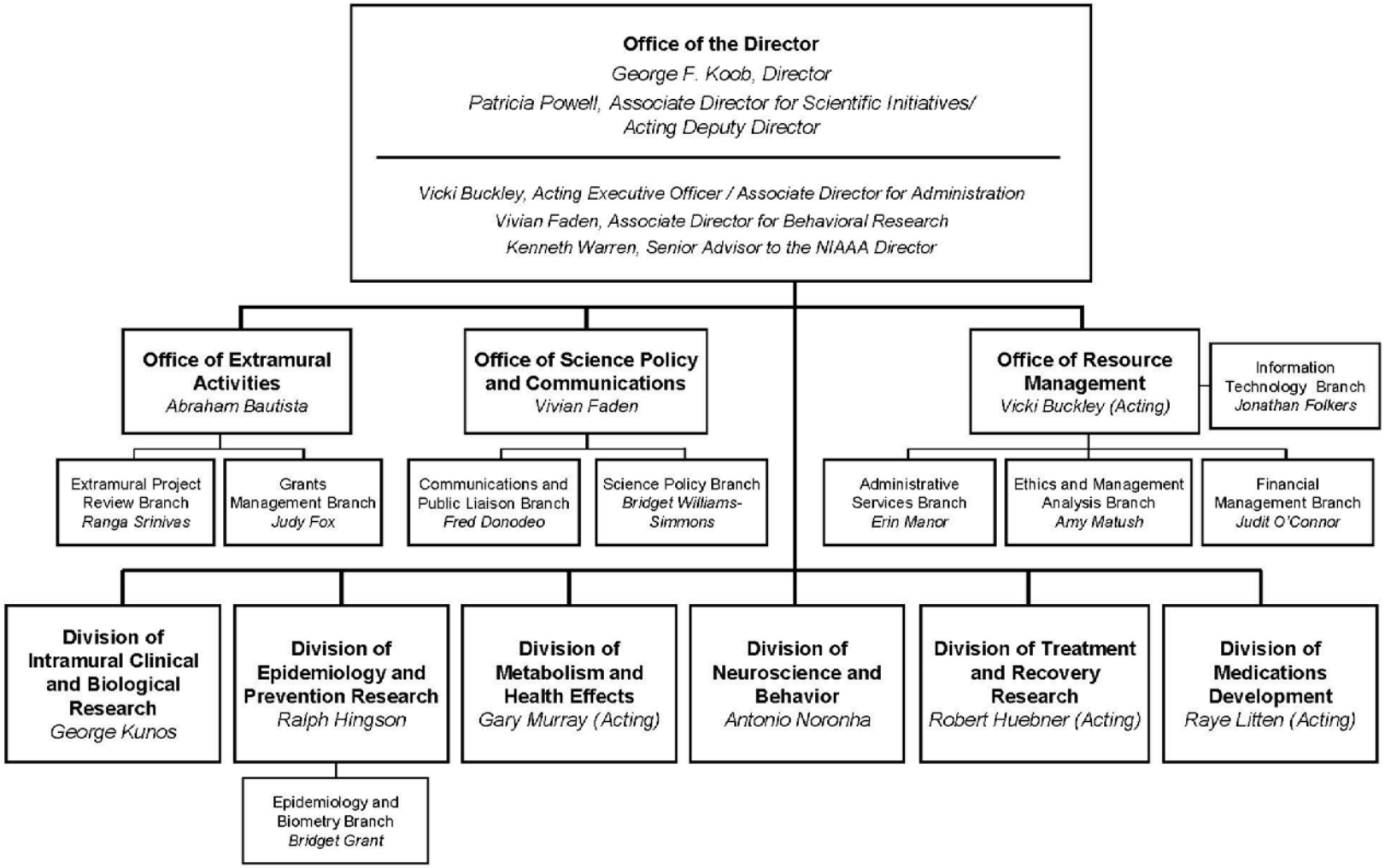
DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

National Institute on Alcohol Abuse and Alcoholism (NIAAA)

FY 2017 Budget — Page No.

National Institutes of Health
National Institute on Alcohol Abuse and Alcoholism



NATIONAL INSTITUTES OF HEALTH

National Institute on Alcohol Abuse and Alcoholism

For carrying out section 301 and title IV of the PHS Act with respect to alcohol abuse and alcoholism, [$467,700,000] *$459,578,000.*

NATIONAL INSTITUTES OF HEALTH
National Institute on Alcohol Abuse and Alcoholism

Amounts Available for Obligation[1]
(Dollars in Thousands)

Source of Funding	FY 2015 Actual	FY 2016 Enacted	FY 2017 President's Budget
Appropriation	$447,408	$467,700	$467,445
Mandatory Appropriation: (non-add)			
Type 1 Diabetes	*(0)*	*(0)*	*(0)*
Other Mandatory financing	*(0)*	*(0)*	*(7,867)*
Rescission	0	0	0
Sequestration	0	0	0
FY 2015 First Secretary's Transfer	0	0	0
FY 2015 Second Secretary's Transfer	0	0	0
Subtotal, adjusted appropriation	$447,408	$467,700	$467,445
OAR HIV/AIDS Transfers	-255	-255	0
National Children's Study Transfers	0	0	0
Subtotal, adjusted budget authority	$447,153	$467,445	$467,445
Unobligated balance, start of year	0	0	0
Unobligated balance, end of year	0	0	0
Subtotal, adjusted budget authority	$447,153	$467,445	$467,445
Unobligated balance lapsing	-1	0	0
Total obligations	$447,152	$467,445	$467,445

[1] Excludes the following amounts for reimbursable activities carried out by this account:
FY 2015 - $3,853 FY 2016 - $5,000 FY 2017 - $5,000

NATIONAL INSTITUTES OF HEALTH
FY 2017 Congressional Justification
NIAAA

Budget Mechanism - Total[1]
(Dollars in Thousands)

MECHANISM	FY 2015 Actual		FY 2016 Enacted		FY 2017 President's Budget[3]		FY 2017 +/- FY 2016	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Research Projects:								
Noncompeting	495	$187,270	479	$187,985	451	$182,100	-28	-$5,885
Administrative Supplements	*(27)*	2,091	*(32)*	2,600	*(32)*	2,600		
Competing:								
Renewal	27	11,643	29	12,506	30	12,806	1	300
New	129	41,184	144	45,844	152	48,688	8	2,844
Supplements								
Subtotal, Competing	156	$52,828	173	$58,350	182	$61,494	9	$3,144
Subtotal, RPGs	651	$242,189	652	$248,935	633	$246,194	-19	-$2,741
SBIR/STTR	23	10,449	32	11,279	32	11,960		681
Research Project Grants	674	$252,638	684	$260,214	665	$258,154	-19	-$2,060
Research Centers:								
Specialized/Comprehensive	18	$28,019	20	$30,264	20	$30,021		-$243
Clinical Research								
Biotechnology								
Comparative Medicine								
Research Centers in Minority Institutions								
Research Centers	18	$28,019	20	$30,264	20	$30,021		-$243
Other Research:								
Research Careers	88	$14,024	92	$14,445	92	$14,500		$55
Cancer Education								
Cooperative Clinical Research	1	7,250	2	9,466	2	9,466		
Biomedical Research Support								
Minority Biomedical Research Support	1	340	1	340	1	340		
Other	46	15,628	48	16,097	48	16,097		
Other Research	136	$37,242	143	$40,348	143	$40,403		$55
Total Research Grants	828	$317,899	847	$330,826	828	$328,578	-19	-$2,248
Ruth L Kirchstein Training Awards:	FTTPs		FTTPs		FTTPs		FTTPs	
Individual Awards	104	$4,234	111	$4,580	111	$4,656		$76
Institutional Awards	170	8,456	173	8,609	173	8,751		142
Total Research Training	274	$12,689	284	$13,189	284	$13,407		$218
Research & Develop. Contracts	60	$36,615	62	$40,283	62	$40,650		$367
(SBIR/STTR) (non-add)[2]		*(1,600)*		*(1,916)*		*(1,916)*		
Intramural Research	107	$49,471	99	$49,644	99	$50,637		$993
Res. Management & Support	130	30,478	140	33,503	140	34,173		670
Res. Management & Support (SBIR Admin) (non-add)[2]		*(7)*		*(10)*		*(10)*		
Office of the Director - Appropriation[2]								
Office of the Director - Other								
ORIP/SEPA (non-add)[2]								
Common Fund (non-add)[2]								
Buildings and Facilities								
Appropriation								
Type 1 Diabetes								
Program Evaluation Financing								
Cancer Initiative Mandatory Financing								
Other Mandatory Financing						-7,867		-7,867
Subtotal, Labor/HHS Budget Authority		**$447,153**		**$467,445**		**$459,578**		**-$7,867**
Interior Appropriation for Superfund Res.								
Total, NIH Discretionary B.A.		**$447,153**		**$467,445**		**$459,578**		**-$7,867**
Type 1 Diabetes								
Proposed Law Funding								
Cancer Initiative Mandatory Financing								
Other Mandatory Financing						7,867		7,867
Total, NIH Budget Authority		**$447,153**		**$467,445**		**$467,445**		
Program Evaluation Financing								
Total, Program Level		**$447,153**		**$467,445**		**$467,445**		

[1] All Subtotal and Total numbers may not add due to rounding.
[2] All numbers in italics and brackets are non-add.
[3] Includes mandatory financing.

Major Changes in the Fiscal Year 2017 President's 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 2017 President's Budget request for NIAAA, which is the same as the FY 2016 Enacted level, for a total of $467.445 million.

Research Project Grants (-$2.060 million; total $258.154 million): NIAAA will support a total of 665 Research Project Grant (RPG) awards in FY 2017. Noncompeting RPGs will decrease by twenty-eight awards and competing awards will increase by nine awards and $3.144 million. In addition, resources are identified to support SBIR and STTR projects to sustain the higher statutory funding threshold applicable for FY 2017.

Research Centers and Other Research Grants (-$0.188 million; total $70.424 million): NIAAA will support a total of 20 Research Centers and 143 Other Research Grants in FY 2017.

Research Training (+$0.218 million; total $13.407 million): The success of biomedical research is dependent upon the robustness of NIH training programs for the next generation of scientists. NIH will provide an across-the-board increase in FY 2017 of 2.0 percent for stipends levels under the Ruth L. Kirschstein National Research Service Award training program to continue efforts to attain the stipend levels recommended by the National Academy of Sciences. The requested increase will help to sustain the development of a highly qualified biomedical research workforce.

Research and Development Contracts (+$0.367 million; total $40.650 million): Funds are included in R&D contracts to support the expansion of clinical trials to test promising therapeutic agents for alcohol use disorders.

Intramural Research and Research Management and Support (+$1.663 million; total $84.810 million): Intramural Research (IR) will receive a $.0.993 million or a two percent increase. This funding level will maintain continued support for NIAAA laboratories within the Division of Intramural Clinical and Biological Research as well as the Intramural Office of Laboratory Animal Science. Research Management and Support (RMS) funding will be increased by $0.670 million or a two percent. The increase will cover the expenses associated with providing effective administrative management. Increases in both IR and RMS mechanisms accommodates mandatory payroll cost increases attributable to anticipated annual salary raises and higher health insurance premiums.

NATIONAL INSTITUTES OF HEALTH
National Institute on Alcohol Abuse and Alcoholism

Summary of Changes
(Dollars in Thousands)

FY 2016 Enacted	$467,445
FY 2017 President's Budget	$467,445
Net change	$0

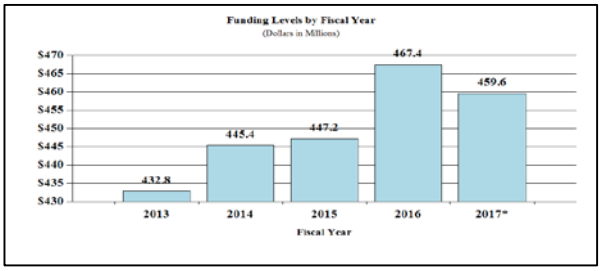
CHANGES	FY 2017 President's Budget[1] FTEs	FY 2017 President's Budget[1] Budget Authority	Change from FY 2016 FTEs	Change from FY 2016 Budget Authority
A. Built-in:				
1. Intramural Research:				
a. Annualization of January 2016 pay increase & benefits		$17,606		$44
b. January FY 2017 pay increase & benefits		17,606		131
c. Two less days of pay		17,606		0
d. Differences attributable to change in FTE		17,606		0
e. Payment for centrally furnished services		7,964		194
f. Increased cost of laboratory supplies, materials, other expenses, and non-recurring costs		25,068		624
Subtotal		-		$993 -
2. Research Management and Support:				
a. Annualization of January 2016 pay increase & benefits		$22,542		$58
b. January FY 2017 pay increase & benefits		22,542		174
c. Two less days of pay		22,542		0
d. Differences attributable to change in FTE		22,542		0
e. Payment for centrally furnished services		467		11
f. Increased cost of laboratory supplies, materials, other expenses, and non-recurring costs		11,164		426
Subtotal		-		$670 -
Subtotal, Built-in				$1,663

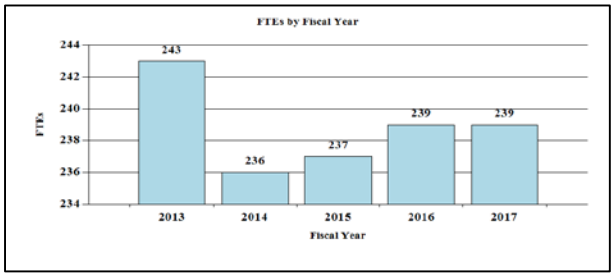
CHANGES	FY 2017 President's Budget[1] No.	FY 2017 President's Budget[1] Amount	Change from FY 2016 No.	Change from FY 2016 Amount
B. Program:				
1. Research Project Grants:				
a. Noncompeting	451	$184,700	-28	-$5,885
b. Competing	182	61,494	9	3,144
c. SBIR/STTR	32	11,960	0	681
Subtotal, RPGs	665	$258,154	-19	-$2,060
2. Research Centers	20	$30,021	0	-$243
3. Other Research	143	40,403	0	55
4. Research Training	284	13,407	0	218
5. Research and development contracts	62	40,650	0	367
Subtotal, Extramural		$382,635		-$1,663
	FTEs		FTEs	
6. Intramural Research	99	$50,637	0	$0
7. Research Management and Support	140	34,173	0	0
8. Construction		0		0
9. Buildings and Facilities		0		0
Subtotal, Program	239	$467,445	0	-$1,663
Total changes		-		$0

[1] Includes mandatory financing.

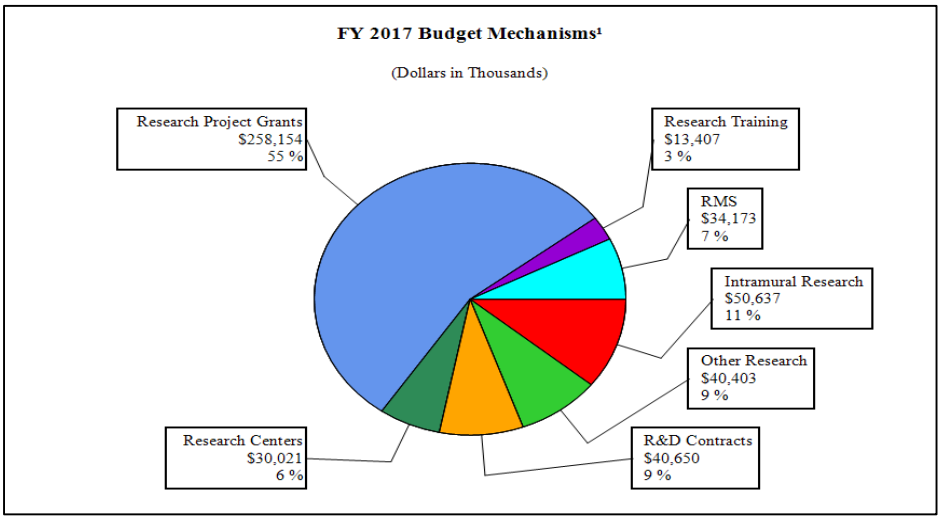
Fiscal Year 2017 Budget Graphs

History of Budget Authority and FTEs:

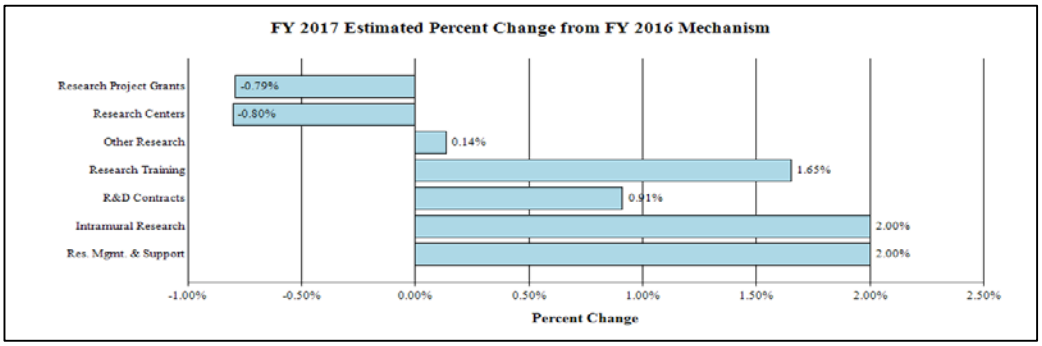




Distribution by Mechanism:



Change by Selected Mechanism:



NATIONAL INSTITUTES OF HEALTH
National Institute on Alcohol Abuse and Alcoholism

Budget Authority by Activity[1]
(Dollars in Thousands)

	FY 2015 Actual		FY 2016 Enacted		FY 2017 President's Budget[2]		FY 2017 +/- FY2016	
Extramural Research	**FTE**	**Amount**	**FTE**	**Amount**	**FTE**	**Amount**	**FTE**	**Amount**
Detail								
Embryo and Fetus		$17,495		$18,310		$18,230		-$79
Youth/Adolescence		51,311		53,699		53,467		-232
Young Adult		170,226		178,151		177,380		-771
Mid-Life/Senior Adult		128,172		134,139		133,558		-580
Subtotal, Extramural		**$367,204**		**$384,298**		**$382,635**		**-$1,663**
Intramural Research	**107**	**$49,471**	**99**	**$49,644**	**99**	**$50,637**	**0**	**$993**
Research Management & Support	**130**	**$30,478**	**140**	**$33,503**	**140**	**$34,173**	**0**	**$670**
TOTAL	**237**	**$447,153**	**239**	**$467,445**	**239**	**$467,445**	**0**	**$0**

[1] Includes FTEs whose payroll obligations are supported by the NIH Common Fund.
[2] Includes mandatory financing.

NATIONAL INSTITUTES OF HEALTH
National Institute on Alcohol Abuse and Alcoholism

Authorizing Legislation

	PHS Act/ Other Citation	U.S. Code Citation	2016 Amount Authorized	FY 2016 Enacted	2017 Amount Authorized	FY 2017 President's Budget[1]
Research and Investigation	Section 301	42§241	Indefinite	$467,445,000	Indefinite	$459,578,000
National Institute on Alcohol Abuse and Alcoholism	Section 401(a)	42§281	Indefinite	$467,445,000	Indefinite	$459,578,000
Total, Budget Authority				$467,445,000		$459,578,000

[1]Excludes mandatory financing.

NATIONAL INSTITUTES OF HEALTH
National Institute on Alcohol Abuse and Alcoholism

Appropriations History

Fiscal Year	Budget Estimate to Congress	House Allowance	Senate Allowance	Appropriation
2007	$433,318,000	$433,318,000	$433,318,000	$435,930,000
Rescission				$0
2008	$436,505,000	$436,505,000	$436,505,000	$436,256,000
Rescission				$7,757,000
Supplemental				$2,320,000
2009	$436,681,000	$451,688,000	$448,834,000	$450,230,000
Rescission				$0
2010	$455,149,000	$466,308,000	$457,887,000	$462,346,000
Rescission				$0
2011	$474,649,000		$473,904,000	$462,346,000
Rescission				$4,059,673
2012	$469,197,000	$469,197,000	$453,127,000	$460,389,000
Rescission				$870,135
2013	$457,104,000		$458,489,000	$459,518,865
Rescission				$919,038
Sequestration				($23,064,687)
2014	$463,848,000		$460,765,000	$446,025,000
Rescission				$0
2015	$446,017,000			$447,408,000
Rescission				$0
2016	$459,833,000	$456,012,000	$469,355,000	$467,700,000
Rescission				$0
2017[1]	$467,445,000			

[1] Includes mandatory financing.

Justification of Budget Request

National Institute on Alcohol Abuse and Alcoholism

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

Budget Authority (BA):

	FY 2015 Actual	FY 2016 Enacted	FY 2017 President's Budget	FY 2017+ / - FY 2016
BA	$447,153,000	$467,445,000	$467,445,000	$0
FTE	237	239	239	0

Program funds are allocated as follows: Competitive Grants/Cooperative Agreements; Contracts; Direct Federal/Intramural and Other.

Director's Overview

Alcohol misuse has profound effects on the health and well-being of individuals, families, and communities. Nearly thirty percent of adults in the United States have experienced alcohol use disorder (AUD) at some point in their lives, and excessive drinking cost the United States $249 billion in 2010.[1,2] The National Institute on Alcohol Abuse and Alcoholism (NIAAA) supports research and related initiatives to reduce the considerable burden of alcohol misuse for individuals at all stages of life. NIAAA will capitalize on emerging opportunities across the biomedical sciences to: identify the basic biological mechanisms underlying AUD and alcohol-related conditions; improve the prevention and treatment of alcohol misuse, AUD, and other alcohol-related problems; and improve the dissemination of evidence-based information to health care providers, researchers, policy makers, and the public.

Foundation for Discoveries: Basic Research

AUD is a chronically relapsing brain disease. As individuals progress from initial alcohol use to risky drinking to AUD, changes occur in the structure and function of their brains that perpetuate drinking and persist long after they stop. A major focus of NIAAA's work is aimed at developing a more thorough understanding of these changes at the molecular, cellular, and systems levels, and how they contribute to the development and maintenance of AUD as well as facilitate the recovery process. Individuals who begin drinking during adolescence are at increased risk for AUD later in life, and accumulating research indicates that adolescent drinking alters the trajectory of brain development. NIAAA supports a broad portfolio of research to identify the neurobiological, cognitive, and behavioral precursors of adolescent alcohol misuse

[1] Grant BF et al. Epidemiology of DSM-5 Alcohol Use Disorder: Results from the National Epidemiologic Survey on Alcohol and Related Conditions III. *JAMA Psychiatry.* 2014 Aug:72(8):757-66. doi:10.1001/jamapsychiatry.2015.0584.

[2] Sacks JJ et al. 2010 National and State Costs of Excessive Alcohol Consumption. *Amer. Journal of Prev. Med.* 2015;49(5):e73–e79. doi: 10.1016/j.amepre.2015.05.031. Epub 2015 Oct 1.

and the subsequent development of AUD, as well as how alcohol use during this period affects brain development (see portrait).

NIAAA will also be expanding research on the neurobiological mechanisms underlying AUD and post-traumatic stress disorder (PTSD). An estimated 30-60 percent of patients seeking treatment for AUD meet criteria for PTSD, and approximately one-third of individuals who have had PTSD have had AUD at some point in their lives. Both disorders are linked to dysregulation of brain stress systems, and alcohol use may increase the risk of PTSD by altering the brain's ability to recover from traumatic experiences. Developing a better understanding of the factors that contribute to these disorders will pave the way for new treatments for the many individuals diagnosed with both disorders. Alcoholic hepatitis is a serious and often fatal consequence of alcohol misuse for which there is a dire need for new treatments. NIAAA-supported researchers recently identified a protein linked to alcoholic hepatitis in humans, and found that inhibiting this protein ameliorated liver injury in mouse models of the disease. These findings suggest that this protein may be a new pharmacotherapeutic target for treating patients with alcoholic hepatitis.

Turning basic research discoveries into effective interventions for preventing and treating AUD and related disorders is a key priority for NIAAA. Reflecting its increased emphasis on medications development, NIAAA established the Division of Medications Development to coordinate extramural efforts to identify, screen, and evaluate compounds with potential for treating AUD. NIAAA is also supporting extramural and intramural research to develop and validate human laboratory paradigms to evaluate novel and repurposed compounds before testing them in more expensive, lengthy clinical trials. NIAAA's Clinical Investigations Group, a component of the Division of Medications Development, is streamlining the AUD medications development process by conducting "fast success/fast fail" phase II clinical trials of both novel and repurposed compounds with potential for treating AUD in collaboration with the pharmaceutical industry.

The Promise of Precision Medicine

Precision medicine has emerged as a guiding framework for developing new interventions for preventing and treating AUD. Through its proposed Alcohol Addiction Research Domain Criteria (AARDoC) framework (see portrait), NIAAA will develop a better understanding of the biological, cognitive, and behavioral factors that underlie individual variation in alcohol misuse and AUD, develop and validate biomarkers to assess individual variation in these domains, and use this information to tailor interventions to the people most likely to benefit from them. NIAAA has supported precision medicine studies investigating whether particular AUD treatments are more effective in people with specific gene variants or a family history of AUD, whether compounds that target brain stress systems are effective treatments for people who are particularly susceptible to stress-induced drinking, and whether brain imaging can be used to identify people who are especially susceptible to relapse when exposed to alcohol-related cues.

Applying Big Data and Technology to Improve Health

Rapid advances in electronic health technologies provide opportunities outside of typical healthcare settings to assist individuals engaged in alcohol misuse and provide them with personalized resources and support where and when they need it most. NIAAA-funded researchers have developed a smartphone application that reduced drinking overall and increased

abstinence in patients previously treated for AUD. Investigators are now working to enhance the application with a feature for monitoring an individual's risk for relapse and providing them with prompt, personally-tailored relapse prevention interventions. NIAAA also issued a challenge prize to stimulate the design and production of a small, inconspicuous, and wearable device to monitor blood alcohol levels in real time. By collecting and storing accurate alcohol consumption data, such a biosensor would facilitate alcohol research, enable clinicians to assess their patients' alcohol use, and help individuals monitor their own drinking.

Stewardship to Inspire Public Trust

Guided by a new five-year strategic plan, NIAAA is optimizing the allocation of its research resources to areas of science most likely to benefit from additional support, translating research findings for the benefit of public health, and positioning itself as the nation's source of evidence-based information on alcohol and health. NIAAA recently launched the College Alcohol Intervention Matrix, CollegeAIM. This decision tool and guide will help higher education administrators select among evidence-based interventions for addressing alcohol misuse on their campuses and serve as a model for promoting effective interventions for other populations at-risk. NIAAA also supports a range of training and career development opportunities aimed at preparing a diverse and talented workforce to conduct innovative basic, clinical, and population research and to translate that information into practice. NIAAA is also partnering with medical organizations to improve clinical training in addiction medicine, thereby improving healthcare services for individuals struggling with AUD and other substance use disorders.

Program Descriptions and Accomplishments

Embryo and Fetus: Alcohol consumption during pregnancy can have devastating effects on the developing embryo and fetus, including at the earliest stages and often before a woman knows that she is pregnant. Prenatal alcohol exposure is a leading preventable cause of birth defects and developmental abnormalities in the United States, with the most profound effects being brain damage and the resulting impairments in cognitive and behavioral functioning. Although the problems that occur vary in severity, they create a variety of health and functional challenges known collectively as Fetal Alcohol Spectrum Disorders (FASD), which includes Fetal Alcohol Syndrome (FAS). To ultimately improve outcomes for the developing embryo and fetus, NIAAA's research focuses on: diagnosing and treating women with AUD, preventing prenatal alcohol exposure, increasing our understanding of the effects of alcohol on the unborn child, improving the diagnosis of and establishing more precise prevalence estimates of FASD in the United States, and developing effective interventions to mitigate the health effects on individuals prenatally exposed to alcohol. One challenge facing clinicians is the ability to recognize children who have been exposed to alcohol prenatally. Although the f*acial features of FAS, the most clinically recognizable form of FASD, were well defined, recently NIAAA-funded researchers developed three-dimensional facial imaging techniques to enhance the detection of a broader range of alcohol-induced facial changes in children. These techniques are showing promise for identifying children who have cognitive impairments caused by prenatal alcohol exposure but lack the hallmark facial features of FAS. D*eveloping biological and neuropsychological markers and determining the neurological deficits underlying the behavioral manifestations of FASD will be critical to effectively intervening with affected children. For example, preliminary results of a neuroimaging study with prenatally-exposed newborns showed deficits in the structure of cells

from which white matter tracts in the brain are derived. Additional research is needed to develop a more detailed understanding of the effects of maternal drinking on pre- and post-natal brain development. Given that maternal alcohol use appears to be a significant risk factor for Sudden Infant Death Syndrome (SIDS) and stillbirth, NIAAA collaborates with NICHD and NIDCD to support studies that investigate the association between prenatal alcohol exposure and other environmental and maternal factors that contribute to SIDS and stillbirth.

Budget Policy: The FY 2017 President's Budget estimate is $18.230 million, a decrease of $0.079 million or -0.4 percent below the FY 2016 Enacted level.

Youth/Adolescence (Ages 0-17): Adolescence is a period of significant biological, social, and environmental changes. During this time of life, the brain undergoes widespread changes, and the frontal cortex—the region of the brain responsible for planning, decision-making, and emotional control—is still developing. Adolescence is also when drinking, binge drinking (drinking five or more drinks on one occasion for men or four or more drinks on one occasion for women), and heavy drinking (binge drinking five or more times in the past 30 days) all increase dramatically. Protecting the developing body and brain from alcohol exposure is an important investment in short- and long-term health. NIAAA continues to support a multi-site longitudinal study of youth ages 12-21 to assess the vulnerability of the adolescent brain to alcohol exposure and to examine how pre-existing differences in brain structure and function during adolescence may contribute to alcohol misuse and other neurodevelopmental consequences. This study is also examining whether changes in adolescent brain and cognitive function induced by alcohol consumption recover over time. Preliminary results of a longitudinal study of forty youth ages 12-17 revealed that those who transitioned from no or minimal drinking to heavy drinking during the study, had structural abnormalities in the brain prior to the initiation of heavy drinking. The abnormalities included smaller brain volumes in the frontal cortex. This finding underscores the need for larger, multi-site longitudinal studies to more fully explore the connection between alcohol use and the architecture of the developing adolescent brain. Complementary studies with animals will continue to investigate the biological mechanisms that underlie the effects of adolescent alcohol exposure on brain function and behavior in adulthood. Screening and brief interventions by health providers has been shown to be effective in reducing problem drinking in adults and a growing body of evidence supports the use of alcohol screening among adolescents; however, research indicates that youth are not routinely asked about drinking when they interface with the health care system. To encourage universal screening for youth in health care settings, NIAAA developed an empirically based alcohol screener and guide for pediatricians and other clinicians who care for children and adolescents. The screener was devised to identify children at elevated risk for using alcohol, children and adolescents who have already begun to experiment with alcohol, and those who are more heavily involved with alcohol. This developmentally appropriate screening instrument, which is endorsed by the American Academy of Pediatrics, has been widely distributed. This instrument is currently being evaluated for effectiveness in primary care, emergency department, academic and juvenile justice settings.

Budget Policy: The FY 2017 President's Budget estimate is $53.467 million, a decrease of $0.232 million or -0.4 percent below the FY 2016 Enacted level.

Young Adult (Ages 18-29): Young adults remain highly vulnerable to the adverse effects of alcohol misuse, in part because their frontal cortex is still developing and will not reach maturity until about age 25. For this population, NIAAA focuses on risk assessment and screening, universal and selective prevention, early intervention (before problems escalate and/or become chronic), and timely treatment for those who need it. Given the pervasiveness of binge and high intensity drinking and alcohol use disorder among young adults, efforts to alter drinking trajectories at this stage have life-changing potential and can significantly reduce the burden of illness resulting from alcohol-related problems. The incidence of alcohol poisonings and other alcohol-related consequences is alarmingly high in this age group. On America's college campuses harmful and underage alcohol consumption is a problem faced on an almost daily basis; especially worrisome is the intensity of drinking as reflected in the increased percentage of college students who report having experienced a blackout in the past year as a result of drinking. NIAAA-supported studies have shown that both individual and environmental approaches to prevention and treatment for college students are necessary to reduce harmful and underage drinking and its consequences. In FY 2015, NIAAA released the College Alcohol Intervention Matrix, CollegeAIM, a research-based, interactive, user-friendly decision tool and guide to help colleges and universities choose wisely among strategies to meet their alcohol intervention goals. Developed with leading college alcohol researchers and NIAAA staff, CollegeAIM allows users to search for strategies according to intervention level (e.g., individual, campus, community level) and factors such as effectiveness, cost, and ease of implementation. Another focus of NIAAA's young adult portfolio stems from research suggesting that screening and brief intervention (SBI) is effective in young adults. In light of this research, NIAAA will continue to encourage the evaluation of SBI among young adults in both clinical and non-clinical settings. In addition, NIAAA will encourage the development of effective interventions for young adult populations disproportionally affected by the adverse effects of alcohol misuse.

Budget Policy: The FY 2017 President's Budget estimate is $177.380 million, a decrease of $0.771 million or -0.4 percent below the FY 2016 Enacted level.

Midlife/Senior Adult: Research has demonstrated that individual differences contribute to risk for AUD and AUD-related health outcomes as well as response to treatment. NIAAA's research focus for the midlife/senior population includes: 1) identification of mechanisms by which alcohol and its metabolites cause tissue and organ pathologies; 2) development of treatment strategies for AUD (including medications) that are tailored to specific populations; and 3) treatment of individuals with co-occurring physical and mental health conditions. To ensure efficient screening of promising compounds for AUD and to move them more quickly through early clinical testing, NIAAA's Clinical Investigations Group (NCIG) continues to coordinate multi-site Phase II clinical trials. By taking on more of the risk for failure during early drug development, NIAAA has found that pharmaceutical companies are more willing to pursue those compounds that show positive effects. Through NCIG, NIAAA recently completed a clinical trial of a novel compound that targets brain stress systems as a possible treatment for AUD, and is currently evaluating an FDA-approved anti-seizure medication that has shown promise for reducing heavy drinking and promoting abstinence in individuals with AUD. NIAAA continues to promote *Rethinking Drinking*, which features evidence-based information about risky drinking patterns in U.S. adults, as well as support for cutting back or quitting alcohol use. NIAAA also continues to support development of medications for the treatment of alcoholic liver disease,

especially alcoholic hepatitis, and to seek biomarkers that enable detection of various stages of liver damage. Potential therapies for alcoholic hepatitis that are currently being tested include probiotics; an interleukin inhibitor, which targets a signaling molecule produced by immune cells; and immunoglobulin, which binds lipopolysaccharide in the gastrointestinal tract.

Budget Policy: The FY 2017 President's Budget estimate is $133.558 million, a decrease of $0.580 million or -0.4 percent below the FY 2016 Enacted level.

Intramural Research: A major focus of the NIAAA Intramural Program is to improve diagnosis, prevention and treatment of AUD and associated disorders by increasing understanding of the basic biological mechanisms underlying these disorders. NIAAA's Intramural Research Program will continue to focus on many important research areas: the genetic and neurobiological bases of AUD and related behaviors; the impact of alcohol on brain structure and function; the patterns of alcohol use and prevalence of AUD and co-occurring disorders in the U.S. population; and the molecular and cellular processes underlying the effects of alcohol exposure on the body. The Intramural Research Program will also continue to pursue research to identify novel therapeutic targets for the treatment of AUD and alcohol-related diseases, and identify and evaluate compounds with promise for treating these diseases. For example, previous research has shown that chronic alcohol consumption increases the activity of corticotropin-releasing factor (CRF) receptors in the brain, and medications that block CRF receptors can decrease stress-triggered alcohol consumption. Working in collaboration with GlaxoSmithKline, the NIAAA Intramural Research Program is testing whether verucerfont, a compound that inhibits a type of CRF receptor, reduces stress-related alcohol craving in women with AUD. Intramural investigators are also leading the development of an "Addictions Neuroclinical Assessment" that will employ neuroimaging and neuropsychological tests to diagnose and classify individuals with AUD based on the neuropsychological mechanisms underlying their disease. They will also evaluate whether the assessment can be used effectively to tailor AUD treatment to the needs of individual patients.

Budget Policy: The FY 2017 President's Budget estimate is $50.637 million, an increase of $0.993 million or 2.0 percent above the FY 2016 Enacted level.

Research Management and Support (RMS): RMS activities provide administrative, budgetary, logistical, and scientific support in the review, award, and monitoring of research grants, training awards, and research and development contracts. RMS functions also encompass strategic planning, coordination, and evaluation of the NIAAA's programs, regulatory compliance, international coordination, and liaison with other Federal agencies, Congress, and the public.

Budget Policy: The FY 2017 President's Budget estimate is $34.173 million, an increase of $0.670 million or 2.0 percent above the FY 2016 Enacted level.

Program Portrait: Neurobiological Effects of Alcohol on the Developing Adolescent Brain

FY 2016 Level: $13.9 million
FY 2017 Level: $13.9 million
Change: +/-$0.0 million

The developing adolescent brain undergoes widespread changes in structure and function, both within individual regions and in the connections between them. During normal adolescent brain development, these changes facilitate maturation of the brain's systems that regulate cognitive, emotional, and social behavior. The rapidly changing nature of the adolescent brain, and the extent and complexity of these changes, make the adolescent brain particularly vulnerable to the adverse effects of alcohol. Studies have associated heavy alcohol use during adolescence with altered integrity of various brain structures, short- and long-term neurobehavioral deficits, and increased risk for future alcohol use disorder and other mental health disorders.

Human brain imaging studies have shown that over the course of adolescence, the volume of gray matter in the brain decreases, likely reflecting the normal process of "synaptic pruning," whereas the volume of white matter increases, presumably reflecting enhanced brain connectivity. Initial findings from NIAAA-supported research indicate that heavy drinking adolescents have accelerated reductions in gray matter and attenuated increases in white matter, compared to non-drinking adolescents. Myelin, a key component of white matter tracts, is decreased in adolescent binge drinking animals, and these deficits in myelin may provide insight into similar deficits observed in humans. To build on these findings, NIAAA supports the National Consortium on Alcohol and Neurodevelopment in Adolescence (NCANDA), a nationally representative, accelerated longitudinal study of over 800 youth, to examine the influence of adolescent alcohol exposure on the developmental trajectory of the brain in greater detail, and to enable identification of factors that predict later alcohol use disorder. The NIH Adolescent Brain Cognitive Development Study, a 10 year longitudinal study of 10,000 youth, is building on NCANDA and providing much needed information about the neurodevelopmental consequences of alcohol and other drugs, alone and in combination.

NIAAA is also investing in research to define the underlying neurobiological mechanisms through which adolescent alcohol exposure impacts adult brain function. In a recent study, conducted by the Neurobiology of Adolescent Drinking in Adulthood Consortium, scientists found that animals exposed to alcohol during adolescence exhibited epigenetic changes (i.e., changes affecting gene expression that do not alter the DNA sequence) in the amygdala, a brain region in humans that regulates emotional responses and the brain's stress system. These changes were associated with increased alcohol consumption and anxiety-like behaviors in adult animals. Specifically, expression of genes involved in forming connections between nerve cells in the amygdala decreased; reversal of these epigenetic effects resulted in reduced alcohol intake and less anxiety in the adult animals.

These complementary lines of investigation are enhancing our understanding of the effects of alcohol and other substances on the developing adolescent brain, and will inform efforts to reduce alcohol related problems in this vulnerable population.

Program Portrait: The Alcohol Addiction Research Domain Criteria Framework

FY 2016 Level: $0.348 million
FY 2017 Level: $0.348 million
Change: +/-$0.0 million

Much progress has been made in elucidating the heterogeneity of AUD. Individuals with AUD differ in their drinking patterns, motivations for drinking, and clinical signs and symptoms, as well as the neurobiological, genetic, and environmental influences that contribute to their disorder. For example, whereas some people may have trouble moderating their drinking as a result of heightened sensitivity to stress, others may be driven more by an inability to experience pleasure from typically rewarding experiences, or deficits in cognitive function that lead to poor decision making, or some combination of these or other factors.

Although these individual differences may explain why current behavioral and pharmacological treatments for AUD are not effective for all individuals who seek treatment, commonly accepted methods of AUD diagnosis do not account for these differences. An enhanced understanding of AUD that integrates neurobiological, genetic, environmental, and behavioral components could be used to guide more precise diagnosis of the specific deficits or other drivers underlying an individual's AUD, and target behavioral and/or pharmacological therapy to the specific problem(s), thereby increasing treatment effectiveness.

NIAAA has launched a new program to structure alcohol research efforts and promote new discoveries that build on current knowledge: AARDoC framework. The proposed AARDoC framework represents an alternate way of classifying AUD based on domains of brain and behavioral functioning that underlie the disorder. NIAAA will support research to identify these functional domains and the genetic, neurobiological, and behavioral mechanisms that underlie them. An initial step in this effort is the development and evaluation of an Addictions Neuroclinical Assessment by the NIAAA Intramural Research Program that will utilize neuroimaging and neuropsychological tests to diagnose and classify individuals with AUD. This approach will use detailed, specific, objective measures of the genetic, neurobiological, and behavioral mechanisms associated with AUD, in addition to a patient's clinical signs and symptoms that are commonly used for diagnoses.

AARDoC has the potential to transform the way prevention and treatment for AUD are delivered by developing a more comprehensive understanding of the fundamental mechanisms of AUD, revealing new biomarkers for diagnosis and treatment response, and tailoring prevention and treatment to the individual – the goal of precision medicine.

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Budget Authority by Object Class[1]
(Dollars in Thousands)

	FY 2016 Enacted	FY 2017 President's Budget[2]	FY 2017 +/- FY 2016
Total compensable workyears:			
Full-time employment	239	239	0
Full-time equivalent of overtime and holiday hours	0	0	0
Average ES salary	$0	$0	$0
Average GM/GS grade	12.8	12.8	0.0
Average GM/GS salary	$113	$114	$1
Average salary, grade established by act of July 1, 1944 (42 U.S.C. 207)	$92	$92	$1
Average salary of ungraded positions	$145	$146	$1

	OBJECT CLASSES	FY 2016 Enacted	FY 2017 President's Budget[2]	FY 2017 +/- FY 2016
	Personnel Compensation			
11.1	Full-Time Permanent	$19,142	$19,288	$146
11.3	Other Than Full-Time Permanent	8,232	8,295	63
11.5	Other Personnel Compensation	411	414	3
11.7	Military Personnel	302	305	2
11.8	Special Personnel Services Payments	2,780	2,801	21
11.9	**Subtotal Personnel Compensation**	**$30,868**	**$31,103**	**$235**
12.1	Civilian Personnel Benefits	$8,581	$8,751	$170
12.2	Military Personnel Benefits	292	294	2
13.0	Benefits to Former Personnel	0	0	0
	Subtotal Pay Costs	**$39,741**	**$40,148**	**$407**
21.0	Travel & Transportation of Persons	$919	$962	$42
22.0	Transportation of Things	104	108	4
23.1	Rental Payments to GSA	0	0	0
23.2	Rental Payments to Others	4	5	0
23.3	Communications, Utilities & Misc. Charges	432	450	18
24.0	Printing & Reproduction	7	7	0
25.1	Consulting Services	$1,145	$1,197	$53
25.2	Other Services	5,705	5,920	216
25.3	Purchase of goods and services from government accounts	49,319	50,446	1,127
25.4	Operation & Maintenance of Facilities	$59	$62	$2
25.5	R&D Contracts	20,038	19,996	-43
25.6	Medical Care	201	206	6
25.7	Operation & Maintenance of Equipment	630	653	24
25.8	Subsistence & Support of Persons	0	0	0
25.0	**Subtotal Other Contractual Services**	**$77,096**	**$78,481**	**$1,385**
26.0	Supplies & Materials	$3,722	$3,831	$110
31.0	Equipment	1,404	1,467	63
32.0	Land and Structures	0	0	0
33.0	Investments & Loans	0	0	0
41.0	Grants, Subsidies & Contributions	344,015	341,985	-2,030
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	**$427,704**	**$427,297**	**-$407**
	Total Budget Authority by Object Class	**$467,445**	**$467,445**	**$0**

[1] Includes FTEs whose payroll obligations are supported by the NIH Common Fund.
[2] Includes mandatory financing.

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Salaries and Expenses
(Dollars in Thousands)

OBJECT CLASSES	FY 2016 Enacted	FY 2017 President's Budget	FY 2017 +/- FY 2016
Personnel Compensation			
Full-Time Permanent (11.1)	$19,142	$19,288	$146
Other Than Full-Time Permanent (11.3)	8,232	8,295	63
Other Personnel Compensation (11.5)	411	414	3
Military Personnel (11.7)	302	305	2
Special Personnel Services Payments (11.8)	2,780	2,801	21
Subtotal Personnel Compensation (11.9)	**$30,868**	**$31,103**	**$235**
Civilian Personnel Benefits (12.1)	$8,581	$8,751	$170
Military Personnel Benefits (12.2)	292	294	2
Benefits to Former Personnel (13.0)	0	0	0
Subtotal Pay Costs	**$39,741**	**$40,148**	**$407**
Travel & Transportation of Persons (21.0)	$919	$962	$42
Transportation of Things (22.0)	104	108	4
Rental Payments to Others (23.2)	4	5	0
Communications, Utilities & Misc. Charges (23.3)	432	450	18
Printing & Reproduction (24.0)	7	7	0
Other Contractual Services:			
Consultant Services (25.1)	840	887	47
Other Services (25.2)	5,705	5,920	216
Purchases from government accounts (25.3)	33,228	34,059	831
Operation & Maintenance of Facilities (25.4)	59	62	2
Operation & Maintenance of Equipment (25.7)	630	653	24
Subsistence & Support of Persons (25.8)	0	0	0
Subtotal Other Contractual Services	**$40,462**	**$41,582**	**$1,120**
Supplies & Materials (26.0)	$3,722	$3,831	$110
Subtotal Non-Pay Costs	**$45,651**	**$46,945**	**$1,295**
Total Administrative Costs	**$85,391**	**$87,093**	**$1.702**

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Detail of Full-Time Equivalent Employment (FTE)

OFFICE/DIVISION	FY 2015 Actual			FY 2016 Est.			FY 2017 Est.		
	Civilian	Military	Total	Civilian	Military	Total	Civilian	Military	Total
Division of Epidemiology and Prevention Research									
Direct:	11		11	19		19	19		19
Reimbursable:									
Total:	11		11	19		19	19		19
Division of Intramural Research Program									
Direct:	96	3	99	89	3	92	89	3	92
Reimbursable:	8		8	7		7	7		7
Total:	104	3	107	96	3	99	96	3	99
Division of Metabolism and Health Effects									
Direct:	9		9	9		9	9		9
Reimbursable:									
Total:	9		9	9		9	9		9
Division of Neuroscience and Behavior									
Direct:	14		14	14		14	14		14
Reimbursable:									
Total:	14		14	14		14	14		14
Division of Treatment and Recovery Research									
Direct:	10		10	10		10	10		10
Reimbursable:									
Total:	10		10	10		10	10		10
Office of Extramural Activities									
Direct:	20		20	20		20	20		20
Reimbursable:									
Total:	20		20	20		20	20		20
Office of Resource Management									
Direct:	36		36	37		37	37		37
Reimbursable:									
Total:	36		36	37		37	37		37
Office of Science Policy and Communications									
Direct:	16		16	16		16	16		16
Reimbursable:									
Total:	16		16	16		16	16		16
Office of the Director									
Direct:	14		14	15		15	15		15
Reimbursable:									
Total:	14		14	15		15	15		15
Total	234	3	237	236	3	239	236	3	239
Includes FTEs whose payroll obligations are supported by the NIH Common Fund.									
FTEs supported by funds from Cooperative Research and Development Agreements.	0	0	0	0	0	0	0	0	0

FISCAL YEAR	Average GS Grade
2013	13.0
2014	13.0
2015	12.8
2016	12.8
2017	12.8

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Detail of Positions[1]

GRADE	FY 2015 Actual	FY 2016 Enacted	FY 2017 President's Budget
Total, ES Positions	0	0	0
Total, ES Salary	0	0	0
GM/GS-15	31	32	32
GM/GS-14	52	52	52
GM/GS-13	39	40	40
GS-12	22	22	22
GS-11	9	9	9
GS-10	1	1	1
GS-9	5	5	5
GS-8	3	3	3
GS-7	8	8	8
GS-6	0	0	0
GS-5	2	2	2
GS-4	1	1	1
GS-3	0	0	0
GS-2	0	0	0
GS-1	0	0	0
Subtotal	173	175	175
Grades established by Act of July 1, 1944 (42 U.S.C. 207)	0	0	0
Assistant Surgeon General	0	0	0
Director Grade	1	1	1
Senior Grade	0	0	0
Full Grade	2	2	2
Senior Assistant Grade	0	0	0
Assistant Grade	0	0	0
Subtotal	3	3	3
Ungraded	75	75	75
Total permanent positions	175	177	177
Total positions, end of year	251	253	253
Total full-time equivalent (FTE) employment, end of year	237	239	239
Average ES salary	0	0	0
Average GM/GS grade	12.8	12.8	12.8
Average GM/GS salary	110,030	112,815	113,674

[1] Includes FTEs whose payroll obligations are supported by the NIH Common Fund.