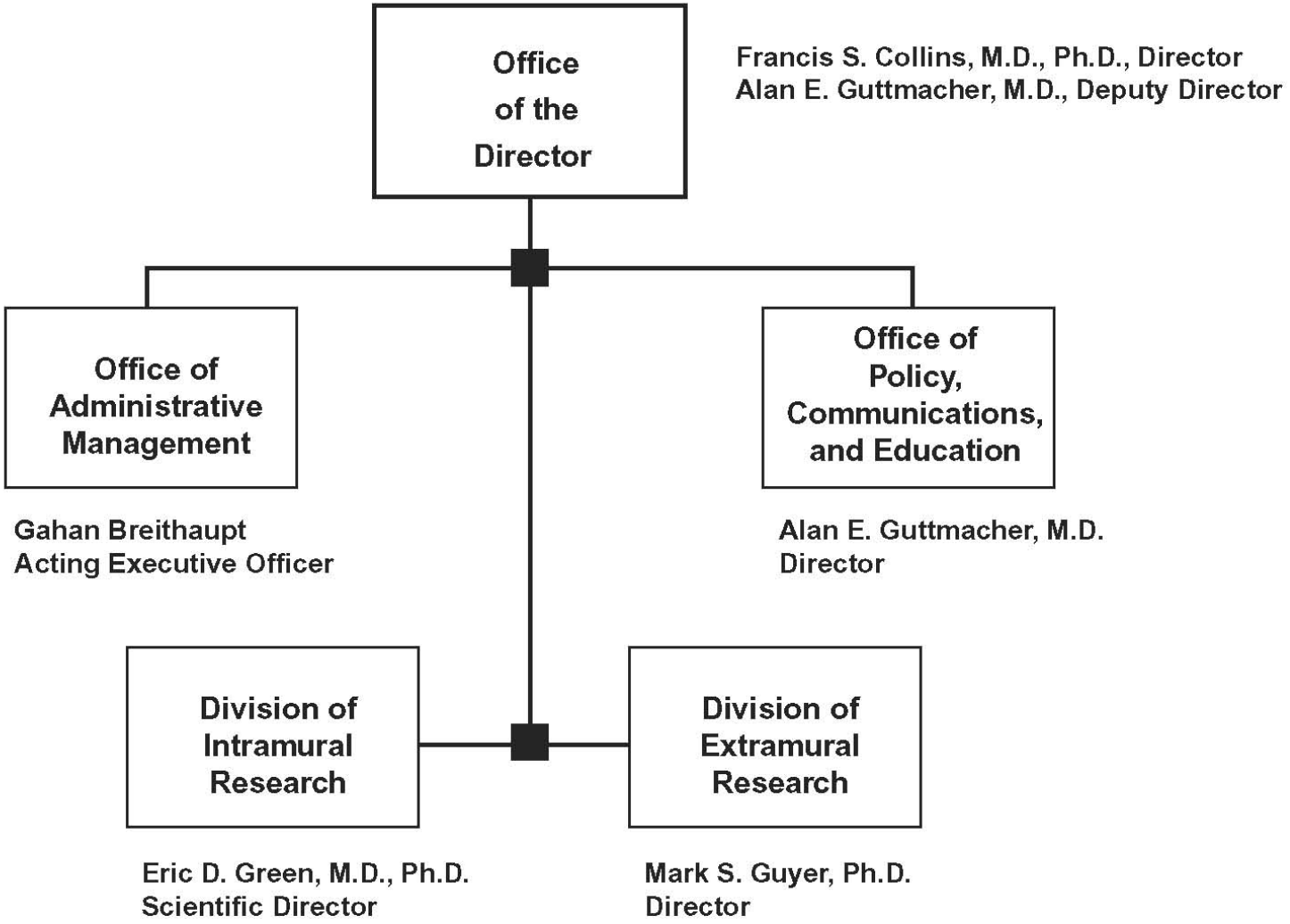
DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

National Human Genome Research Institute

NATIONAL HUMAN GENOME RESEARCH INSTITUTE

Organizational Structure



FY 2008 Proposed Appropriation Language

NATIONAL INSTITUTES OF HEALTH

National Human Genome Research Institute

For carrying out section 301 and title IV of the Public Health Service Act with respect to human genome research, $484,436,000

Supplementary Exhibit

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

NATIONAL INSTITUTES OF HEALTH

National Human Genome Research Institute

For carrying out section 301 and title IV of the Public Health Service Act with respect to human genome research, [~~$490,959,000~~] **$484,436,000** (Department of Health and Human Services Appropriations Act, 2006)

National Institutes of Health
National Human Genome Research Institute

Amounts Available for Obligation 1/

Source of Funding	FY 2006 Actual	FY 2007 Continuing Resolution	FY 2008 Estimate
Appropriation	$490,959,000	$486,049,000	$484,436,000
Enacted Rescissions	-4,910,000		
Subtotal, Adjusted Appropriation	486,049,000	486,049,000	484,436,000
Real Transfer under Roadmap Authority	-4,343,000		
Real Transfer under Secretary's One-percent transfer authority	-334,000		
Comparative transfer from OD for NIH Roadmap	4,343,000		
Comparative Transfer to NIBIB	-38,000	-38,000	
Comparative transfer to OD	-17,000	-17,000	
Comparative Transfer to NCRR	-3,000	-7,000	
Comparative Transfers to the Office of the Assistant Secretary for Admin. And Mgmt. and to the Office of the Assistant Secretary for Public Affairs	-2,000	-2,000	
Subtotal, adjusted budget authority	485,655,000	485,985,000	484,436,000
Unobligated Balance, start of year	0	0	0
Unobligated Balance, end of year	-34,000	0	0
Subtotal, adjusted budget authority	485,621,000	485,985,000	484,436,000
Unobligated balance lapsing	0	0	0
Total obligations	485,621,000	485,985,000	484,436,000

1/ Excludes the following amounts for reimbursable activities carried out by this account:
FY 2006 - $25,869,000 FY 2007 - $26,010,000 FY 2008 - $26,329,000
Excludes $111,000 in FY 2007 and $118,000 in FY 2008 for royalties.

NATIONAL INSTITUTES OF HEALTH

National Human Genome Research Institute

(Dollars in Thousands)

Budget Mechanism - Total

MECHANISM	FY 2006 Actual		FY 2007 Continuing Resolution		FY 2008 Estimate		Change	
Research Grants:	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Research Projects:								
Noncompeting	124	$67,492	138	$78,297	137	$83,591	-1	$5,294
Administrative supplements	(26)	13,623	(23)	6,448	(23)	6,448	(0)	0
Competing:								
Renewal	16	16,430	17	8,886	21	10,891	4	2,005
New	59	22,913	62	32,409	63	33,276	1	867
Supplements	1	384	0	0	0	0	0	0
Subtotal, competing	76	39,727	79	41,295	84	44,167	5	2,872
Subtotal, RPGs	200	120,842	217	126,040	221	134,206	4	8,166
SBIR/STTR	42	10,225	35	10,025	34	9,857	-1	-168
Subtotal, RPGs	242	131,067	252	136,065	255	144,063	3	7,998
Research Centers:								
Specialized/comprehensive	22	176,290	21	170,346	21	160,433	0	-9,913
Biotechnology	15	29,870	15	30,026	15	30,026	0	0
Subtotal, Centers	37	206,160	36	200,372	36	190,459	0	-9,913
Other Research:								
Research careers	17	3,498	17	3,501	20	3,771	3	270
Other	25	2,838	25	2,800	25	2,800	0	0
Subtotal, Other Research	42	6,336	42	6,301	45	6,571	3	270
Total Research Grants	321	343,563	330	342,738	336	341,093	6	-1,645
Research Training:	FTTPs		FTTPs		FTTPs			
Individual awards	13	586	13	583	13	583	0	0
Institutional awards	140	6,834	140	6,800	140	6,800	0	0
Total, Training	153	7,420	153	7,383	153	7,383	0	
Research & development contracts	12	14,707	20	14,633	20	14,633	0	0
(SBIR/STTR)	(0)	(23)	(0)	(23)	(0)	(23)	(0)	0
	FTEs		FTEs		FTEs		FTEs	
Intramural research	217	97,858	216	97,370	216	96,716	0	-654
Research management and support	66	17,764	66	18,031	66	18,211	0	180
NIH Roadmap for Medical Research	9	4,343	19	5,830	23	6,400		570
Total, NHGRI	292	485,655	301	485,985	305	484,436	0	-1,549

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

NATIONAL INSTITUTES OF HEALTH
National Human Genome Research Institute
Budget Authority by Program
(Dollars in thousands)

Extramural Research	FY 2004 Actual FTEs	FY 2004 Actual Amount	FY 2005 Actual FTEs	FY 2005 Actual Amount	FY 2006 Actual FTEs	FY 2006 Actual Amount	FY 2007 Continuing Resolution FTEs	FY 2007 Continuing Resolution Amount	FY 2008 Estimate FTEs	FY 2008 Estimate Amount	Change FTEs	Change Amount
Detail:												
Basic genomics												
Large-scale Sequencing		174,105		150,366		$123,975		$72,495		$57,865		-$14,630
Medical Sequencing		0		0		10,026		25,612		41,198		15,586
The Cancer Genome Atlas		0		0		0		16,666		16,666		0
Genomic Function		29,995		33,832		39,322		53,921		48,428		-5,493
Genomic Variation		10,868		12,258		11,996		11,999		11,778		-221
Computational Genomics		39,525		44,581		47,360		47,371		46,501		-870
Technology Development		35,121		39,614		47,202		47,213		47,213		0
Other basic genomics		62,325		70,298		62,723		62,738		61,586		-1,152
Translational genomics		1,153		1,300		3,455		8,501		13,718		5,217
ELSI		14,329		17,043		19,634		18,238		18,156		-82
Subtotal, Extramural		367,421		369,292		365,693		364,754		363,109		-1,645
Intramural research	219	94,617	207	98,505	217	97,887	216	97,370	216	96,716	0	-654
Res. management & support	54	15,145	63	17,722	66	17,793	66	18,031	66	18,211	0	180
NIH Roadmap for Medical Research	3	1,645	5	3,089	9	4,343	19	5,830	23	6,400	4	570
TOTAL	276	478,828	275	488,608	292	485,716	301	485,985	305	484,436	4	-1,549

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

Major Changes in the Fiscal Year 2008 Budget Request

Research Project Grants (+$8.0 million, total $144.1 million): NHGRI will support a total of 255 Research Project Grant (RPG) awards in FY 2008. Noncompeting RPGs will decrease by one award and increase by $5.3 million. Competing RPGs will increase by 5 awards and increase by $2.9 million.

Research Careers (+$270,000; total $3.771 million): NHGRI will support the Pathway to Independence program, by funding an additional 3 awards in FY 2008. Total support for the Pathway program in FY 2008 is 6 awards and $540,000.

NIH Roadmap for Biomedical Research (+$570,000; total $6.4 million): NHGRI 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.

Medical Sequencing (+$15.586 million; total $41.198 million): Emphasis is shifting from Large-scale Sequencing to Medical Sequencing in FY 2008.

Large-scale Sequencing (-$14.63 million; total $57.865 million): Emphasis is shifting from Large-scale Sequencing to Medical Sequencing in FY 2008. The significant decrease is due to a shift in the usage of sequencing capacity from large-scale sequencing to medical sequencing; overall capacity is actually increased in spite of overall reduction in expenditures because of improvements in process efficiency.

Translational Genomics (+$5.217 million; total $13.718 million): Projects directed toward analysis of the "genetic contributions to disease, disease risk, disease resistance to drug response" are included in other program lines, including large-scale sequencing (the new medical sequencing program) and population genomics (specifically the Genes, Environment and Health Initiative [GEI]).

Genomic Function (-$5.493 million; total $48.428 million): Decreases are proposed to offset new projects directed toward analysis of the "genetic contributions to disease, disease risk, disease resistance to drug response" are included in other program lines, including large-scale sequencing (the new medical sequencing program) and population genomics (specifically GEI).

NATIONAL INSTITUTES OF HEALTH
National Human Genome Research Institute
Summary of Changes

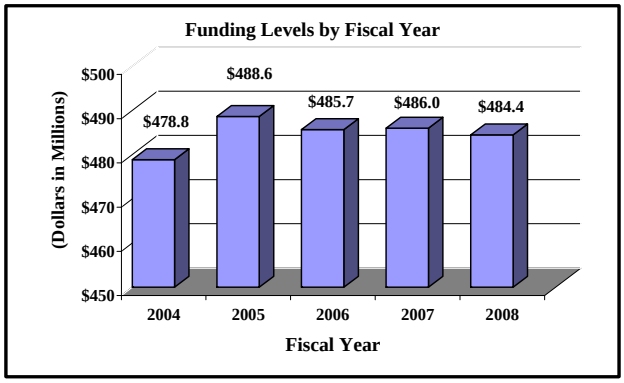
FY 2007 Continuing Resolution				485,985,000
FY 2008 Estimated Budget Authority				484,436,000
Net change				-1,549,000
	2007 Continuing Resolution Base		Change from Base	
CHANGES	FTEs	Budget Authority	FTEs	Budget Authority
A. Built-in:				
1. Intramural research:				
a. Annualization of January 2007 pay increase		$29,657,000		$196,000
b. January 2008 pay increase		29,657,000		682,000
c. Two extra days of pay		29,657,000		234,000
d. Payment for centrally furnished services		16,425,000		164,000
e. Increased cost of laboratory supplies, materials, and other expenses		51,288,000		1,132,000
Subtotal				2,408,000
2. Research Management and Support:				
a. Annualization of January 2007 pay increase		$10,404,000		69,000
b. January 2008 pay increase		10,404,000		239,000
c. Two extra days of pay		10,404,000		82,000
d. Payment for centrally furnished services		1,578,000		16,000
e. Increased cost of laboratory supplies, materials, and other expenses		6,049,000		142,000
Subtotal				548,000
Subtotal, Built-in				2,956,000

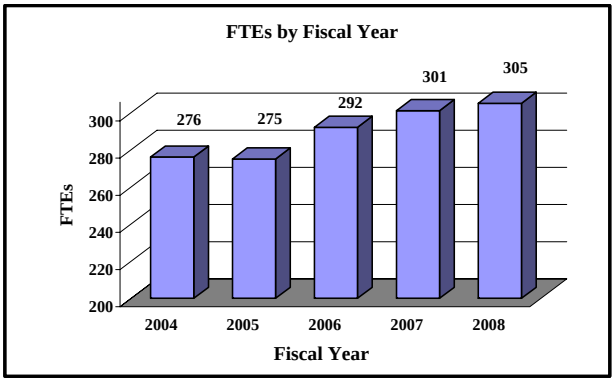
NATIONAL INSTITUTES OF HEALTH
National Human Genome Research Institute
Summary of Changes--continued

CHANGES	2007 Continuing Resolution Base		Change from Base	
	No.	Budget Authority	No.	Budget Authority
B. Program:				
1. Research project grants:				
a. Noncompeting	138	$84,745,000	-1	$5,294,000
b. Competing	79	41,295,000	5	2,872,000
c. SBIR/STTR	35	10,025,000	-1	-168,000
Total	252	136,065,000	3	7,998,000
2. Research centers	36	200,372,000	0	-9,913,000
3. Other research	42	6,301,000	3	270,000
4. Research training	153	7,383,000	0	0
5. Research and development contracts	20	14,633,000	0	0
Subtotal, extramural				-1,645,000
	FTEs		FTEs	
6. Intramural research	216	97,370,000	0	-3,062,000
7. Research management and support	66	18,031,000	0	-368,000
8. NIH Roadmap for Medical Research	19	5,830,000	4	570,000
Subtotal, program		485,985,000		-4,505,000
Total changes	301		4	-1,549,000

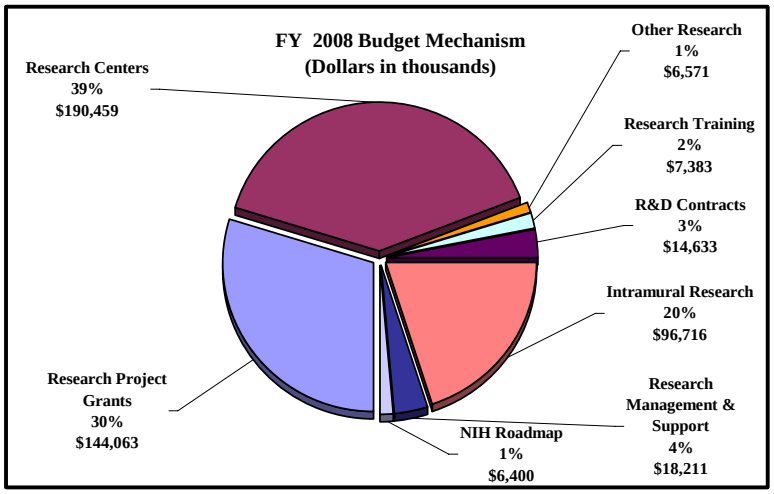
Fiscal Year 2008 Budget Graphs

History of Budget Authority and FTEs:

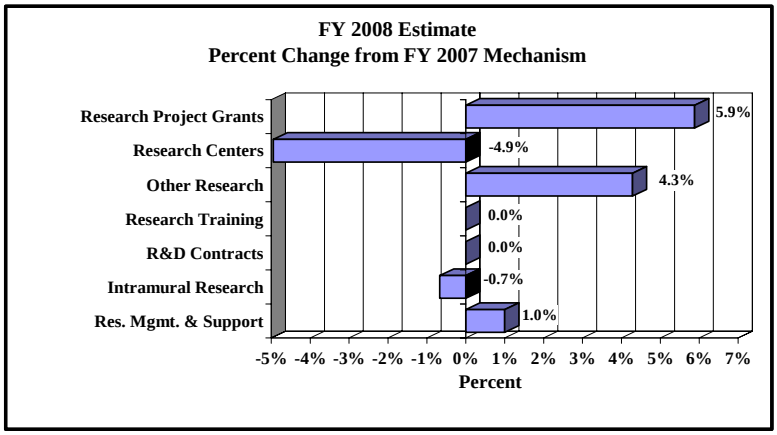




Distribution by Mechanism:



Change by Selected Mechanisms:



Justification

National Human Genome Research Institute

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	
FTEs	BA	FTEs	BA	FTEs	BA	FTEs	BA
292	$485,655,000	301	$485,985,000	305	$484,436,000	+4	-$1,549,000

This document provides justification for the Fiscal Year (FY) 2008 activities of the National Human Genome Research Institute, including HIV/AIDS activities. Details of the FY 2008 HIV/AIDS activities are in the "Office of AIDS Research (OAR)" Section of the Overview. Details on the Roadmap/Common Fund are located in the Overview, Volume One.

DIRECTOR'S OVERVIEW

The NHGRI led the National Institutes of Health's contribution to the International Human Genome Project, which had as its primary goal the sequencing of the human genome. This project was successfully completed in 2003, allowing the NHGRI to build on this strong foundation to initiate a broad range of studies aimed at understanding the structure and function of the human genome and its role in health and disease. To that end, NHGRI supports the development of resources and technology that will accelerate genome research and its application to human health. A critical part of the NHGRI mission continues to be the study of the ethical, legal and social implications (ELSI) of genome research. NHGRI also supports the training of investigators and the dissemination of genome information to the public and to health professionals.

Understanding Human Genetic Information: The International HapMap Project and Beyond
The elucidation of the entire human genome has made possible a successful effort to develop a haplotype map of the human genome. The haplotype map, or "HapMap," is a tool developed over the past few years through NHGRI leadership and support that allows researchers to accelerate the discovery of genes and genetic variations that affect health and disease. The success of this approach has already been demonstrated by its use to identify genes involved in several common disorders, including adult macular degeneration (the leading cause of severe vision loss in older Americans), prostate cancer, diabetes, and Crohn's disease. This has all been made possible by the ability to conduct genome-wide association studies (GWAS), which survey the genome comprehensively and identify genes involved in common diseases. GWAS take advantage of less expensive technologies and new data about the structure of the human genome

provided by the HapMap Project. NHGRI has played a lead role in establishing a public-private partnership, the Genetic Association Information Network (GAIN), which utilizes funds from private partners to determine the genotype (genetic profiles) of individuals involved in numerous NIH studies on a range of disorders and diseases. This will provide valuable data to help identify genes involved in such common, yet complex, diseases as bipolar disorder, diabetic nephropathy, psoriasis, and schizophrenia. In FY 2007, NIH began the Genes, Environment and Health Initiative (GEI), a key part of which would be an NHGRI-led effort to use a similar GWAS approach to identify genes involved in dozens of other common diseases, as well as encourage the development of better methods to assess the contribution of environmental exposures to these diseases.

Technology Development: Aiming For the $1,000 Genome

Since 1990, NHGRI has invested approximately $380 million to develop and improve DNA sequencing technologies. DNA sequencing costs have fallen more than 50-fold over the past decade, fueled in large part by tools, technologies and process improvements developed as part of the successful project to sequence the human genome. However, it still costs about $10 million to sequence 3 billion base pairs- the amount of DNA in the genomes of humans and other mammals. NHGRI's near-term goal is to lower the cost of sequencing a mammalian-sized genome to $100,000, allowing researchers to sequence the genomes of hundreds of people to identify genes that contribute to common, complex diseases. Ultimately, NHGRI's vision is to cut the cost of whole-genome sequencing to $1,000 or less, which will enable the sequencing of an individual's genome during routine medical care. The ability to sequence an individual genome cost-effectively could enable health care professionals to tailor diagnosis, treatment and prevention to each person's unique genetic profile. To make this vision a reality, NHGRI is already funding new technologies to ultimately yield a $1,000 genome. Many of these grants are based on advances in nanotechnology and microfluidics that miniaturize current sequencing systems, which results in reduced costs. Alternatively, attempts at using different platforms for carrying out sequencing reactions aim at changing the paradigm of whole-genome sequencing.

Understanding the Role of Genes in Cancer: The Cancer Genome Atlas

The Cancer Genome Atlas (TCGA) is a comprehensive joint effort of NHGRI and the National Cancer Institute to advance understanding of the molecular basis of cancer through the application of genome analysis technologies, including large-scale genome sequencing. Its recently launched Pilot Project will study lung, brain, and ovarian cancers (which collectively account for more than 210,000 cancer cases each year in the United States) to assess the feasibility of a full-scale effort to explore systematically the entire spectrum of genomic changes involved in human cancer. At the same time, a related NHGRI technical pilot project is examining 1,000 genes in specimens of a cancer of the lung. Data from these pilot projects will provide researchers and clinicians an early glimpse of what promises to become an unprecedented, comprehensive "atlas" of molecular information describing the genomic changes in all types of cancer. TCGA will ultimately enable researchers to develop a new generation of targeted diagnostics, therapeutics, and preventives for all cancers, and pave the way for more personalized—and more effective—cancer medicine.

Genomic Medicine: Predictive, Personalized, Preemptive, Participatory Health Care
TCGA is but one of many NHGRI-supported efforts that will serve as the foundation for a new type of health care, which changes the standard clinical paradigm from one that treats everyone with a particular disease identically to one that tailors treatments to each individual based upon a knowledge of their personal genetic make up – their individual biology. This will allow new treatment strategies that rely on choosing the right medicine for the right person at the right time. In addition, this approach will provide, individualized disease prevention profiles that will allow individuals to make lifestyle and medical choices that delay or completely preempt the onset of many common diseases before they develop.

Challenges for the Future: NHGRI Takes a Proactive Approach
NHGRI understands fully that while realizing the potential of such genomic medicine will require innovative basic research and technology development, it will also require a multi-pronged approach that includes health applications research, education of health professionals and the public, and community involvement in answering the complex ethical, legal, and social questions that this powerful new level of knowledge of the individual raises. Thus, NHGRI not only continues to invest in ELSI research, but also has spent considerable energy - and launched a number of other programs - in translational research, professional and lay education, and community engagement.

FY 2008 JUSTIFICATION BY ACTIVITY DETAIL

Overall Budget Policy: Investigator-initiated research projects and new investigator research and career development are the Institute's highest priorities. The NHGRI carefully evaluates investigator-initiated requests to submit grant applications for all large programs. A scientific review is conducted, and the results are presented to the NHGRI Advisory Council to determine the level of recommended support, if any. The level of support provided for Institute-initiated projects (e.g., RFAs) is also evaluated. The Institute maintains a balance between solicitations issued to the extramural community in areas that need stimulation and funding made available to support investigator-initiated projects.

EXTRAMURAL RESEARCH

Basic Genomics

Large-scale Sequencing

The functions of many proteins encoded by our genome are similar to those encoded by genomes of other animals. Therefore, investigators look to organisms that can be easily manipulated genetically, even if they are evolutionarily distant from humans, to explore biological processes that are analogous to our own. The recent publication of the honey bee genome is an excellent example of useful knowledge about a model organism not closely related from an evolutionary standpoint to humans. It still offers many biological insights into the development of the brain and central nervous system that may ultimately shed light on human disorders such as depression or Alzheimer's disease. Unexpected results also surfaced this year when the complete genome sequence of the sea urchin, which filled an evolutionary gap, revealed a surprising relationship with many human genes. In the mammalian world, the dog genome is a unique example of a model organism that is important as a tool both for identifying genetic components of human diseases and for research and treatment specific to canines. As these examples show, the sequencing of multiple species remains an important tool in biological research; new sequencing targets proposed include several non-human primates, mammals, fungi, and multiple strains of yeast. NHGRI has funded not only the work noted above, but three large-scale sequencing centers to further carry out these efforts.

Budget Policy: The FY 2008 budget estimate for large-scale sequencing is $57.865 million, a decrease of $14.630 million or -20.2 percent from the FY 2007 estimate. The decrease is due to a shift in the usage of sequencing capacity from large-scale sequencing to medical sequencing; overall capacity is actually increased in spite of overall reduction in expenditures because of improvements in process efficiency.

In FY 2008, NHGRI will continue the restructuring of its large-scale sequencing program that was initiated in FY 2007 by redeploying additional sequencing capacity from applications designed to reveal the functional components of the human genome sequence to applications that will reveal the DNA sequences of the genomic determinants underlying disease and disease risk. The redeployment is made possible by two factors. First, a considerable amount of the sequence data needed for interpretation of the human genome sequence has been obtained in the past four

years, since the completion of the first human reference sequence. Second, continued decreases in the cost of DNA sequencing through technology development enable NHGRI to generate large amounts of sequence information for lower cost.

Medical Sequencing

Genomic sequencing has already begun to make a substantial impact on both biological and medical research. As more is learned about the genomic contribution to disease, genomic sequence information will become ever more important both for biomedical research and for providing medically relevant information to individuals. When it becomes affordable to sequence fully any individual's genome, the information obtained will allow estimates of future disease risk and improve the prevention, diagnosis, and treatment of disease. NHGRI is particularly interested in defining a sequencing program that will both drive technology and produce data useful to biomedical research at all stages along the way. To this end, NHGRI has developed a medical sequencing program that utilizes DNA sequencing to: identify the genes responsible for dozens of relatively rare, single-gene diseases; sequence all of the genes on the X chromosome from affected individuals to identify the genes involved in sex-linked diseases; and survey the range of variants in genes known to contribute to certain common diseases. Actual start dates of the individual sequencing projects will depend on a number of factors, including the strategic selection of specific diseases and the availability of patient samples with appropriate informed consent, but most are expected to begin in early 2007. NHGRI has also convened a Medical Sequencing Working Group to help chart a course towards application of medical sequencing, as well as to provide guidance on setting policies for ethical, legal, and social issues arising from the program.

Budget Policy: The FY 2008 budget estimate for medical sequencing is $41.198 million, an increase of $15.586 million or +60.9 percent over the FY 2007 estimate. Medical sequencing is increasing for programmatic reasons, as large-scale sequencing technology has improved and created new opportunities to apply genomic tools to the study of human disease.

In FY 2008, NHGRI will continue the expansion of its medical sequencing program that was initiated in FY 2007 by redeploying additional sequencing capacity from applications designed to reveal the functional components of the human genome sequence to applications that will reveal the DNA sequences of the genomic determinants underlying disease and disease risk. The the medical sequencing program will analyze additional diseases in the three areas with which the program began, single-gene diseases, sex-linked diseases, and genes known to contribute to certain common diseases. The medical sequencing program will also expand by applying sequence analysis to genomic regions implicated in other common diseases by the GAIN and GEI projects, for the purpose of identifying the individual genes in those regions that contribute to common diseases such as bipolar disorder, diabetic nephropathy, psoriasis, and schizophrenia.

The Cancer Genome Atlas

The mission of The Cancer Genome Atlas, jointly supported and led by the NHGRI and the National Cancer Institute (NCI), is to accelerate our understanding of the molecular basis of cancer through the application of genome analysis technologies, including large-scale genome sequencing. This program will develop and test the complex science and technology framework needed to identify systematically and characterize the genetic mutations and other genomic

changes associated with cancer. Data and technologies produced from other genomic projects have provided tools necessary to produce new insights into how and why genetic changes cause cancer. Genetic mutations are linked to several different types of cancer have already led to diagnostic tests, and recent discoveries in cancer genomics have helped to identify several treatments that work by targeting cancer cells that have a specific genetic change. These successful developments underlie the promise that further examination of the molecular origins of cancer will enable us to diagnose, treat, and prevent cancer more quickly and more effectively. NHGRI, in collaboration with NCI, will continue funding three sequencing centers to work on genomic sequencing for TCGA. Beginning in FY 2007, these projects will start to assess the range of genomic changes associated with malignancies.

Budget Policy: The FY 2008 budget estimate for TCGA is $16.666 million, with no change from the FY 2007 estimate. The Cancer Genome Atlas expenditures are constant, as NHGRI made a three-year commitment to the project.

In FY 2008, the focus of the sequencing component of the TCGA pilot will be on completion of the analysis of glioblastoma (brain cancer) and initiation of the analysis of squamous cell lung cancer. As a result of anticipated cost reductions, the pilot effort will be able to analyze a larger number of genes in each tumor type and/or a larger number of tumor samples in FY 2008 compared to the number that were analyzed in the first year of the TCGA.

Portrait of a Program: The Cancer Genome Atlas Pilot Project

FY 2007 Level:	$16.666 million
FY 2008 Level:	$16.666 million
Change	$0

It is now understood that cancer actually consists of hundreds of different diseases. TCGA pilot project has been initiated to assess the feasibility and value of an effort to systematically explore the entire spectrum of genomic changes involved in human cancer.

The pilot project has selected lung, brain, and ovarian cancer for study, based on their value in determining the practicality of a large-scale project. The program consists of four main components, which have now been chosen. The Biospecimen Core Resource will manage the collection, storage, and distribution of tissue samples. The Genomic Sequencing Centers (GSCs) will use high-throughput methods similar to those employed in the Human Genome Project to analyze candidate genes and other genomic targets by sequencing. Seven Cancer Genome Characterization Centers (CGCCs) will analyze the same samples by other methods to identify other key genomic alterations. A Data Coordinating Center will track all of the data produced by the TCGA pilot and deposit them in public databases. These data will be the beginning of an unprecedented, comprehensive "atlas" of information describing the genomes of these cancers that can be used by the entire scientific and clinical communities to develop new diagnostic, therapeutic, and prevention strategies. In anticipation of the TCGA pilot, NHGRI had earlier initiated a technical demonstration project, The Tumor Sequencing Project. This is a collaboration among participants at several institutions that is testing approaches to large-scale identification of genomic changes in tumors by sequencing the protein coding regions of 1,000 genes in almost 200 specimens of adenocarcinoma of the lung, and by measuring changes in chromosomal copy number in those samples. The overarching goal of TCGA is to improve our ability to diagnose, treat, and prevent cancer, by identifying genetic changes that can point to new therapeutic targets. Towards accomplishing this mission, planned goals for FY 2008 include comprehensive discovery of genomic changes in brain and lung cancer that can be further validated for a role in tumorigenesis in these tumors. The GSCs will also be implementing new sequencing technologies that will allow examination of more genomic changes in selected tumors at lower cost.

Genomic Function

NHGRI has a variety of projects in place to characterize and identify the function of our DNA sequence. The ENCyclopedia Of DNA Elements (ENCODE) Project, launched in 2003, seeks to identify functional DNA elements, beginning with a carefully chosen non-contiguous region totaling ~1% of the human genome. A concurrent technology development component to promote development of novel high throughput methods and a planned production component are also parts of ENCODE. However, efforts to uncover functional elements are not limited to the human genome. The model organism ENCODE (modENCODE) Project is working towards similar goals in *C. elegans* and *D. melanogaster*. The goal of the Knockout Mouse Project (KOMP), another effort towards understanding genomic function, is to determine the role of each gene in normal physiology and development in the mouse. Results generated from each of these projects will be maintained in a public and comprehensive repository, thus maximizing their usefulness in accelerating science.

Budget Policy: The FY 2008 budget estimate for genomic function programs is $48.428 million, a decrease of $5.493 million or -10.2 percent from the FY 2007 estimate. Decreases are intentional to offset new projects directed toward analysis of the "genetic contributions to disease, disease risk, disease resistance to drug response" are included in other program lines, including large-scale sequencing (the new medical sequencing program) and population genomics (specifically GEI).

The major foci of NHGRI's activities in FY 2008 will be continuation of three large-scale efforts in the area of genomic function: the expansion of the ENCODE Project to the whole-genome scale for analysis of sequence-based functional elements, continuation of the modENCODE Project, and continuation of the KOMP. The Institute also will continue to fund meritorious investigator-initiated applications submitted in response to announcements that encourage new technologies and new approaches to the analysis of genomic function.

Genomic Variation

In addition to decoding DNA sequence from a single person or organism, efforts are also underway to understand the differences observed across individuals. Although the genome sequence variation between two people is only ~0.1 percent, this amount of genetic variation in humans underlies a variety of observable characteristics ranging from the benign, such as hair or eye color, to a myriad of diseases, such as diabetes, cancer, Alzheimer's, and heart disease. The NHGRI led International HapMap Project continues to chart the patterns of genetic variation that are common in the world's population by identifying and cataloging single changes of our genome's alphabet, referred to as single nucleotide polymorphisms, or SNPs. The HapMap has already proven a powerful public resource for identifying genes involved in common diseases, and will facilitate many new studies to investigate genetic variation's link to other factors involved in health and disease, including susceptibility to infection, response to environmental factors, and drug efficacy.

Budget Policy: The FY 2008 budget estimate for genetic variation programs is $11.778 million, a decrease of $0.221 million or -1.8 percent from the FY 2007 estimate. Activity in Genomic

Variation will remain constant effectively, as increases in efficiency off-set decreases in expenditures.

The NHGRI will continue support of the effort, which began in FY 2006, to analyze structural variation in the human genome and to determine the contribution of structural variants to human diseases. The Institute also will continue to fund meritorious investigator-initiated applications submitted in response to announcements that encourage new technologies and new approaches to the analysis of genetic variation, the role that genetic variation plays in the determination of human disease, disease susceptibility, and environmental sensitivities.

Computational Genomics

Genome-wide studies are feasible, in part, because of computational tools that allow researchers to access, analyze, and store massive amounts of information. Database maintenance, management, and interoperability are important focuses of computational biology. Both database technology and computational methods are constantly under development for sequence analysis, gene mapping, complex trait mapping, and understanding genetic variation. New software is also needed to facilitate novel analyses for modeling and experimental validation of observed phenotypes of diseases derived from complex systems. NHGRI recognizes that, as the speed of genotyping increases (accompanied by a continued decrease in its cost), computational genomics research must also evolve to meet the needs of complex data generated by high-throughput means, and supports a number of key research efforts in this area.

Budget Policy: The FY 2008 budget estimate for computational genomics programs is $46.501 million, a decrease of $0.87 million or -1.8 percent from the FY 2007 estimate. Funds are reduced to accommodate higher programmatic priorities.

In FY 2008, the NHGRI will continue its support for the essential resource represented by genomic databases. The Institute also will continue to fund meritorious investigator-initiated applications submitted in response to announcements that encourage new technologies and new approaches to the emerging issue of how to make the enormous amount of data being generated by large-scale, genomic studies available to the broad research community, and how to analyze such large datasets.

Technology Development

The mission of NHGRI's technology development programs is to create new technology that will make DNA sequencing and other genomic technologies faster and cost effective for use in both medical research and health care. NHGRI has a broad investment in technology development, over many areas of research. In particular, application of these new technologies continues to make a powerful impact on the functional understanding of our genome. Since 1990, NHGRI has been investing funds to develop and improve DNA sequencing technologies. DNA sequencing costs have fallen dramatically, more than 50-fold over the past decade. Grants sponsoring the creation of these new tools and technologies show promise in further reducing the cost of sequencing a human-sized genome from the current cost of ~$10 million to $1,000. The near-term goal is to sequence a human-sized genome for $100,000; several new technologies supported by NHGRI grants show strong potential to become commercially available within the

next five years. A separate set of grants funds nine investigators who are developing revolutionary technologies to make it possible to sequence a $1,000 genome. Having the ability to sequence an individual genome so inexpensively not only would dramatically further biomedical research, but would enable health care professionals to tailor diagnosis, treatment, and prevention strategies to each person's own genetic profile.

Budget Policy: The FY 2008 budget estimate for technology development is $47.213 million, with no change from the FY 2007 estimate.

The NHGRI will continue in FY 2008 its ground-breaking efforts to reduce the cost of DNA sequencing to the point where the technology can be used as a widely disseminated research tool and as a tool for individual healthcare.

Other Basic Genomics

Started in 2001, NHGRI's Centers of Excellence in Genomic Science (CEGS) program supports the formation of multi-investigator, interdisciplinary research teams to develop novel and innovative genomic research projects and to foster the wider application of comprehensive, high-throughput genomics methods to the study of human biology and disease, using and expanding the data sets and technologies developed by the Human Genome Project. The CEGS also serve as focal points for providing education and training about genomic research opportunities to members of under-represented population groups. Participants in CEGS education and training programs span a wide spectrum of ages and educational levels, ranging from college undergraduates to post-doctoral fellows.

Budget Policy: The FY 2008 budget estimate for other basic genomics programs is $61.586 million, a decrease of $1.152 million or -1.8 percent from the FY 2007 estimate. Funds are reduced to accommodate higher programmatic priorities.

In FY 2008, the NHGRI will continue support the CEGS program in its efforts to stimulate highly innovative research approaches that will substantially advance the state of the art in genomic approaches to the study of a biological problem, and to foster the wider application of comprehensive, high-throughput genomics methods to the study of human biology and disease.

Translational Genomics

Information received from studies of genomic function and variation is essential for developing clinical applications in the translation from "bench to bedside." However, some diseases are more complex than others and, along with DNA mutations, epigenetic factors, or factors acting "on" the genome, must be considered. The Genes, Environment and Health Initiative (GEI) is designed to address these challenges via two components: an NHGRI-led program to analyze genetic variation in groups of patients with specific illnesses; and a National Institute for Environmental Health Sciences (NIEHS) led environmental technology development program to produce and validate new methods for monitoring environmental exposures, including physical activity and dietary intake, that affect health. Identifying and understanding the interactions of epigenetic factors, such as environmental exposures, with specific genetic variation will truly

revolutionize our approach to health and health care, allowing not only much more accurate prediction of disease, but, ultimately, individual-based disease prevention.

Budget Policy: The FY 2008 budget estimate for translational genomics is $13.718 million, an increase of $5.217 million or +61.4 percent from the FY 2007 estimate. NHGRI is expanding activity in the area of translational genomics, as the application of advances in genomics to problems of human health have a very high programmatic priority.

In FY2008, NHGRI will collaborate with NHLBI in an innovative study to evaluate the use of genetic variants to personalize the dosing of a commonly-used and frequently over-dosed medication, coumadin; the NHGRI contribution will be a component to identify newer genetic variants important in minorities or in persons without the most common variants found in Caucasians. In FY2008, NHGRI will also support the identification, development and dissemination of a set of standardized measures of health characteristics (phenotypes) and environmental exposures to enhance the value of costly and highly-detailed genome-wide association studies by facilitating interpretation and allowing comparison across studies and meta-analyses. Finally, NHGRI will support the determination of highly detailed measures of genetic variation in persons who have donated samples and electronic health information to biorepositories to examine the strengths, weaknesses and concerns raised by this type of research.

Ethical, Legal, and Social Implications

As the use of genetics and genomics in translational and clinical studies (for instance, large-cohort studies) increases, the importance of understanding ELSI of genetic and genomic research continues to grow as well. NHGRI has launched a new initiative to address the challenges of ELSI research related to such studies, its Centers of Excellence in ELSI Research (CEERs). The CEERs are charged with: 1) transcending boundaries between various disciplines involved in ELSI and genomic science, 2) translating ELSI research findings to research, health, and public policies and practices and, 3) training the next generation of ELSI researchers. NHGRI also addresses ethical, legal, and social issues through public consultation and community engagement that identifies and responds to culturally specific concerns and gives participating communities input into research, importantly including the informed consent and sample collection processes.

Budget Policy: The FY 2008 budget estimate for the ELSI program is $18.156 million, a decrease of $0.082 million or -0.4 percent from the FY 2007 estimate. The ELSI budget is legislatively mandated at 5 percent of the total NHGRI extramural budget.

In FY 2008, the NHGRI will continue to support the ELSI research program in its efforts to anticipate and address the social, legal, and ethical issues that will arise from the new information about the human genome and the genetic contribution to human disease, and new approaches to applying that information to the improvement of human health.

INTRAMURAL RESEARCH

NHGRI intramural researchers continue to focus on the genetic components of both rare and common disorders. As an example, NHGRI intramural researchers have recently uncovered genetic clues to a disease known as dementia with Lewy bodies (DLB), the second most common form of age-related dementia after Alzheimer's disease. They discovered the same enzyme, glucocerebrosidase (GBA), that catalyzes the breakdown of fatty material and is known to be mutated in the inherited metabolic disorder Gaucher disease is also involved in the development of DLB. GBA's role in both disorders is a reminder of how disruption of one gene's normal function can develop into multiple disease states in very different biological contexts. NHGRI intramural researchers also made progress this year in understanding the cause of complex and common disorders involving the skin and related tissues that act as a lining of organs. Hay fever, asthma, eczema, and psoriasis are all related diseases that result from a defective protein that normally gives tissues such as the skin its protective properties. NHGRI intramural researchers are providing important new insights into the process by which the propagation of these defective cells in skin and linings of the lung fails, thus becoming the root cause of these diseases. Genetics-based research should lead to new therapies to interrupt this malicious cycle. Comparable research performed within the institute continues to have a profound impact on our understanding of many common and rare disorders.

The NHGRI Division of Intramural Research plans to increase its focus on translational research in FY 2008. Towards this end, the Institute is creating a new Office of Translational Research, which is intended to encourage collaborations between basic scientists and clinical investigators, thereby facilitating the translation of promising laboratory discoveries into new medical treatments and approaches for numerous genetic and genomic disorders.

Two clinical genomics initiatives will also be launched in FY 2008. The first, called ClinSeq, will be a pilot study aimed at developing the technologic and procedural infrastructure to facilitate large-scale medical sequencing (LSMS) in a clinical research setting. The second, called the Multiplex Initiative, is a research study intended to provide and evaluate patients' reactions to genetic susceptibility testing for several common health conditions, such as cardiovascular disease and osteoporosis.

The Institute will continue to strengthen its efforts in a number of key areas of human genetics and genomics, including cancer genomics; key faculty recruitments are currently under way. The Institute will continue its commitment towards providing its investigators with state-of-the-art research resources and world-class expertise through its six core facilities, which specialize in areas such as the development of mouse and zebrafish models of human disease, flow cytometry, chip-based gene expression analysis, and bioinformatics.

NHGRI will continue its strong commitment to multidisciplinary training. Specific emphasis will be placed on promoting training and research opportunities for physicians committed to pursuing translational research through its Physician-Scientist Development Program, a program aimed at creating a cadre of individuals that can apply genomic techniques towards improving human health. NHGRI will also significantly increase its efforts to attract and train scientists from

traditionally underrepresented minority communities with an interest in the underlying genetic basis of human disease.

Budget Policy: The FY 2008 budget estimate for Intramural research is $96.716 million, a decrease of $654,000 (–0.7%) from the FY 2007 estimate. This decrease reflects a reduction in funding for the establishment of and recruitment into the Office of Translational Research, refurbishment of aging laboratory space, modernizing the IT infrastructure, and recruitment in bioinformatics.

Portrait of a Program: Farnesyltransferase Inhibitors (FTIs) as Potential Therapy for Children Afflicted With Hutchinson-Gilford Progeria Syndrome

FY 2007 Level: $0.668 million
FY 2008 Level: $0.701 million
Change +$0.034 million

Hutchinson-Gilford Progeria Syndrome (HGPS) is a genetic disorder that affects an estimated one in four million children with approximately one in eight million actually reported[1]. A disease of accelerated aging, it does not become apparent until 18-24 months of age. Unlike other premature aging syndromes defined by the inability to repair damaged DNA, HGPS results from the abnormal processing of the lamin A protein, which is necessary for the structure of the cell's nucleus. Accumulation of abnormal lamin A within the nucleus distorts its shape, and that interferes with vital nuclear processes such as gene expression, DNA replication, and cell division. These perturbations to normal cell functions result in growth retardation, alopecia (total or near-total hair loss), and excessive wrinkling of the skin. In addition to other symptoms of aging, HGPS patients suffer from accelerated cardiovascular disease and often die in their teen or even pre-teen years from heart-related illnesses. No treatments are currently available for HGPS; however, recent work led by NHGRI researchers indicates that farnesyltransferase inhibitors (FTIs), a class of drugs originally developed to treat cancer by blocking the growth of tumor cells, are capable of reversing the effects of the defective lamin A protein. Ongoing studies in a mouse model have validated the results of preliminary experiments, and a clinical trial of FTIs in children with progeria will be undertaken in 2007. In FY 2008, researchers plan on expanding the study to investigate whether FTIs are capable of reversing the detrimental effects after progression of the cardiovascular anomalies have manifested in the mouse model. The development of biological assays to assess the effects of FTI treatment on the patients' cells is in progress to monitor potential beneficial effects of the clinical trial. In addition, it has been demonstrated that the progerin protein is present in small amounts in normal aging tissues. The investigation of this phenomenon is being pursued as a contributory factor to the normal aging process.

[1]DeBusk FL. The Hutchinson-Gilford progeria syndrome. Report of 4 cases and review of the literature. J Pediatr. 1972 Apr;80(4):697-724.

RESEARCH MANAGEMENT AND SUPPORT

The NHGRI's Office of the Director, part of the RMS program, oversees the operation of the institute and includes a number of component parts. Two major ongoing initiatives for which the Office of the Director provides key leadership and financial support are National DNA Day and the U.S. Surgeon General's Family History Initiative. DNA Day is an annual opportunity to educate students about genetics and genomics and to use this cutting edge field to spark their interest in science. NHGRI staff collaborate with researchers, professional and lay advocacy organizations, and teachers to reach students across the country. This is achieved through school visits, teacher training, and a live web-based chatroom where students can post questions to NHGRI researchers and staff. The U.S. Surgeon General's Family History Initiative is a coordinated multi-agency effort to encourage all American families to learn more about their

family health history and to employ it in preventive health care. To make gathering this information easier, an improved version of the online software tool, "My Family Health Portrait," as well as paper versions of the tool have been made available in both English and Spanish. To expand the initiative's reach and impact, NHGRI annually selects a group for a one-year demonstration project grant to educate and engage health care providers and patient communities about the importance of family history. NHGRI also plays a lead role in the initiative's annual National Family History Day activities.

Budget Policy: The FY 2008 budget estimate for research management and support is $18.211 million, an increase of $0.18 million or +1 percent from the FY 2007 estimate.

NHGRI plans for FY 2008 to continue to develop ongoing initiatives for which the Office of the Director provides leadership and financial support for programs, including National DNA Day and the US Surgeon General's Family History Initiative. NHGRI will continue to enhance its community engagement and outreach programs to the public targeting underserved communities within the United States. NHGRI will expand its efforts in exposing students to careers in genomics and genetics research by developing new resources for teachers and students. In addition, NHGRI plans to enhance its programs to provide high quality, current and accessible genetic information to individuals seeking health information.

NATIONAL INSTITUTES OF HEALTH
National Human Genome Research Institute

Budget Authority by Object

	FY 2007 Continuing Resolution	FY 2008 Estimate	Increase or Decrease
Total compensable workyears:			
Full-time employment	301	305	4
Full-time equivalent of overtime & holiday hours	0	0	0
Average ES salary	$153,409	$158,011	$4,602
Average GM/GS grade	11.8	11.8	0
Average GM/GS salary	$83,414	$85,916	$2,502
Average salary, grade established by act of July 1, 1944 (42 U.S.C. 207)	$0	$0	0
Average salary of ungraded positions	0	0	0

OBJECT CLASSES		FY 2007 Continuing Resolution	FY 2008 Estimate	Increase or Decrease
	Personnel Compensation:			
11.1	Full-Time Permanent	$14,317,000	$15,118,000	$801,000
11.3	Other than Full-Time Permanent	13,038,000	13,768,000	730,000
11.5	Other Personnel Compensation	455,000	480,000	25,000
11.7	Military Personnel	226,000	239,000	13,000
11.8	Special Personnel Services Payments	4,130,000	4,361,000	231,000
	Total, Personnel Compensation	32,166,000	33,966,000	1,800,000
12.0	Personnel Benefits	7,801,000	8,237,000	436,000
12.2	Military Personnel Benefits	94,000	100,000	6,000
13.0	Benefits for Former Personnel	0	0	0
	Subtotal, Pay Costs	**40,061,000**	**42,303,000**	**2,242,000**
21.0	Travel & Transportation of Persons	2,105,000	2,086,000	-19,000
22.0	Transportation of Things	240,000	238,000	-2,000
23.1	Rental Payments to GSA	3,000	3,000	0
23.2	Rental Payments to Others	26,000	26,000	0
23.3	Communications, Utilities & Miscellaneous Charges	544,000	539,000	-5,000
24.0	Printing & Reproduction	88,000	87,000	-1,000
25.1	Consulting Services	675,000	669,000	-6,000
25.2	Other Services	7,439,000	7,372,000	-67,000
25.3	Purchase of Goods & Services from Government Accounts	56,925,000	54,506,000	-2,419,000
25.4	Operation & Maintenance of Facilities	363,000	360,000	-3,000
25.5	Research & Development Contracts	2,746,000	2,721,000	-25,000
25.6	Medical Care	1,078,000	1,068,000	-10,000
25.7	Operation & Maintenance of Equipment	2,098,000	2,079,000	-19,000
25.8	Subsistence & Support of Persons	0	0	0
25.0	**Subtotal, Other Contractual Services**	**71,324,000**	**68,775,000**	**-2,549,000**
26.0	Supplies & Materials	10,578,000	10,484,000	-94,000
31.0	Equipment	5,065,000	5,019,000	-46,000
32.0	Land and Structures	0	0	0
33.0	Investments & Loans	0	0	0
41.0	Grants, Subsidies & Contributions	350,121,000	348,476,000	-1,645,000
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	**440,094,000**	**435,733,000**	-4,361,000
	NIH Roadmap for Medical Research	**5,830,000**	**6,400,000**	570,000
	Total Budget Authority by Object	**485,985,000**	**484,436,000**	-1,549,000

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

NATIONAL INSTITUTES OF HEALTH
National Human Genome Research Institute

Salaries and Expenses

OBJECT CLASSES	FY 2007 Continuing Resolution	FY 2008 Estimate	Increase or Decrease
Personnel Compensation:			
Full-Time Permanent (11.1)	$14,317,000	$15,118,000	$801,000
Other Than Full-Time Permanent (11.3)	13,038,000	13,768,000	730,000
Other Personnel Compensation (11.5)	455,000	480,000	25,000
Military Personnel (11.7)	226,000	239,000	13,000
Special Personnel Services Payments (11.8)	4,130,000	4,361,000	231,000
Total Personnel Compensation (11.9)	**32,166,000**	**33,966,000**	**1,800,000**
Civilian Personnel Benefits (12.1)	7,801,000	8,237,000	436,000
Military Personnel Benefits (12.2)	94,000	100,000	
Benefits to Former Personnel (13.0)	0	0	0
Subtotal, Pay Costs	**40,061,000**	**42,303,000**	**2,242,000**
Travel (21.0)	2,105,000	2,086,000	-19,000
Transportation of Things (22.0)	240,000	238,000	-2,000
Rental Payments to Others (23.2)	26,000	26,000	0
Communications, Utilities and Miscellaneous Charges (23.3)	544,000	539,000	-5,000
Printing and Reproduction (24.0)	88,000	87,000	-1,000
Other Contractual Services:			
Advisory and Assistance Services (25.1)	675,000	669,000	-6,000
Other Services (25.2)	7,439,000	7,372,000	-67,000
Purchases from Govt. Accounts (25.3)	42,292,000	39,873,000	-2,419,000
Operation & Maintenance of Facilities (25.4)	363,000	360,000	-3,000
Operation & Maintenance of Equipment (25.7)	2,098,000	2,079,000	-19,000
Subsistence & Support of Persons (25.8)	0	0	0
Subtotal Other Contractual Services	**52,867,000**	**50,353,000**	**-2,514,000**
Supplies and Materials (26.0)	10,577,000	10,483,000	-94,000
Subtotal, Non-Pay Costs	66,447,000	63,812,000	-2,635,000
Total, Administrative Costs	**106,508,000**	**106,115,000**	**-393,000**

NATIONAL INSTITUTES OF HEALTH
National Human Genome Research Institute

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	$485,985,000	Indefinite	$484,436,000
National Human Genome Research Institute	Section 402(a)	P.L. 109-482	Indefinite		Indefinite	
Total, Budget Authority				485,985,000		484,436,000

NATIONAL INSTITUTES OF HEALTH
National Human Genome Research Institute

Appropriations History

Fiscal Year	Budget Estimate to Congress	House Allowance	Senate Allowance	Appropriation 1/
1999	236,275,000 2/ 3/	246,111,000	249,891,000	264,892,000
Rescission				-185,000
2000	271,536,000 2/	308,012,000	337,322,000	337,322,000
Rescission				-1,795,000
2001	353,427,000 2/	386,410,000	385,888,000	382,384,000
Rescission				-192,000
2002	426,739,000	423,454,000	440,448,000	429,515,000
Rescission				-757,000
2003	458,182,000	458,182,000	468,037,000	468,037,000
Rescission				-3,042,000
2004	478,072,000	478,072,000	482,372,000	482,222,000
Rescission				-3,149,000
2005	492,670,000	492,670,000	496,400,000	492,670,000
Rescission				-4,062,000
2006	490,959,000	490,959,000	502,804,000	490,959,000
Rescission				-4,910,000
2007	482,942,000	482,942,000	486,315,000	486,049,000 4/
2008	484,436,000			

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 $721,000 for the budget amendment for Bioterrorism
4/ Annualized current rate

NATIONAL INSTITUTES OF HEALTH

National Human Genome Research Institute

Details of Full-Time Equivalent Employment (FTEs)

OFFICE/DIVISION	FY 2006 Actual	FY 2007 Continuing Resolution	FY 2008 Estimate
Office of the Director	8	8	8
Office of Administrative Management	20	20	20
Office of Policy, Communications and Education	11	11	11
Division of Intramural Research	226	235	239
Division of Extramural Research	27	27	27
Total	292	301	305
Includes FTEs which are reimbursed from the NIH Roadmap for Medical Research			
FTEs supported by funds from Cooperative Research and Development Agreements	(2)	(2)	(2)

FISCAL YEAR	Average GM/GS Grade
2004	11.6
2005	11.8
2006	11.8
2007	11.8
2008	11.8

NATIONAL INSTITUTES OF HEALTH
National Human Genome Research Institute

Detail of Positions

GRADE	FY 2006 Actual	FY 2007 Continuing Resolution	FY 2008 Estimate
Total, ES Positions	1	1	1
Total, ES Salary	149,463	153,409	158,011
GM/GS-15	22	22	22
GM/GS-14	13	14	14
GM/GS-13	40	39	39
GS-12	41	42	42
GS-11	21	20	20
GS-10	3	3	3
GS-9	9	10	10
GS-8	10	11	11
GS-7	10	8	8
GS-6	1	1	1
GS-5	1	1	1
GS-4	0	0	0
GS-3	0	0	0
GS-2	0	0	0
GS-1	0	0	0
Subtotal	171	171	171
Grades established by Act of July 1, 1944 (42 U.S.C. 207):			
Assistant Surgeon General	0	0	0
Director Grade	2	2	2
Senior Grade	0	0	0
Full Grade	1	1	1
Senior Assistant Grade	0	0	0
Assistant Grade	0	0	0
Subtotal	3	3	3
Ungraded	127	136	140
Total permanent positions	191	193	196
Total positions, end of year	302	311	315
Total full-time equivalent (FTE) employment, end of year	292	301	305
Average ES salary	149,463	153,409	158,011
Average GM/GS grade	11.8	11.8	11.8
Average GM/GS salary	81,269	83,414	85,916

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

NATIONAL INSTITUTES OF HEALTH
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New Positions Requested

	FY 2008		
	Grade	Number	Annual Salary
Staff Scientist	Title 42	4	$105,000
Total Requested		4	