

DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

National Eye Institute (NEI)

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NATIONAL INSTITUTES OF HEALTH

National Eye Institute

Organization Chart

**Office of the Director**

Dr. Paul A. Sieving  
Director

Dr. Deborah A. Carper  
Acting Deputy Director

David L. Whitmer  
Associate Director for Management

**Division of Intramural  
Research**

Dr. Sheldon S. Miller  
Scientific Director

**Division of Epidemiology and  
Clinical Applications**

Dr. Frederick L. Ferris III  
Director

**Division of Extramural Research**

Dr. Loré Anne McNicol  
Director

NEI-2

## **NATIONAL INSTITUTES OF HEALTH**

### National Eye Institute

For carrying out section 301 and title IV of the Public Health Services Act with respect to eye diseases and visual disorders [\$688,480,000] \$695,789,000 (Department of Health and Human Services Appropriation Act, 2009)

**National Institutes of Health  
National Eye Institute**

**Amounts Available for Obligation 1/**

Source of Funding	FY 2008 Actual	FY 2009 Estimate	FY 2010 PB
Appropriation	\$678,978,000	\$688,480,000	\$695,789,000
Rescission	-11,862,000	0	0
Supplemental	3,548,000	0	0
Subtotal, adjusted appropriation	670,664,000	688,480,000	695,789,000
Real transfer under Director's one-percent transfer authority (GEI)	-1,130,000	0	0
Comparative transfer under Director's one-percent transfer authority (GEI)	1,130,000	0	0
Subtotal, adjusted budget authority	670,664,000	688,480,000	695,789,000
Unobligated balance, start of year	0	0	0
Unobligated balance, end of year	0	0	0
Subtotal, adjusted budget authority	670,664,000	688,480,000	695,789,000
Unobligated balance lapsing	0	0	0
Total obligations	670,664,000	688,480,000	695,789,000

1/ Excludes the following amounts for reimbursable activities carried out by this account:  
 FY 2008 Actual - \$15,201,000 FY 2009 Estimate - \$17,500,000 FY 2010 Estimate - \$17,500,000  
 Excludes \$2,615,200 Actual in FY 2008 for royalties.

**NATIONAL INSTITUTES OF HEALTH**

**National Eye Institute**

(Dollars in Thousands)

Budget Mechanism - Total

MECHANISM	FY 2008 Actual		FY 2009 Estimate		FY 2010 PB		Change	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount
<b>Research Grants:</b>								
<u>Research Projects:</u>								
Noncompeting	780	\$290,272	780	\$310,015	830	\$330,159	50	\$20,144
Administrative supplements	(67)	10,881	(48)	6,000	(20)	2,500	((28))	(3,500)
Competing	279	102,578	258	97,601	225	86,639	(33)	(10,962)
Subtotal, RPGs	1,059	403,731	1,038	413,616	1,055	419,298	17	5,682
<b>SBIR/STTR</b>	51	16,229	51	16,256	52	16,420	1	164
Subtotal, RPGs	1,110	419,960	1,089	429,872	1,107	435,718	18	5,846
<u>Research Centers:</u>								
Specialized/comprehensive	40	27,066	40	27,472	40	27,472	0	0
Clinical research	0	0	0	0	0	0	0	0
Biotechnology	0	0	0	0	0	0	0	0
Comparative medicine	0	150	0	152	0	152	0	0
Research Centers in Minority Institutions	0	0	0	0	0	0	0	0
Subtotal, Centers	40	27,216	40	27,624	40	27,624	0	0
<u>Other Research:</u>								
Research careers	72	16,808	72	17,060	72	17,060	0	0
Cancer education	0	0	0	0	0	0	0	0
Cooperative clinical research	48	50,587	48	51,346	48	51,346	0	0
Biomedical research support	0	0	0	0	0	0	0	0
Minority biomedical research support	0	0	0	0	0	0	0	0
Other	20	11,342	20	11,512	20	11,512	0	0
Subtotal, Other Research	140	78,737	140	79,918	140	79,918	0	0
<b>Total Research Grants</b>	1,290	525,913	1,269	537,414	1,287	543,260	18	5,846
<u>Research Training:</u>	<u>FTEs</u>		<u>FTEs</u>		<u>FTEs</u>			
Individual awards	60	2,809	90	4,214	90	4,214	0	0
Institutional awards	209	8,599	209	8,685	209	8,685	0	0
<b>Total, Training</b>	269	11,408	299	12,899	299	12,899	0	0
<b>Research &amp; development contracts (SBIR/STTR)</b>	52	41,826	48	44,545	47	44,545	(1)	0
	0	39	(0)	(39)	(0)	(39)	(0)	(0)
	<u>FTEs</u>		<u>FTEs</u>		<u>FTEs</u>		<u>FTEs</u>	
Intramural research	159	68,594	164	70,172	166	71,225	2	1,053
Research management and support	71	22,923	75	23,450	78	23,860	3	410
<b>Total, NEI</b>	230	670,664	239	688,480	244	695,789	5	7,309

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

NATIONAL INSTITUTES OF HEALTH  
National Eye Institute  
BA by Program  
(Dollars in thousands)

	FY 2006 Actual		FY 2007 Actual		FY 2008 Actual		FY 2008 Comparable		FY 2009 Estimate		FY 2010 PB		Change	
	FTEs	Amount	FTEs	Amount	FTEs	Amount	FTEs	Amount	FTEs	Amount	FTEs	Amount	FTEs	Amount
<b>Extramural Research</b>														
<u>Detail:</u>														
Retinal Disease Research		\$266,534		\$263,438		\$263,374		\$264,572		\$271,048		\$273,712		2,664
Corneal Diseases, Cataract, and Glaucoma Research		166,543		168,110		168,530		168,859		173,440		175,144		1,704
Sensorimotor Disorders and Rehabilitation Research		144,031		144,556		146,113		145,716		150,370		151,848		1,478
<b>Subtotal, Extramural</b>		577,108		576,104		578,017		579,147		594,858		600,704		5,846
<b>Intramural research</b>	143	67,029	145	67,298	159	68,594	159	68,594	164	70,172	166	71,225	2	1,053
<b>Res. management &amp; support</b>	64	22,161	69	22,584	71	22,923	71	22,923	75	23,450	78	23,860	3	410
<b>TOTAL</b>	207	666,298	214	665,986	230	669,534	230	670,664	239	688,480	244	695,789	5	7,309

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

## Major Changes in the Fiscal Year 2010 Budget Request

Major changes by budget mechanism and/or budget activity detail are briefly described below. Note that there may be overlap between budget mechanism and activity detail and these highlights will not sum to the total change for the FY 2010 budget request for NEI, which is \$7.309 million more than the FY 2009 estimate, for a total of \$695.789 million.

Research Project Grants (+\$5.846 million; total \$435.718 million): The NIH budget policy for Research Project Grants (RPGs) in FY 2010 is to provide 2 percent inflationary increases in noncompeting awards and in the average cost for competing RPGs. NEI will continue to support new investigators while maintaining an adequate number of competing RPGs. NEI will support 1,107 RPGs in FY 2010, an increase of 18 grants and \$5.846 million. Noncompeting RPGs will increase by 50 awards and increase by \$20.144 million; competing RPGs will decrease by 33 awards and decrease by \$10.962 million.

Intramural Research (+\$1.053 million; total \$71.225 million): Consistent with NIH policy, NEI's Intramural Research funding will increase 1.5 percent. NEI will use this funding to support a new program in computational medicine and biology.

**NATIONAL INSTITUTES OF HEALTH  
National Eye Institute  
Summary of Changes**

FY 2009 estimate		\$688,480,000		
FY 2010 estimated budget authority		695,789,000		
Net change		7,309,000		
CHANGES	2009 Current Estimate Base		Change from Base	
	FTEs	Budget Authority	FTEs	Budget Authority
A. Built-in:				
1. Intramural research:				
a. Annualization of January 2009 pay increase		\$26,365,000		\$315,000
b. January FY 2010 pay increase		26,365,000		395,000
c. Zero less days of pay		26,365,000		0
d. Payment for centrally furnished services		10,933,000		219,000
e. Increased cost of laboratory supplies, materials, and other expenses		32,874,000		542,000
Subtotal				1,471,000
2. Research management and support:				
a. Annualization of January 2009 pay increase		\$10,265,000		\$123,000
b. January FY 2010 pay increase		10,265,000		154,000
c. Zero less days of pay		10,265,000		0
d. Payment for centrally furnished services		4,425,000		89,000
e. Increased cost of laboratory supplies, materials, and other expenses		8,760,000		265,000
Subtotal				631,000
Subtotal, Built-in				2,102,000



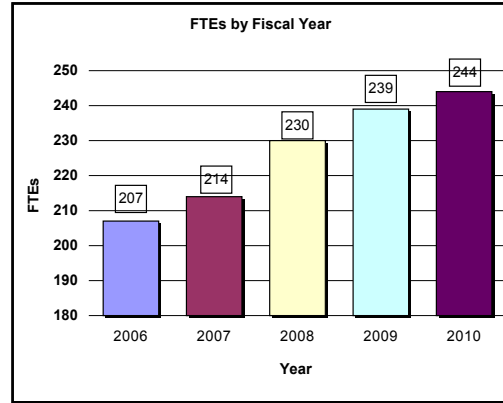
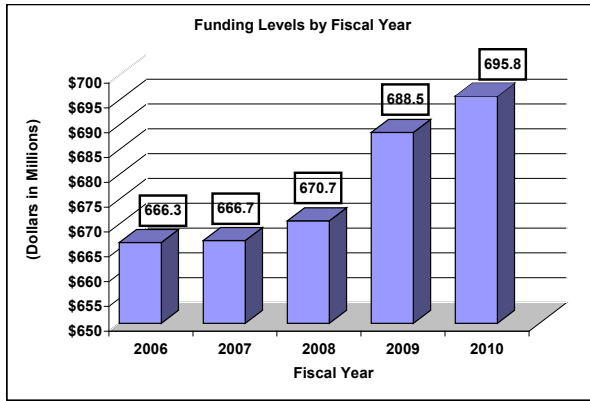
**NATIONAL INSTITUTES OF HEALTH  
National Eye Institute**

**Summary of Changes--continued**

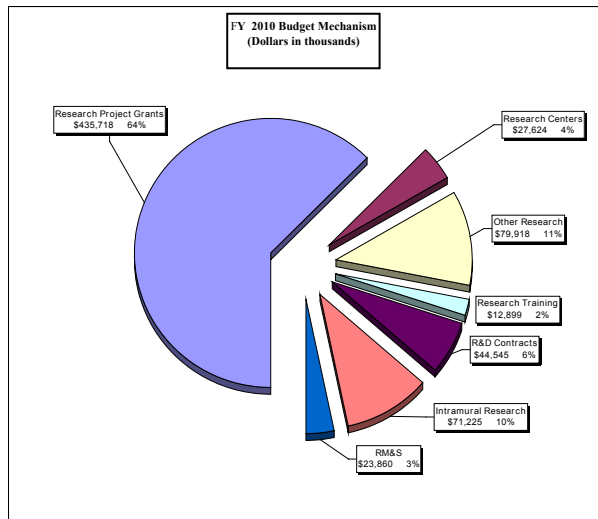
CHANGES	2009 Current Estimate Base		Change from Base	
	No.	Amount	No.	Amount
B. Program:				
1. Research project grants:				
a. Noncompeting	780	\$316,015,000	50	\$16,644,000
b. Competing	258	97,601,000	(33)	(10,962,000)
c. SBIR/STTR	51	16,256,000	1	164,000
Total	1,089	429,872,000	18	5,846,000
2. Research centers	40	27,624,000	0	0
3. Other research	140	79,918,000	0	0
4. Research training	299	12,899,000	0	0
5. Research and development contracts	48	44,545,000	(1)	0
Subtotal, extramural				5,846,000
	<u>FTEs</u>		<u>FTEs</u>	
6. Intramural research	164	70,172,000	2	(418,000)
7. Research management and support	75	23,450,000	3	(221,000)
Subtotal, program		688,480,000		5,207,000
Total changes	239		5	7,309,000

## Fiscal Year 2010 Budget Graphs

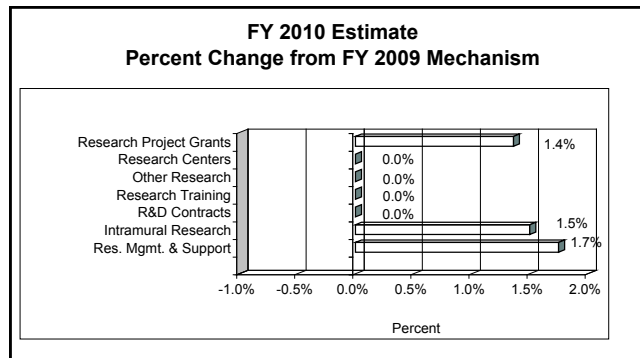
### History of Budget Authority and FTEs:



### Distribution by Mechanism:



### Change by Selected Mechanisms:



## Justification of Budget Request

### National Eye Institute

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

	FY 2008 <u>Appropriation</u>	FY 2009 <u>Omnibus</u>	FY 2009 Recovery <u>Act</u>	FY 2010 President's <u>Budget</u>	FY 2010 +/- 2009 <u>Omnibus</u>
BA	\$670,664,000	\$688,480,000	\$174,097,000	\$695,789,000	\$7,309,000
FTE	230	239	0	244	5

This document provides justification for the Fiscal Year (FY) 2010 activities of the National Eye Institute (NEI), including HIV/AIDS activities. Details of the FY 2010 HIV/AIDS activities are in the "Office of AIDS Research (OAR)" Section of the Overview. Details on the Common Fund are located in the Overview, Volume One. Program funds are allocated as follows: Competitive Grants/Cooperative Agreements; Contracts; Direct Federal/Intramural and Other.

In FY 2009, a total of \$174,097,000 American Recovery and Reinvestment Act (ARRA) funds were transferred from the Office of the Director. These funds will be used to support scientific research opportunities that help support the goals of the ARRA. The ARRA allows NIH to execute these funds via any NIH funding mechanism. Funds are available until September 30, 2010. These funds are not included in the FY 2009 Omnibus amounts reflected in this document.

### Director's Overview

The National Eye Institute's (NEI) mission is to conduct and support research, training, health information dissemination, and other programs with respect to blinding eye diseases, visual disorders, mechanisms of visual function, preservation of sight, and the special health problems and requirements of individuals who are visually impaired. These investigations are conducted in hundreds of laboratories and clinics throughout the U.S. and in NEI's intramural research facilities in Bethesda, Maryland.

NEI continues to reinvigorate its intramural research program (IRP) to better leverage new scientific opportunities. The recently established Neurobiology, Neurodegeneration, and Repair Laboratory (N-NRL) integrates basic, pre-clinical, and translational research to develop and test therapeutic interventions in neurodegenerative eye diseases such as macular degeneration, glaucoma and retinitis pigmentosa. N-NRL will explore and assess interventions, including gene therapy, small molecules, neurotrophic factors, and cell-based systems, in combination with a variety of treatment delivery technologies.

The immense volume of available genetic data in health and disease requires sophisticated mathematical and statistical methods to help unravel the nature of complex diseases. The IRP will initiate a new program in computational medicine and biology in FY 2010. This program will provide the IRP with increased ability to meld biological information to the medical context of future clinical care based on rapidly evolving knowledge of the genetic basis of disease, including gene expression, protein structure, protein-protein interaction and biological networks. Additionally, the IRP will increase its electrophysiology capabilities by creating a core group dedicated to the clinical and research application of electroretinography, a powerful tool that measures the electrical activity and function of the retina.

NEI established eyeGENE, a partnership of academic research laboratories from more than 20 universities across the nation that work collaboratively to study the genetic basis of disease. eyeGENE is designed around the critical research purpose of creating a centralized repository of genetic material and diagnostic information as a national public resource to enable research activity beyond existing limitations. This is done in the context of providing genotype information to participating individuals and their doctors that will help to predict an individual's risk of developing eye disease. The eyeGENE network will add several additional genotyping tests and testing sites in FY 2010.

NEI has vigorously supported the development of gene transfer techniques for treating blinding genetic eye diseases. These efforts culminated in phase 1 clinical trials to assess the safety of gene transfer in the treatment of Leber congenital amaurosis (LCA), a severe retinal disease. Initial results from these studies were recently published. Investigators found no serious adverse events or systemic toxicities associated with this highly novel investigational therapy. Because phase I trials are designed to evaluate safety, they do not feature the standard statistical and methodological safeguards required to properly evaluate treatment effectiveness. Nonetheless, several of the reported observations suggest that gene transfer may be exerting modest biological effects in some of the treated individuals. Additional follow-up testing of the treated individuals should determine whether these effects are sustained. NEI plans to evaluate the effectiveness of this therapy in a larger phase II clinical trial in 2010. With the safety of this investigational therapy established, the NEI plans to expand its gene transfer portfolio for a number of diseases, including juvenile retinoschisis, an early onset disease that causes another blinding retinal disorder.

Age-Related Macular Degeneration (AMD), the leading cause of blindness in the elderly in the United States, will impose an increasing burden in future years based on demographics. The original AREDS clinical trial, demonstrated that antioxidant vitamin and mineral supplements reduced the progression to advanced AMD by 25 percent on average. Building on these landmark findings, AREDS2 is assessing additional supplements (lutein, zeaxanthin, and long-chain omega-3 fatty acids) as a treatment for AMD and cataracts. AREDS2 is also evaluating effects of eliminating beta-carotene and/or reducing zinc in the original AREDS formulation on AMD progression.

Recruitment for this large, multicenter clinical trial has been completed. FY 2010 will see continued funding support for AREDS2.

NEI extramural research program implemented an initiative to investigate the role of inflammation in degenerative eye diseases such as AMD, uveitis, and other chronic disorders of the eye. Findings indicated that some forms of the toll-like receptor 3 protein may convey protection, thus opening possibilities for developing a pharmacologic therapy for this devastating eye disease. This finding will spur further expansion of the existing initiative in FY 2010 to look for specific viruses that activate the toll-like receptor 3 gene and other immune receptors that might exert a similar pathology. NEI also seeks to expand our knowledge of how the inflammatory process is controlled using the eye as a model system. This knowledge will be pivotal to the development of new diagnostic and intervention strategies to halt and reverse the progression of degenerative eye diseases.

Early detection of diabetic eye disease is critical to prompt, sight-saving treatment. Currently there is a need for low-cost screening devices to improve monitoring and detection efforts in insulin-dependent patients. In FY 2009 NEI issued a Request for Application (RFA) to develop screening devices through its Small Business Innovation Research program. Grants from this RFA will be funded and supported in FY 2010.

NEI funds basic research on cell biology, development and the regulation of blood vessel growth where findings could have relevance to our understanding and treatment of cancer. NEI also supports a phase III clinical trial on the treatment of retinoblastoma, a cancerous, blinding and potentially fatal eye disease. Consistent with the FY 2010 NIH priority to expand cancer research funding, NEI will increase its FY 2010 commitment to this portion of the portfolio by 4.4 percent.

## **Overall Budget Policy**

NEI will continue to support new investigators and to maintain an adequate number of competing RPGs. NEI will provide a 2 percent inflationary increase for non-competing and competing grants. The first priority will continue to be funding the highest quality investigator-initiated research applications, determined by the scientific and technical merit of the application as evaluated through the peer review system. Intramural Research and Research Management and Support will receive modest increases to help offset the cost of pay and other increases.

## **Program Descriptions and Accomplishments**

### **Retinal Diseases Research:**

The light-sensitive retina of the eye is susceptible to many sight-threatening conditions including age-related macular degeneration, diabetic retinopathy, retinopathy of

prematurity, retinitis pigmentosa, Usher's syndrome, ocular albinism, retinal detachment, uveitis (inflammation), and eye cancer. The goals of this program area are to understand the disease mechanisms that cause vision loss and to develop improved methods of prevention, diagnosis, and treatment. To meet these goals, NEI supports research on the cell biology, physiology, and immunology of the retina and on the role of gene expression, gene regulation, and the environment in retinal health and disease.

Recent accomplishments include the publication of promising results from a phase I clinical trial to assess the safety of gene transfer in treating Leber congenital amaurosis, a severe retinal disease. There were no serious adverse events or systemic toxicities associated with this highly novel investigational therapy.

**Budget Policy:**

The FY 2010 budget estimate for these activities is \$273.712 million, an increase of \$2.664 million or 1.0 percent over the FY 2009 estimate. FY 2010 program plans will focus on an acceleration of research on the genetic and environmental basis for AMD, including the role of possible immunological factors. This will include an expansion of genome wide association studies and related efforts in bioinformatics. NEI will support projects that address the possible restoration of vision in retinal degenerative diseases by building on recent advances in gene transfer, cell transplantation and precursor cell biology. Research will continue in efforts to control abnormal new blood vessel growth (angiogenesis) in a number of eye diseases, and will include the conduct of clinical trials in this area. Program plans also include the continuation of the Age-Related Eye Disease Study 2 (AREDS2), a multi-center study to evaluate the use of additional oral supplements for the treatment of AMD and cataract. NEI also plans to continue collaborating with the National Heart Lung and Blood Institute on the follow-up ocular component of the Multi-Ethnic Study of Atherosclerosis (MESA) study.

**Portrait of a Program: Gene Transfer Therapy for Childhood-Onset Blindness**

FY 2009 Level: \$1.900 million  
FY 2010 Level: \$2.000 million  
Change            \$0.100 million

In FY 2008, NEI launched a phase I clinical trial to assess the safety of gene transfer in treating people with a severe form of childhood blindness called Leber congenital amaurosis (LCA). This therapy is intended to restore lost vision by transferring a functional copy of the mutant, dysfunctional gene which causes the disease. Results from these trials were recently published. Investigators found no serious adverse events or systemic toxicities associated with this highly novel investigational therapy. The trials will continue to evaluate the safety of escalated doses and retreatment. It is anticipated that in FY 2010 the NEI will expand to a phase II clinical trial to evaluate the effectiveness of the treatment in a larger group of patients. NEI also plans to further expand its gene transfer portfolio for a number of diseases, including juvenile retinoschisis, an early onset disease that causes another blinding retinal disorder.

### **Portrait of a Program: Role of Inflammation in Age Related Macular Degeneration**

FY 2009 Level: \$2.300 million

FY 2010 Level: \$2.500 million

Change \$0.200 million

Recognition that inflammation may play an important role in the pathogenesis of age-related macular degeneration (AMD) has led to a major paradigm shift in our understanding of this disease. Investigators now hypothesize that the underlying mechanism that leads to AMD is immune driven, perhaps sharing some of the characteristics of atherosclerosis and other degenerative disorders. A recently published study reports on an association between the toll-like receptor 3 (TLR3) gene, which encodes a viral sensor that activates immune responses, and advanced AMD. This finding will spur additional investigations in FY 2010 to look for associations with other genes in the immune pathway and to test for the presence of viruses in patients with AMD that spur activation of the TLR3 gene.

### **Corneal Diseases, Cataract, and Glaucoma Research:**

Corneal diseases, cataract, and glaucoma are among the most prevalent disorders of the eye. Corneal injuries, infections, and diseases can be extremely painful, requiring immediate medical attention. NEI grantees are exploring how infectious, inflammatory, and immunological processes affect the cornea, and how the cornea heals following a wound. The cornea, tear film, eyelids, and conjunctiva form a highly-integrated biological system.

By 2020 researchers estimate that about 40 million Americans will be affected by cataracts<sup>1</sup>. The economic burden of cataract will only worsen as the American population ages. NEI cataract research seeks to understand the physiological basis of lens transparency at the cellular and molecular levels and seeks strategies to prevent cataract formation and progression.

Approximately 2.2 million Americans have glaucoma and the prevalence of the disease will rise to a projected 3 million by 2020<sup>2</sup>. Glaucoma is the leading cause of blindness in African Americans. Glaucoma research aims to understand the complex genetic and biological factors that cause the disease and to develop treatments that protect optic nerves from the damage that leads to vision loss.

The recently published *Cornea Donor Study* (CDS) found that corneal transplants using tissue from older donors have similar rates of survival to those using tissue from younger donors. The CDS study gives eye banks, transplant surgeons and patients confidence in the use of older donor tissue. This finding should also help eye banks keep pace with the increasing demand for corneal tissue.

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<sup>1</sup> Prevalence of cataract and pseudophakia/aphakia among adults in the United States. Arch Ophthalmol 122: 487-494, 2004.

<sup>2</sup> Prevalence of open-angle glaucoma among adults in the United States. Arch Ophthalmol 122: 532-538, 2004.

### Budget Policy:

The FY 2010 budget estimate for these activities is \$175.144 million, an increase of \$1.704 million or 1.0 percent over the FY 2009 estimate. FY 2010 program plans include following up on a recent finding that certain receptors that bind to vascular endothelial growth factor may play an important role in maintaining the normal transparency of the cornea. NEI expects to fund new projects to identify therapeutic approaches to limit and/or reduce corneal pain. Projects will be funded to examine the possible contribution of defects in the gap junctions in the development of cataracts. Genome wide association studies and related bioinformatics efforts will be launched to explore further the role of genetics and the environment on the development of glaucoma and to understand better the differential response of individuals to glaucoma medications. NEI will expand its collaboration in the Age Gene/Environment Susceptibility Study with the National Institute on Aging and several other institutes. NEI will also fund the follow-up ocular component of this study, which is investigating the contribution of candidate genes and the environment in diseases that are common in old age.

### **Sensorimotor Disorders and Rehabilitation Research:**

Strabismus (misalignment of the eyes) and amblyopia (commonly known as "lazy eye") occur during development and affect 2-4 percent of the U.S. population<sup>3 4</sup>. Program goals center on gaining a better understanding of the development of the visual system in children at high risk for these conditions, and of the neuromuscular control of gaze.

Refractive errors, such as nearsightedness (myopia), farsightedness (hyperopia) and astigmatism are the most common, correctable visual disorders. A major goal of this program is to prevent refractive error by discovering the biochemical pathways that govern eye growth and uncovering the risk factors associated with refractive errors.

Much of the cerebral cortex is devoted to processing the visual information that floods our eyes. Vision scientists seek to understand how the brain processes visual information, how neural activity is related to visual perception, and how the visual system interacts with cognitive and motor systems.

Three million Americans now have low vision, a term used to describe chronic visual conditions that are not correctable by eye glasses or contact lenses<sup>5</sup>. The NEI supports rehabilitation research on improving the quality of life of persons with visual impairments by helping them maximize the use of remaining vision and by devising improved aids and strategies to assist those without useful vision.

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<sup>3</sup> The evolving concept of amblyopia: a challenge to epidemiologists. Am J Epidemiol 118(2): 192-205, 1983.

<sup>4</sup> Baltimore Vision Screening Project. Ophthalmology 103(1): 105-109, 1996.

<sup>5</sup> Blindness and Visual Impairment in an American Urban Population. Arch Ophthalmol 108: 286-290, 1990.



Recent accomplishments include the discovery that astrocytes, a class of glial cells, previously thought to act solely as a support network for nerve cells and circuits, also respond to visual stimuli in a manner similar to neuronal cells. Investigators also developed a novel method to trace all the pre-synaptic connections of a single nerve cell in living tissue within the nervous system, revealing how a single nerve cell interacts in a larger circuit.

Budget Policy:

The FY 2010 budget estimate for these activities is \$151.848 million, an increase of \$1.478 million or 1.0 percent over the FY 2009 estimate. FY2010 program plans include pursuing the research finding of several genes involved in Leber's Hereditary Optic Neuropathy, a genetic disease that frequently results in a substantial loss of central vision. Research will also pursue new findings about how the activity of certain brain cells allows us to perceive a stable view of our surroundings despite constant head and eye movements, as highlighted in NEI's strategic plan.

**Intramural Research:**

The program conducts vision research in its laboratories and clinic located on the NIH campus in Bethesda and other facilities in Rockville, Maryland. Program activities include: clinical studies concerned with the cause, prevention, and treatment of major eye diseases and vision disorders; basic research on cellular and molecular mechanisms of eye development, including the expression and function of genes within the eye; research in immunology and infectious diseases of the eye; and, developing a better understanding of our critical ability to guide movements under sensory control.

Recent accomplishments include the discovery of gene alterations leading to retinal disease; a greater understanding of photoreceptor cell differentiation; and the discovery of a neuroprotective agent as a potential new therapeutic in retinal degenerative diseases.

Budget Policy:

The FY 2010 budget estimate for this program is \$71.225 million, an increase of \$1.053 million or 1.5 percent over the FY 2009 estimate. In FY 2010, NEI plans continued recruitment for the recently established Laboratory of Neurobiology, Neurodegeneration and Repair to integrate basic, pre-clinical, and translation research in developing and testing therapeutic interventions in neurodegenerative eye diseases. NEI will also enhance the Ophthalmic Genetics and Visual Function Branch and expand the eyeGENE network to facilitate research on the genetic causes of ocular diseases.

**Research Management and Support:**

Research Management and Support (RMS) sustains, guides, and monitors the extramural and intramural research programs. Included in these funds are the support

necessary for personnel to carry out leadership and management functions, human resource support, training, travel, purchasing, facilities, budget, planning, information technology, and extramural grant award and management. NEI currently oversees more than 1,300 grants and contracts, including research project grants, core center grants, research career development awards, cooperative clinical research agreements, and research and development contracts.

The management plans for FY 2010 include the continued prudent use of RMS funds while implementing strategic change through continuous improvement, business process reengineering, and other change strategies to meet NEI goals. For example, as part of its strategic planning process, NEI scientific programs undergo regular portfolio review at its National Advisory Eye Council meetings. NEI is participating in a variety of trans-NIH objectives such as using Knowledge Management to implement a transparent coding and disease reporting system and embracing the electronic submission of grant applications to replace previous paper applications. NEI will develop a Risk Management Program that will align with that of the NIH to standardize the risk management process and implement this risk management methodology, approach, tools, and procedures.

Budget Policy:

The FY 2010 budget estimate for these activities is \$23.860 million, an increase of \$410 thousand or 1.8 percent over the FY 2009 estimate. This increase reflects NIH policy and will be used to help offset the cost of pay and other increases.

**Common Fund:**

The NEI is the lead institute for the Nanomedicine Initiative supported through the NIH Common Fund.

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**Budget Authority by Object**

	FY 2009 Estimate	FY 2010 PB	Increase or Decrease
<b>Total compensable workyears:</b>			
Full-time employment	239	244	5
Full-time equivalent of overtime and holiday hours	0	0	0
Average ES salary	\$158,000	\$161,200	\$3,200
Average GM/GS grade	12.2	12.2	0.0
Average GM/GS salary	\$98,900	\$100,900	\$2,000
Average salary, grade established by act of July 1, 1944 (42 U.S.C. 207)	\$78,500	\$80,100	\$1,600
Average salary of ungraded positions	\$130,000	\$132,600	\$2,600
<b>OBJECT CLASSES</b>	FY 2009 Estimate	FY 2010 PB	Increase or Decrease
<b>Personnel Compensation:</b>			
11.1 Full-time permanent	\$15,216,000	\$16,008,000	\$792,000
11.3 Other than full-time permanent	9,644,000	10,062,000	418,000
11.5 Other personnel compensation	959,000	1,004,000	45,000
11.7 Military personnel	341,000	354,000	13,000
11.8 Special personnel services payments	3,304,000	3,434,000	130,000
<b>Total, Personnel Compensation</b>	<b>29,464,000</b>	<b>30,862,000</b>	<b>1,398,000</b>
12.0 Personnel benefits	6,922,000	7,253,000	331,000
12.2 Military personnel benefits	244,000	254,000	10,000
13.0 Benefits for former personnel	0	0	0
<b>Subtotal, Pay Costs</b>	<b>36,630,000</b>	<b>38,369,000</b>	<b>1,739,000</b>
21.0 Travel and transportation of persons	931,000	910,000	(21,000)
22.0 Transportation of things	76,000	74,000	(2,000)
23.1 Rental payments to GSA	1,000	1,000	0
23.2 Rental payments to others	9,000	9,000	0
23.3 Communications, utilities and miscellaneous charges	701,000	667,000	(34,000)
24.0 Printing and reproduction	156,000	150,000	(6,000)
25.1 Consulting services	320,000	315,000	(5,000)
25.2 Other services	7,376,000	7,222,000	(154,000)
25.3 Purchase of goods and services from government accounts	56,497,000	56,665,000	168,000
25.4 Operation and maintenance of facilities	1,153,000	1,115,000	(38,000)
25.5 Research and development contracts	23,376,000	23,355,000	(21,000)
25.6 Medical care	239,000	237,000	(2,000)
25.7 Operation and maintenance of equipment	2,956,000	2,900,000	(56,000)
25.8 Subsistence and support of persons	0	0	0
<b>25.0 Subtotal, Other Contractual Services</b>	<b>91,917,000</b>	<b>91,809,000</b>	<b>(108,000)</b>
26.0 Supplies and materials	4,444,000	4,391,000	(53,000)
31.0 Equipment	3,299,000	3,247,000	(52,000)
32.0 Land and structures	0	0	0
33.0 Investments and loans	0	0	0
41.0 Grants, subsidies and contributions	550,313,000	556,159,000	5,846,000
42.0 Insurance claims and indemnities	0	0	0
43.0 Interest and dividends	3,000	3,000	0
44.0 Refunds	0	0	0
<b>Subtotal, Non-Pay Costs</b>	<b>651,850,000</b>	<b>657,420,000</b>	<b>5,570,000</b>
<b>Total Budget Authority by Object</b>	<b>688,480,000</b>	<b>695,789,000</b>	<b>7,309,000</b>

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

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**Salaries and Expenses**

OBJECT CLASSES	FY 2009 Estimate	FY 2010 PB	Increase or Decrease
<b>Personnel Compensation:</b>			
Full-time permanent (11.1)	\$15,216,000	\$16,008,000	\$792,000
Other than full-time permanent (11.3)	9,644,000	10,062,000	418,000
Other personnel compensation (11.5)	959,000	1,004,000	45,000
Military personnel (11.7)	341,000	354,000	13,000
Special personnel services payments (11.8)	3,304,000	3,434,000	130,000
<b>Total Personnel Compensation (11.9)</b>	<b>29,464,000</b>	<b>30,862,000</b>	<b>1,398,000</b>
Civilian personnel benefits (12.1)	6,922,000	7,253,000	331,000
Military personnel benefits (12.2)	244,000	254,000	10,000
Benefits to former personnel (13.0)	0	0	0
<b>Subtotal, Pay Costs</b>	<b>36,630,000</b>	<b>38,369,000</b>	<b>1,739,000</b>
Travel (21.0)	931,000	910,000	(21,000)
Transportation of things (22.0)	76,000	74,000	(2,000)
Rental payments to others (23.2)	9,000	9,000	0
Communications, utilities and miscellaneous charges (23.3)	701,000	667,000	(34,000)
Printing and reproduction (24.0)	156,000	150,000	(6,000)
<b>Other Contractual Services:</b>			
Advisory and assistance services (25.1)	320,000	315,000	(5,000)
Other services (25.2)	7,376,000	7,222,000	(154,000)
Purchases from government accounts (25.3)	37,157,000	37,325,000	168,000
Operation and maintenance of facilities (25.4)	1,153,000	1,115,000	(38,000)
Operation and maintenance of equipment (25.7)	2,956,000	2,900,000	(56,000)
Subsistence and support of persons (25.8)	0	0	0
<b>Subtotal Other Contractual Services</b>	<b>48,962,000</b>	<b>48,877,000</b>	<b>(85,000)</b>
Supplies and materials (26.0)	4,429,000	4,376,000	(53,000)
<b>Subtotal, Non-Pay Costs</b>	<b>55,264,000</b>	<b>55,063,000</b>	<b>(201,000)</b>
<b>Total, Administrative Costs</b>	<b>91,894,000</b>	<b>93,432,000</b>	<b>1,538,000</b>

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**Authorizing Legislation**

	PHS Act/ Other Citation	U.S. Code Citation	2009 Amount Authorized	FY 2009 Estimate	2010 Amount Authorized	FY 2010 PB
Research and Investigation	Section 301	42§241	Indefinite	\$688,480,000	Indefinite	\$695,789,000
	Section 402(a)	42§281	Indefinite		Indefinite	
National Eye Institute						
<b>Total, Budget Authority</b>				<b>688,480,000</b>		<b>695,789,000</b>

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**Appropriations History**

Fiscal Year	Budget Estimate to Congress	House Allowance	Senate Allowance	Appropriation <u>1/</u>
2001	462,776,000 <u>2/</u>	514,673,000	516,605,000	510,611,000
Rescission				(153,000)
2002	571,126,000 <u>2/</u>	566,725,000	614,000,000	581,366,000
Rescission				(653,000)
2003	625,666,000	625,666,000	637,290,000	637,290,000
Rescission				(4,142,000)
2004	652,738,000	648,299,000	657,199,000	657,199,000
Rescission				(4,147,000)
2005	671,578,000	671,578,000	680,300,000	674,578,000
Rescission				(5,508,000)
2006	673,491,000	673,491,000	693,559,000	673,491,000
Rescission				(6,735,000)
2007	661,358,000	661,358,000	666,898,000	667,166,000
2008	667,820,000	677,039,000	681,962,000	678,978,000
Rescission				(11,862,000)
Supplemental				3,548,000
2009	667,764,000	690,721,000	687,346,000	688,480,000
2010	695,789,000			

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 2008 Actual	FY 2009 Estimate	FY 2010 PB
Office of the Director	76	79	80
Division of Intramural Research	118	122	124
Division of Epidemiology and Clinical Applications	10	10	10
Division of Extramural Research	26	28	30
Total	230	239	244
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		
2006	12.5		
2007	12.2		
2008	12.0		
2009	12.2		
2010	12.2		

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**Detail of Positions**

GRADE	FY 2008 Actual	FY 2009 Estimate	FY 2010 PB
Total, ES Positions	2	1	1
Total, ES Salary	322,641	158,000	161,200
GM/GS-15	32	34	34
GM/GS-14	15	17	18
GM/GS-13	28	29	31
GS-12	30	31	33
GS-11	30	31	31
GS-10	0	0	0
GS-9	13	13	13
GS-8	7	7	7
GS-7	4	4	4
GS-6	1	1	1
GS-5	0	0	0
GS-4	2	2	2
GS-3	0	0	0
GS-2	1	0	0
GS-1	0	0	0
Subtotal	163	169	174
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	1	1	1
Full Grade	2	2	2
Senior Assistant Grade	0	0	0
Assistant Grade	0	0	0
Subtotal	3	3	3
Ungraded	87	89	89
Total permanent positions	165	172	173
Total positions, end of year	255	264	269
Total full-time equivalent (FTE) employment, end of year	230	239	244
Average ES salary	161,321	158,000	161,200
Average GM/GS grade	12.0	12.2	12.2
Average GM/GS salary	94,428	98,900	100,900

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