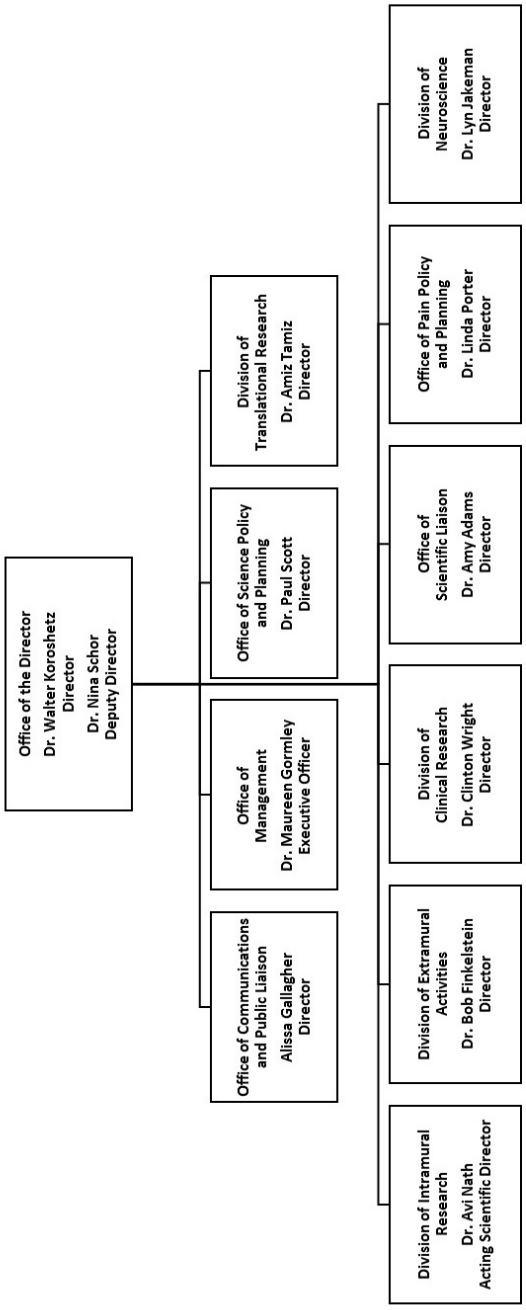
DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

National Institute of Neurological Disorders and Stroke (NINDS)

NATIONAL INSTITUTES OF HEALTH
National Institute of Neurological Disorders and Stroke
Organizational Chart



NATIONAL INSTITUTES OF HEALTH
National Institute of Neurological Disorders and Stroke

For carrying out section 301 and title IV of the PHS Act with respect to neurological disorders and stroke, **[**$2,216,913,000**]***$1,956,031,000*.

NIH INNOVATION ACCOUNT, CURES ACT

(INCLUDING TRANSFER OF FUNDS)

For necessary expenses to carry out the purposes described in section 1001(b)(4) of the 21st Century Cures Act, in addition to amounts available for such purposes in the appropriations provided to the NIH in this Act, **[**$711,000,000**]***$492,000,000*, to remain available until expended: *Provided*, That such amounts are appropriated pursuant to section 1001(b)(3) of such Act, are to be derived from amounts transferred under section 1001(b)(2)(A) of such Act, and may be transferred by the Director of the National Institutes of Health to other accounts of the National Institutes of Health solely for the purposes provided in such Act: *Provided further*, That upon a determination by the Director that funds transferred pursuant to the previous proviso are not necessary for the purposes provided, such amounts may be transferred back to the Account: *Provided further*, That the transfer authority provided under this heading is in addition to any other transfer authority provided by law.

NATIONAL INSTITUTES OF HEALTH
National Institute of Neurological Disorders and Stroke

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

Source of Funding	FY 2018 Final	FY 2019 Enacted	FY 2020 President's Budget
Appropriation[2]	$2,188,149	$2,274,413	$2,026,031
Mandatory Appropriation: (non-add)			
Type 1 Diabetes	*(0)*	*(0)*	*(0)*
Other Mandatory financing	*(0)*	*(0)*	*(0)*
Rescission	0	0	0
Sequestration	0	0	0
Secretary's Transfer	-4,452	0	0
Subtotal, adjusted appropriation	$2,183,697	$2,274,413	$2,026,031
OAR HIV/AIDS Transfers	-2,567	0	0
HEAL Initiative Transfer from NINDS to other ICs	-36,100	0	0
Subtotal, adjusted budget authority	$2,145,030	$2,274,413	$2,026,031
Unobligated balance, start of year[3]	0	195,962	0
Unobligated balance, end of year[3]	-195,962	0	0
Subtotal, adjusted budget authority	$1,949,068	$2,470,375	$2,026,031
Unobligated balance lapsing	-1	0	0
Total obligations	$1,949,067	$2,470,375	$2,026,031

[1] Excludes the following amounts (in thousands) for reimbursable activities carried out by this account:
FY 2018 - $19,053 FY 2019 - $19,671 FY 2020 - $17,703

[2] Of which $43.0 million in FY 2018, $57.5 million in FY 2019, and $70.0 million in FY 2020 is derived by transfer from the NIH Innovation Account under the 21st Century Cures Act.

[3] Reflects HEAL Initiative funding not obligated in FY 2018, and carried over into FY 2019.

NATIONAL INSTITUTES OF HEALTH
National Institute of Neurological Disorders and Stroke

Budget Mechanism - Total[1,2]

(Dollars in Thousands)

MECHANISM	FY 2018 Final[3]		FY 2019 Enacted		FY 2020 President's Budget		FY 2020 +/- FY 2019 Enacted	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Research Projects:								
Noncompeting	2,016	$894,964	2,244	$1,022,234	2,553	$1,084,510	309	$62,276
Administrative Supplements	*(179)*	19,512	*(160)*	14,771	*(70)*	7,354	*(-90)*	-7,417
Competing:								
Renewal	138	76,396	154	67,956	99	39,602	-55	-28,354
New	891	529,237	874	515,005	493	251,460	-381	-263,545
Supplements	2	932	0	0	0	0	0	0
Subtotal, Competing	1,031	$606,565	1,028	$582,961	592	$291,062	-436	-$291,899
Subtotal, RPGs	3,047	$1,521,042	3,272	$1,619,966	3,145	$1,382,925	-127	-$237,040
SBIR/STTR	113	63,106	138	81,805	115	65,297	-23	-16,508
Research Project Grants	3,160	$1,584,148	3,410	$1,701,771	3,260	$1,448,223	-150	-$253,548
Research Centers:								
Specialized/Comprehensive	40	$44,996	39	$48,312	32	$47,537	-7	-$774
Clinical Research	0	1,500	0	0	0	1,500	0	1,500
Biotechnology	0	0	0	0	0	0	0	0
Comparative Medicine	0	100	0	0	0	0	0	0
Research Centers in Minority Institutions	0	0	0	0	0	0	0	0
Research Centers	40	$46,596	39	$48,312	32	$49,037	-7	$726
Other Research:								
Research Careers	206	$36,907	218	$39,468	214	$38,723	-4	-$745
Cancer Education	0	0	0	0	0	0	0	0
Cooperative Clinical Research	0	0	0	0	0	0	0	0
Biomedical Research Support	0	50	0	0	0	0	0	0
Minority Biomedical Research Support	1	164	1	164	0	0	-1	-164
Other	221	71,451	207	61,382	184	75,771	-23	14,389
Other Research	428	$108,572	426	$101,014	398	$114,494	-28	$13,480
Total Research Grants	3,628	$1,739,316	3,875	$1,851,097	3,690	$1,611,755	-185	-$239,343
Ruth L Kirchstein Training Awards:	FTTPs		FTTPs		FTTPs		FTTPs	
Individual Awards	380	$17,421	393	$18,279	356	$17,884	-37	-$394
Institutional Awards	285	14,502	296	15,057	290	14,908	-6	-149
Total Research Training	665	$31,923	689	$33,336	646	$32,793	-43	-$543
Research & Develop. Contracts	98	$97,110	106	$109,600	84	$110,125	-22	$525
(SBIR/STTR) (non-add)	*(1)*	*(141)*	*(2)*	*(678)*	*(0)*	*(590)*	*(-2)*	*(-88)*
Intramural Research	304	197,036	318	198,514	318	195,577	0	-2,937
Res. Management & Support	200	79,646	214	81,866	214	75,782	0	-6,084
Res. Management & Support (SBIR Admin) (non-add)	*(0)*	*(0)*	*(0)*	*(450)*	*(0)*	*(535)*	*(0)*	*(85)*
Construction		0		0		0		0
Buildings and Facilities		0		0		0		0
Total, NINDS	504	$2,145,030	532	$2,274,413	532	$2,026,031	0	-$248,382

[1] All items in italics and brackets are non-add entries.

[2] Of which $43.0 million in FY 2018, $57.5 million in FY 2019, and $70.0 million in FY 2020 is derived by transfer from the NIH Innovation Account under the 21st Century Cures Act.

[3] Includes $0.2 million of 21st Century Cures Act and $195.8 million of HEAL Initiative funding not obligated in FY 2018, and carried over into FY 2019.

Major Changes in the Fiscal Year 2020 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 2020 President's Budget request for the National Institute of Neurological Disorders and Stroke (NINDS), which is $2,026.0 million, a decrease of $248.4 million from the FY 2019 Enacted level. The FY 2020 President's Budget reflects the Administration's fiscal policy goals for the Federal Government. Within that framework, NINDS will pursue its highest research priorities through strategic investments and careful stewardship of appropriated funds.

Research Project Grants (RPGs) (-$253.5 million; total $1,448.2 million):
The NINDS budget mechanism table reflects a decrease in $253.5 million in our Research Project Grants portfolio. NINDS plans a reduction of 8.0 percent in the cost of individual noncompeting awards relative to their committed level. Competing RPGs are expected to decrease by 436 grants in FY 2020 compared to the FY 2019 enacted level of awards.

Other Research ($13.480 million; total $114.494 million):
The Other Research mechanism reflects an increase due to the increase in Other Research grants funded from Opioid funding and from the BRAIN Initiative under the 21st Century Cures Act. NINDS plans to reduce its regular portfolio of Other Research.

NATIONAL INSTITUTES OF HEALTH
National Institute of Neurological Disorders and Stroke

Summary of Changes

(Dollars in Thousands)

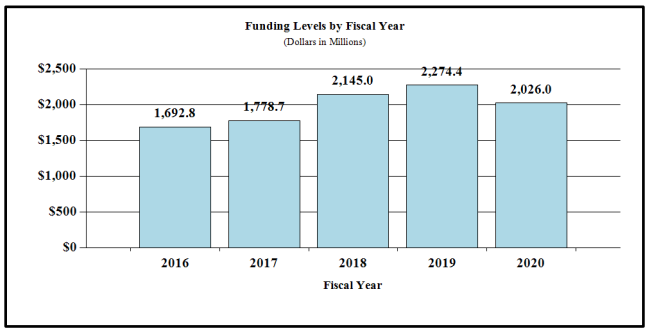
FY 2019 Enacted	$2,274,413
FY 2020 President's Budget	$2,026,031
Net change	-$248,382

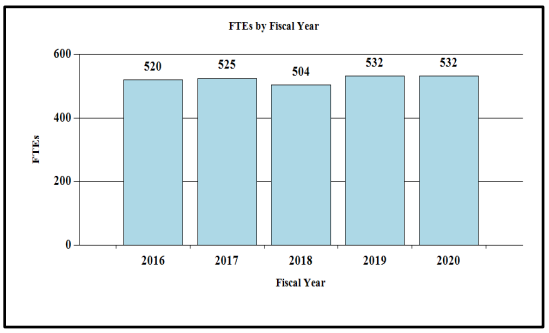
CHANGES	FY 2020 President's Budget FTEs	FY 2020 President's Budget Budget Authority	Change from FY 2019 Enacted FTEs	Change from FY 2019 Enacted Budget Authority
A. Built-in:				
1. Intramural Research:				
a. Annualization of January 2019 pay increase & benefits		$59,008		$27
b. January FY 2020 pay increase & benefits		59,008		243
c. Paid days adjustment		59,008		189
d. Differences attributable to change in FTE		59,008		0
e. Payment for centrally furnished services		30,745		-422
f. Cost of laboratory supplies, materials, other expenses, and non-recurring costs		105,824		0
Subtotal				$37
2. Research Management and Support:				
a. Annualization of January 2019 pay increase & benefits		$33,635		$12
b. January FY 2020 pay increase & benefits		33,635		110
c. Paid days adjustment		33,635		128
d. Differences attributable to change in FTE		33,635		0
e. Payment for centrally furnished services		8,182		-909
f. Cost of laboratory supplies, materials, other expenses, and non-recurring costs		33,265		0
Subtotal				-$659
Subtotal, Built-in				-$622

CHANGES	FY 2020 President's Budget No.	FY 2020 President's Budget Amount	Change from FY 2019 Enacted No.	Change from FY 2019 Enacted Amount
B. Program:				
1. Research Project Grants:				
a. Noncompeting	2,553	$1,091,864	309	$54,859
b. Competing	592	291,062	-436	-291,899
c. SBIR/STTR	115	65,297	-23	-16,508
Subtotal, RPGs	3,260	$1,448,223	-150	-$253,548
2. Research Centers	32	$49,037	-7	$726
3. Other Research	398	114,494	-28	13,480
4. Research Training	646	32,793	-43	-543
5. Research and development contracts	84	110,125	-22	525
Subtotal, Extramural		$1,754,672		-$239,361
	FTEs		FTEs	
6. Intramural Research	318	$195,577	0	-$2,974
7. Research Management and Support	214	75,782	0	-5,425
8. Construction		0		0
9. Buildings and Facilities		0		0
Subtotal, Program	532	$2,026,031	0	-$247,760
Total changes				-$248,382

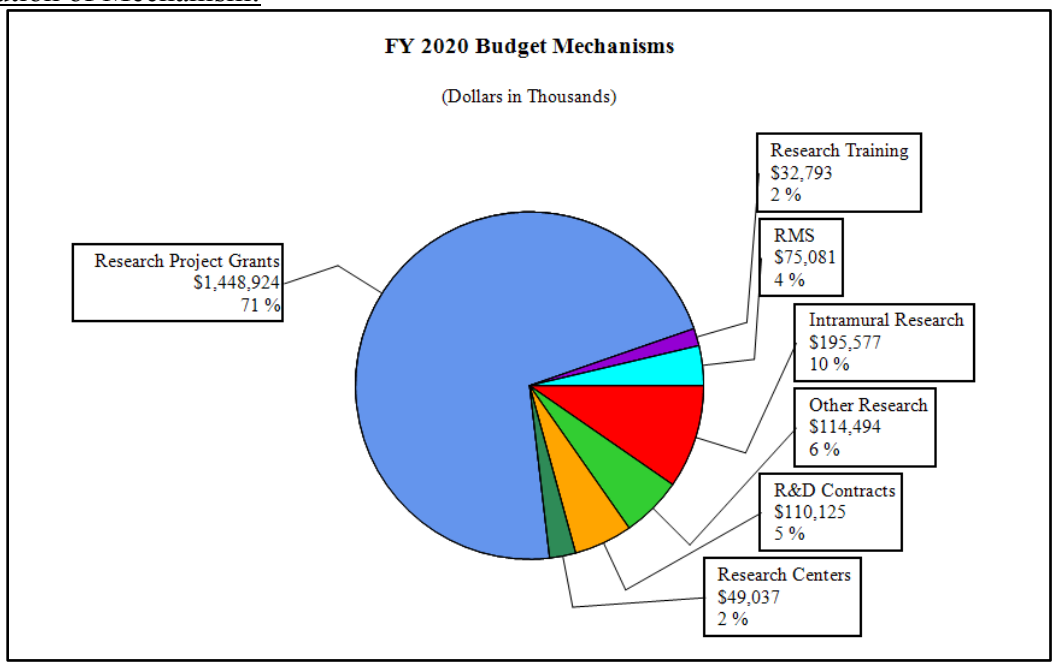
Fiscal Year 2020 Budget Graphs

History of Budget Authority and FTEs:

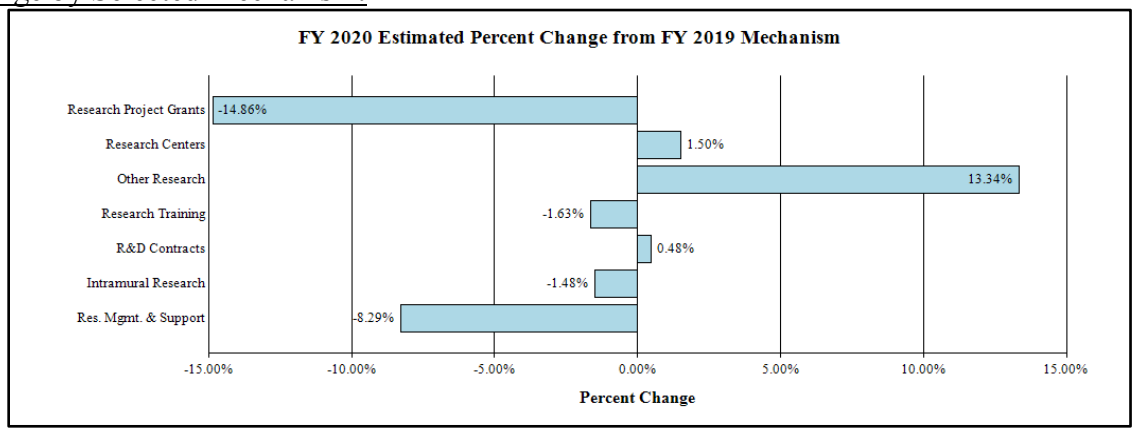




Distribution of Mechanism:



Change by Selected Mechanism:



NATIONAL INSTITUTES OF HEALTH
National Institute of Neurological Disorders and Stroke

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

	FY 2018 Final		FY 2019 Enacted		FY 2020 President's Budget		FY 2020 +/- FY 2019	
Extramural Research	**FTE**	**Amount**	**FTE**	**Amount**	**FTE**	**Amount**	**FTE**	**Amount**
Detail								
Channels, Synapses, and Circuits		$259,153		$271,886		$236,416		-$35,470
Large Scale Clinical Research		126,620		132,024		113,481		-18,543
Neural Environment		234,056		244,046		209,770		-34,276
Neurodegeneration		240,833		251,112		215,843		-35,269
Neurogenetics		180,744		188,459		161,990		-26,469
Repair and Plasticity		203,554		217,122		194,556		-22,566
Systems & Cognitive Neuroscience		202,179		216,921		196,385		-20,536
Training and Workforce Diversity		157,888		164,627		141,505		-23,122
Translational Research		66,283		69,112		59,405		-9,707
Opioid/Pain Research[2]		213,900		250,000		250,000		0
Subtotal, Extramural		**$1,885,210**		**$2,005,308**		**$1,779,351**		**-$225,957**
Intramural Research[3]	**304**	**$181,936**	**318**	**$189,214**	**318**	**$174,077**	**0**	**-$15,137**
Research Management & Support[3]	**200**	**$77,884**	**214**	**$79,891**	**214**	**$72,603**	**0**	**-$7,288**
TOTAL	**504**	**$2,145,030**	**532**	**$2,274,413**	**532**	**$2,026,031**	**0**	**-$248,382**

[1] Includes FTEs whose payroll obligations are supported by the NIH Common Fund.
[2] Includes Intramural Research and Research Management & Support.
[3] Excludes funding related to opioid research included in the Opioid/Pain Research line in the table.

NATIONAL INSTITUTES OF HEALTH
National Institute of Neurological Disorders and Stroke

Authorizing Legislation

	PHS Act/ Other Citation	U.S. Code Citation	2019 Amount Authorized	FY 2019 Enacted	2020 Amount Authorized	FY 2020 President's Budget
Research and Investigation	Section 301	42§241	Indefinite	$2,274,413,000	Indefinite	$2,026,031,000
National Institute of Neurological Disorders and Stroke	Section 401(a)	42§281	Indefinite		Indefinite	
Total, Budget Authority				$2,274,413,000		$2,026,031,000

NATIONAL INSTITUTES OF HEALTH
National Institute of Neurological Disorders and Stroke

Appropriations History

Fiscal Year	Budget Estimate to Congress	House Allowance	Senate Allowance	Appropriation
2011	$1,681,333,000		$1,678,696,000	$1,636,371,000
Rescission				$14,368,312
2012	$1,664,253,000	$1,664,253,000	$1,603,741,000	$1,629,445,000
Rescission				$3,079,651
2013	$1,624,707,000		$1,629,631,000	$1,626,365,349
Rescission				$3,252,731
Sequestration				($81,632,357)
2014	$1,642,619,000		$1,631,703,000	$1,587,982,000
Rescission				$0
2015	$1,608,461,000			$1,605,205,000
Rescission				$0
2016	$1,660,375,000	$1,656,334,000	$1,694,758,000	$1,696,139,000
Rescission				$0
2017 [1]	$1,695,180,000	$1,751,049,000	$1,803,306,000	$1,783,654,000
Rescission				$0
2018 [2]	$1,355,998,000	$1,853,011,000	$1,904,666,000	$2,188,149,000
Rescission				$0
2019 [2]	$1,838,556,000	$2,228,780,000	$2,275,580,000	$2,274,413,000
Rescission				$0
2020 [2]	$2,026,031,000			

[1] Budget Estimate to Congress includes mandatory financing.

[2] Includes funds derived by transfer from the NIH Innovation Account under the 21st Century Cures Act.

Justification of Budget Request

National Institute of Neurological Disorders and Stroke

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

Budget Authority (BA):

	FY 2018 Final	FY 2019 Enacted	FY 2020 President's Budget	FY 2020 +/- FY 2019
BA	$2,145,030,000	$2,274,413,000	$2,026,031,000	-$248,382,000
FTE	504	532	532	0

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

The National Institute of Neurological Disorders and Stroke (NINDS) supports research to improve the diagnosis, prevention, and treatment of neurological disorders; that is, diseases of the brain, spinal cord, muscle, and nerves of the body. NINDS basic research to understand the brain in health and disease, the wellspring of public and private sector progress against these diseases, is at the core of this mission. Chronic pain, Alzheimer's disease and Alzheimer's disease related dementias (ADRDs), stroke, traumatic brain injury (TBI), epilepsy, Parkinson's disease, multiple sclerosis, cerebral palsy, and other common neurological disorders affect millions of Americans of all ages. Hundreds of rare diseases add to the enormous impact. Globally, neurological disorders impose a greater burden in lost life and disability than any other category of diseases.[1] The multiplicity of neurological diseases, the complexity of the brain, and the sensitivity of this remarkable organ to disruption of its indispensable functions present formidable challenges.

Despite the challenges, there is progress. NINDS research has contributed across the research spectrum, from basic research to clinical trials. NINDS clinical trials and risk factor studies helped drive stroke death rates down by 70 percent from 1968 to 2015[2]. In 2018, the Platelet-Oriented Inhibition in New TIA and Minor Ischemic Stroke Trial (POINT) found a drug combination therapy that may prevent stroke in people during high risk periods, the Reasons for Geographic and Racial Difference in Stroke (REGARDS) study found that diet explains much of the racial differences in hypertension, the major risk factor for stroke, and the Endovascular Therapy Following Imaging Evaluation for Ischemic Stroke 3 (DEFUSE 3) trial showed that brain imaging can identify acute ischemic stroke patients who can benefit from clot removal procedures well beyond the current restricted time window for intravenous tPA therapy, which earlier NINDS research established as the first emergency treatment that clears a blocked blood vessel causing stroke. For status epilepticus, the NINDS Rapid Anticonvulsant Medication Prior to Arrival Trial (RAMPART), and subsequent collaboration with the Department of Defense,

[1] Lancet Neurology 16:877-97, 2017
[2] From Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report, September 8, 2017

Biomedical Advanced Research and Development Authority, and private sector led to 2018 Food and Drug Administration (FDA) approval of a treatment that paramedics can administer. For people with progressive multiple sclerosis, who have few treatment options, an NINDS early phase clinical trial showed in 2018 that the drug ibudilast slowed the rate of brain atrophy by nearly 50 percent. Future studies will test whether reducing brain shrinkage improves clinical outcomes, such as thinking, walking, and coordination. NINDS basic research investment also provided the scientific foundation for private sector development of the first disease modifying drugs, approved by the FDA over the last two years, for three rare pediatric neurological diseases, spinal muscular atrophy (SMA), Batten disease, and Duchenne muscular dystrophy.

Progress in electrical stimulation therapies is also noteworthy. Twenty-five years ago, NINDS basic research guided development of deep brain stimulation (DBS) for Parkinson's disease, which dramatically reverses symptoms for some people. Five years ago, NINDS research on seizure prediction and detection enabled the private sector to develop "closed-loop" DBS for epilepsy, which adjusts stimulation based on continuous monitoring of brain activity. In 2018: the FDA approved another epilepsy stimulation treatment, which targets a part of the brain identified by NINDS basic research; a Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative clinical study paved the way for closed loop DBS for Parkinson's; and researchers reported promising results using electrical stimulation to aid recovery of function following spinal cord injury, following decades of research investment.

NINDS emphasizes investigator-initiated research because of its sustained record of success, with programs tailored for basic, translational, and clinical research. Because the Institute focuses on essential research that others are unlikely to support, basic research makes up about 70 percent of NINDS investment. The Institute encourages investigators to undertake innovative and long-term projects through the Javits Awards, authorized by Congress, which provide conditional seven years of funding to scientists who have demonstrated exceptional talent, imagination, and achievement. The highly competitive Research Program Awards, which are available to all but the newest investigators, provide freedom to embark on ambitious, creative, or longer-term research projects for up to eight years. Neuroscientists have also been especially well represented in the NIH-wide Pioneer Awards, Transformative R01, and New Innovator Awards. The Institute's support for preclinical development of drugs, devices, gene therapy, and cell therapies reflects the common pattern that the more innovative a therapy and the higher the risk of development failure, the larger NIH's role is likely to be. Likewise, NINDS clinical research focuses on critical public health challenges, including stroke prevention and the long-term consequences of TBI, that others are unlikely to take on.

To complement investigator-initiated research, NINDS solicits research to target critical public health needs, extraordinary scientific opportunities, and research tools and resources that catalyze progress. The Institute's intensive engagement in the NIH Helping End Addiction Long-term (HEAL) Initiative's development of non-addictive pain interventions to combat the opioid crisis and multiple research initiatives on ADRDs, with the National Institute on Aging (NIA), exemplify attention to public health needs. The BRAIN Initiative epitomizes investment in extraordinary opportunities, including multi-disciplinary, large-scale projects at the scientific and technological frontier. NINDS is also actively engaged in transformative NIH Common Fund Programs, such as Acute to Chronic Pain Signatures, Stimulating Peripheral Activity to

Relieve Conditions, and Somatic Cell Genome Editing initiatives. NINDS investment in catalytic research resources, including brain banks, genetics and cell repositories, and animal models, and the Institute's promotion of data sharing enhance the effectiveness of research. Major initiatives support the development and validation of biomarkers, which are objective indicators of disease and response to therapy, to expedite therapy development. Lack of biomarkers is currently a major obstacle for private sector investment in neurological disorders.

Investment in research would be futile without a talented and trained scientific workforce. For many years, NINDS policies have favored early career investigators. Nearly one third of all NINDS investigators are within their first five years of independent NIH funding, and early stage investigators receive more funding than any other cohort. A spectrum of NINDS training programs serve the graduate, post-doctoral, and early career stages. In 2018, NINDS launched an award program that highlights the value of mentoring in research training and career development. Throughout NINDS programs, the Institute emphasizes diversity. NINDS must tap the full wealth of the nation's talent pool to confront the extraordinary challenges that neurological disorders present. In 2018, the NINDS-supported Society for Neuroscience *Neuroscience Scholars Program* received the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring in recognition of outstanding efforts in developing a science and engineering workforce that reflects the diverse talent of America.

Overall Budget Policy: The FY 2020 President's Budget request is $2,026.0 million, a decrease of $248.4 million, or 10.9 percent, from the FY 2019 Enacted level.

Program Descriptions and Accomplishments

Division of Neurosciences: The Division of Neuroscience, which is the largest part of the NINDS extramural program, supports research on the normal brain, spinal cord, and nerves of the body, on the mechanisms of neurological disorders, and on the early development of diagnostics and treatments. Although each "program cluster" within the division leads NINDS research activities on particular diseases and on related areas of basic research, the intricacies of the brain, the multifaceted nature of its diseases, and the pace of neuroscience do not respect neat bureaucratic divisions. Extensive interactions within the programs and across NINDS extramural divisions reflect that reality. The Division of Neuroscience is organized in the following clusters:

Channels, Synapses, and Neural Circuits: Ion channels control the electrical activity of cells. Synapses are specialized connections between cells by which nerve cells influence one another's activity. Circuits formed by networks of interconnected nerve cells carry out the information processing that enables us to perceive, think, and act. In addition to basic research on the normal functions of channels, synapses, and circuits, this program cluster supports research on how their dysfunction underlies many neurological disorders.

Epilepsy, a prime example of such a disorder, is a major focus. Over several years, research has improved seizure prediction and understanding of related brain circuitry, which has led to private sector advances in brain stimulation therapies for epilepsy. Research has also identified many genes responsible for inherited epilepsy syndromes, opening new avenues for research and treatment development. Recently, for example, research advanced understanding of Sudden Unexplained Death in Epilepsy (SUDEP), including identification of a gene that may contribute to SUDEP in Dravet syndrome, a rare and catastrophic type of epilepsy. The Epilepsy Benchmarks planning process engages all stakeholders. Among specific targeted programs that address planning priorities are the Epilepsy Centers Without Walls, which include: the Epilepsy 4000 (Epi4K) collaborative, which has examined genetic material from more than 4000 individuals to understand epilepsy genes; a center on SUDEP; the Epilepsy Bioinformatics Study for Antiepileptogenic Therapy (EpiBiosS4Rx), on prevention for epilepsy following TBI; and the newest center on how genes cause epilepsy and accelerating diagnosis and treatment.

NINDS is co-chair of the Trans-NIH Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS) Working Group, which includes 24 Institutes and Centers. ME/CFS is a poorly understood, complex, chronic condition that has a major impact on quality of life. NINDS funds research on ME/CFS that is within the Institute's realm of expertise, including studies to understand the mechanisms underlying exertional exhaustion, muscle pain, and fatigue in ME/CFS. In FY 2017, NIH launched a consortium made up of three Collaborative Research Centers and a Data Management Coordinating Centers to advance knowledge on ME/CFS.

Budget Policy: The FY 2020 President's Budget request is $236.4 million, a decrease of $35.5 million, or 13.0 percent, from the FY 2019 Enacted level.

Portrait of a Program: The Brain Research through Advancing Innovative Neurotechnologies® (BRAIN) Initiative

FY 2019 21st Century Cures Level: $57.5 million
FY 2020 21st Century Cures Level: $70.0 million
Change: +$12.5 million

NINDS is an enthusiastic leader of the NIH BRAIN Initiative, which is developing and applying new technologies to understand how circuits of interconnected nerve cells in the brain enable us to perceive, act, think, and learn, and what goes wrong in brain disorders. The Initiative has launched research in all seven priority areas identified by the BRAIN 2025 plan. Remarkable new tools now enable researchers to identify all of the individual brain cell types, monitor activity of thousands of cells in a circuit at once in real time, precisely manipulate cells' activity, and non-invasively monitor and stimulate the human brain with increasing precision. As the Initiative advances from pilot studies to large scale consortia, such as the BRAIN Initiative Cell Census Network, NIH is ramping up investment in data repositories, data standards, and tools and methods for data integration and analysis to catalyze progress across neuroscience.

The BRAIN 2025 report laid out an overarching vision that is as compelling now as it was when the NIH launched the BRAIN Initiative, with strong Congressional support. Recognizing that research priorities must change as the landscape of scientific and technical opportunities evolve, BRAIN 2025 advised NIH to adjust its investments accordingly as the Initiative progresses. The BRAIN 2.0 working group from the scientific community is reaching out extensively to the research community to assess progress and identify how the Initiative can best invest to realize its vision. Their report will guide NIH as the Initiative moves into FY 2020.

Neural Environment: Non-nerve cells in the brain, called glial cells, together with specialized blood vessels and immune cells, maintain the environment around nerve cells, fight infections, respond to injury, and control which molecules enter brain tissue from circulating blood. Non-neural cells also actively shape brain development. For example, inflammation and disruptions in glial development contribute to cerebral palsy. Neurological disorders can result when non-neuronal cells are compromised, become aggressors in inflammatory or autoimmune disorders, or form tumors. Viruses, bacteria, or parasites may also infect the nervous system, and the blood supply to brain cells may be compromised, as in stroke. The Neural Environment program cluster supports basic research on glial cells, the complex relationship between brain cells and their blood supply, and immunologic and metabolic aspects of brain function.

The cluster leads NINDS research on stroke, which has led to dramatic advances in prevention and treatment, and on multiple sclerosis, for which more than a dozen drugs have been approved in the last twenty-five years. However, progress against brain tumors, another disease of focus, has been much more difficult to achieve. NINDS and the National Cancer Institute (NCI) are together addressing this problem. There are signs of progress, including a clinical trial in 2018 using genetically engineered poliovirus to treat glioblastoma, the most aggressive type of brain tumor. NINDS also works closely with the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD) on the complex challenges presented by cerebral palsy and hydrocephalus. The many basic research advances on the non-neuronal cells of the brain have important implications for disease. Research in the last year, for example, found insights into the role of glial cells and the immune system in Parkinson's disease, showed how

immune cells rapidly go to injured brain tissue through previously unseen "secret tunnels," and identified a new subtype of multiple sclerosis that may lead to more tailored treatment.

The Stroke Preclinical Assessment Network (SPAN) will begin in FY2019 to rigorously test neuroprotective agents in controlled experimental pre-clinical settings, replicate across multiple sites, and prepare potential agents for moving to clinical trials. An NINDS workshop in November 2018 brought together basic and clinical experts in stroke recovery and rehabilitation research to discuss research challenges, opportunities, and priorities as this field moves forward.

Budget Policy: The FY 2020 President's Budget request is $209.8 million, a decrease of $34.3 million, or 14.0 percent, from the FY 2019 Enacted level.

Neurodegeneration: The Neurodegeneration program cluster focuses on adult onset neurodegenerative diseases. In these diseases, brain cells progressively die, which impairs movement, perception, or thinking, depending on which nerve cells are affected. The cluster leads research on Parkinson's disease, Huntington's disease, amyotrophic lateral sclerosis (ALS, or Lou Gehrig's disease), and on ADRDs. The ADRDs include Lewy body dementia (LBD), frontotemporal dementia (FTD), and vascular dementias, which are a diverse spectrum of dementias that involve brain blood vessels. Although the symptoms of these diseases vary, research is increasingly revealing commonalities among the underlying causes, including, for example, formation of abnormal aggregates of proteins and mishandling of degraded proteins.

Advances from gene studies have driven progress in understanding of not only inherited neurodegenerative diseases, such as Huntington's, but also of the common, non-familial types of Alzheimer's disease, Parkinson's and ALS. These common disorders have rare inherited sub-types, and the genes and pathways implicated also come into play in the non-inherited disease, as was demonstrated in 2018 for the *LRRK2* gene. Gene studies have also revealed unsuspected connections at the molecular level, as that between ALS and FTD and between Parkinson's disease and Gaucher's disease. In 2018, research also identified new genes and gene modifiers for ALS/FTD and increased understanding of how gene defects lead to disease.

The Congressionally mandated Morris K. Udall Centers of Excellence in Parkinson's Disease continue their collaborative, multi-disciplinary research to better understand Parkinson's disease and improve diagnosis and treatment. The Parkinson's disease biomarkers program (PDBP) is accelerating the development of biomarkers that will advance the development of treatments. In January 2018, NIH launched the NIH Accelerating Medicines Partnership for Parkinson's Disease (AMP PD) to provide the expertise and support needed to determine which biomarkers show the greatest potential for predicting PD and the progression of the disease. This public-private partnership will leverage existing cohorts and biomarkers resources, including PDBP resources, to perform large scale analyses of genes, gene activity, and proteins to identify and validate biomarkers and new therapeutic targets for PD.

Budget Policy: The FY 2020 President's Budget request is $215.8 million, a decrease of $35.3 million, or 14.0 percent, from the FY 2019 Enacted level.

Portrait of a Program: Alzheimer's Disease-Related Dementia (ADRD) Research
FY 2019 Level: $170.0 million
FY 2020 Level: $170.0 million
Change: +$0.0 million

The National Alzheimer's Disease Project Act (NAPA) recognized the public health importance of not only Alzheimer's disease, but also related dementias. The ADRDs include vascular cognitive impairment/dementia (VCID), the second most common dementia, frontotemporal dementia (FTD), the most common dementia in people under 60 years old, and Lewy body dementia. There is a growing understanding of the intersections between cerebrovascular disease and dementia. Stroke dramatically increases likelihood of developing dementia, and VCID, which also involves brain blood vessels, is so intertwined with Alzheimer's disease that most elderly people with dementia have a combination of the two. In 2018, preliminary results from the SPRINT-MIND clinical trial hinted that maintaining well controlled blood pressure may significantly reduce mild cognitive impairment, the precursor of dementia. Full analysis of this important study is expected in Spring 2019.

As part of NAPA activities, NINDS leads triennial summits to identify research priorities for the ADRDs and works closely with the NIA to implement the summits' recommendation through multiple targeted initiatives. In FY 2018, NINDS created new funding opportunities that provide support for biomarker and drug target discovery studies, Lewy body dementia clinical trial design and planning, and mechanistic research to advance our understanding of the basic biology underlying ADRDs. In FY2020, NINDS will implement recommendations of the 2019 NAPA ADRD Summit.

Neurogenetics: Gene defects cause hundreds of rare diseases that affect the nervous system, including ataxias, Down syndrome, dystonias, fragile X syndrome, lysosomal storage diseases, muscular dystrophies, peripheral neuropathies, Rett syndrome, spinal muscular atrophy, Tourette syndrome, and tuberous sclerosis, among many others. Genes also influence susceptibility to common neurological disorders, including autism. The Neurogenetics cluster supports research on genes that cause or influence neurological disorders, molecular mechanisms by which genes act, genetic animal and cell models of human disease, and development of treatments for neurogenetic disorders. Basic research to understand how genes and the environment orchestrate brain development is also a key focus of research, with implications for many disorders.

Over the last several years, research on neurogenetic disorders has advanced dramatically. Gene discoveries led to the development of animal models, which enabled increased understanding of diseases mechanisms, and development of interventions to target these mechanisms. Disease modifying therapies for Duchenne muscular dystrophy, spinal muscular atrophy, and Batten disease were the first to be approved, and treatments for several other genetic disorders are at various stages of preclinical and clinical testing by the NIH and the private sector.

The Congressionally mandated Paul D. Wellstone Muscular Dystrophy Cooperative Research Centers have made important contributions to research on the muscular dystrophies since they were established in 2003. An intensive evaluation is underway to ensure the program continues

to provide the maximum possible impact as it continues into FY2020 and beyond. NINDS also continues to support in the NIH Autism Centers of Excellence program and is strongly engaged in the Rare Diseases Clinical Research Network, led by the National Center for Advancing Translational Sciences (NCATS), and the Undiagnosed Disease Network, led by the National Human Genome Research Institute (NHGRI). As several potential therapies for rare diseases are emerging from the public and private sector, the Clinical Trial Readiness for Rare Neurological and Neuromuscular Diseases initiative is addressing obstacles to conducting effective clinical trials, for example by validating outcome measures and biomarkers. The Institute also continues to support research resources including the Human Genetics Resource Center and the NIH NeuroBioBank, a national resource for human post-mortem brain tissue supported together with the National Institute of Mental Health (NIMH), NICHD, and NIA.

Budget Policy: The FY 2020 President's Budget request is $162 million, a decrease of $26.5 million, or 14.0 percent, from the FY 2019 Enacted level.

Repair and Plasticity: The Repair and Plasticity program cluster leads NINDS research on TBI, spinal cord injury, and peripheral nerve injury. Research covers the full spectrum from the mechanisms of immediate and delayed damage in the hours after initial injury, through laboratory development of interventions that minimize damage or stimulate nervous system repair in animal models, to clinical testing of improved therapies in people. Repair and Plasticity also supports fundamental studies of neural stem cells and of neural plasticity, the ability of the brain and nervous system to change, which has broad implications for recovery following injury or disease. The program cluster also leads the longstanding NINDS Neural Interfaces Program, which pioneered technology development for devices that connect to the nervous system to compensate for lost functions, including therapeutic brain stimulation technologies and brain computer interfaces that enable paralyzed people to control devices with their thoughts. The cluster works closely with the Division of Translational Research on advanced development of therapeutic and diagnostic devices.

In 2018, the FDA authorized marketing of the first blood test to aid in the evaluation of concussion. This advance arose from early research supported by NINDS and later development supported by the DOD, an example of the extensive collaborations between NINDS and DOD on TBI. Other examples of collaboration include the Common Data Elements for TBI, the Federal Interagency TBI Research informatics system, and the DOD led TBI Endpoints Development project. New NINDS initiatives will focus on persistent pediatric concussion symptoms and continue the Institute's investment in research on chronic traumatic encephalopathy (CTE), a delayed neurodegenerative disease in adults that may result from repeated brain trauma as in sports or the military. In 2018, research in animal models using combination therapies, including stem cells and growth factors, showed promise in stimulating regeneration and recovery in animal models of spinal cord injury, and small clinical studies reported promising results in restoring some degree of function in people with spinal cord injuries, using techniques that include electrical stimulation and treadmill training. Both of these recent findings built on decades of NIH supported research. In February 2019, NINDS led a scientific workshop SCI2020 that will discuss promising advances and emerging opportunities for advancing research to foster recovery from spinal cord injury.

Budget Policy: The FY 2020 President's Budget request is $194.6 million, a decrease of $22.5 million, or 10.4 percent, from the FY 2019 Enacted level.

Systems and Cognitive Neuroscience: Systems of interconnected nerve circuits in the brain, spinal cord, and body underlie learning, attention, thinking, emotion, sensation, movement, and response to pain, as well as sleep, feeding, and drinking. The Systems and Cognitive Neuroscience program cluster supports research on how the brain carries out these complex functions, on their disruption in neurological disorders, and on promoting recovery. Non-invasive brain imaging is an important research tool for this program, including monitoring of brain activity associated with specific types of thinking and behavior**.**

Chronic pain disorders, including migraine and other headaches, are among the most prevalent of all medical conditions and a major focus of this program. NINDS leads NIH pain research, which is coordinated through the NIH Pain Consortium. NINDS is also strongly engaged in the NIH Common Fund Acute to Chronic Pain Signatures program, which will identify objective biosignatures of susceptibility to and resilience toward chronic pain. The NINDS Office of Pain Policy coordinates the Interagency Pain Research Coordinating Committee (IPRCC) and manages the Interagency Pain Research Portfolio, a database that provides the public and the research community with information on pain research and training activities supported by six Federal agencies. In 2018, the Office of Pain Policy and the IPRCC released the Federal Pain Research Strategy to guide the federal pain research agenda.

Budget Policy: The FY 2020 President's Budget request is $196.4 million, a decrease of $20.6 million, or 9.5 percent, from the FY 2019 Enacted level.

Portrait of a Program: Development of Non-addictive Pain Treatments
FY 2019 Level: $112.8 million
FY 2020 Level: $112.8 million
Change: +$0.0 million

In 2018, the Centers for Disease Control and Prevention (CDC) reported that 20 percent of adults in the U.S. had chronic pain, and for eight percent of adults, chronic pain was so severe that it interfered with normal daily activities for most days over the previous six months. The high prevalence of chronic pain and the inadequacy of non-addictive treatments is a major driver of the opioid crisis. Developing more effective non-addictive pain interventions is a major goal of the NIH HEAL Initiative. NINDS is leading multiple initiatives to accomplish this goal, including:

- Discovery and Validation of Novel Pain Therapies—to promote basic science discovery and validation of new targets to treat pain, with minimal side effects and abuse/addiction liability
- Preclinical Screening Platform for Pain—to establish a one-stop preclinical testing platform
- Translating NIH BRAIN/SPARC/HEAL Discoveries into Effective Stimulation Devices for Pain Treatment—to translate diagnostic and therapeutic devices into humans
- Discovery and Validations of Biomarkers, Endpoints and Signatures for Pain Conditions—to define patient population and indicate treatment response to accelerate therapy development
- Optimization of Non-Addictive Therapies to Treat Pain

- Data and Asset Sharing Partnership—to enable companies to access data that will speed their development of pain medications
- Early Phase Pain Investigation Clinical Network—to improve the quality, consistency, and efficiency of pain clinical trials

The following institutes at NIH are also engaged in activities related to the NIH HEAL Initiative and additional information can be found on their respective Congressional Justifications: NIDA, NIAID, NCATS, NIAAA, NIMH, NHLBI, NIMHD, NIBIB, NIDDK, NIAMS, NCCIH, NICHD.

Clinical Research: The Division of Clinical Research (DCR) supports clinical trials infrastructure and directs large scale clinical research, including early and advanced phase clinical trials and large epidemiological studies. The Division works closely with disease experts across all NINDS extramural programs. To optimize the efficiency and effectiveness of large scale clinical trials, DCR enforces milestones for progress, provides resources to improve patient access and recruitment, and supports multi-site clinical networks. DCR pioneered innovations for multi-site trials, including use of a single Institutional Review Boards, now adopted across NIH. Over the last several years, DCR led clinical trials have contributed to advances in treatment and prevention for epilepsy, Parkinson's disease, multiple sclerosis, and other diseases. The DCR Common Data Elements (CDE) Program works with the research and patient advocacy communities to develop standards for specific disorders that facilitate comparison and sharing of clinical data across studies, enhancing the value of these major clinical investments.

DCR led clinical networks include:

- StrokeNet, which conducts small and large clinical trials on stroke treatment, prevention, and recovery and rehabilitation through 25 regional centers and more than 200 hospitals throughout the U.S., with central data and clinical management centers.
- NeuroNext (the Network for Excellence in Neuroscience Clinical Trials) for early phase clinical trials and studies, including rare pediatric diseases
- Strategies to Innovate EmeRgENcy Care Clinical Trials Network (SIREN) – jointly led by NINDS and the National Heart Lung and Blood Institute, which conducts clinical trials in emergency care for neurologic, cardiac, respiratory, hematologic, and trauma conditions. Two trials on TBI care are among the first of this new network.

Budget Policy: The FY 2020 President's Budget request is $113.5 million, a decrease of $18.5 million, or 14.0 percent less than the FY 2019 Enacted level.

Translational Research: The Division of Translational Research (DTR) leads NINDS preclinical therapy development activities for all diseases within the Institute's mission. DTR therapy development experts work closely with disease-specific experts in the Division of Neuroscience and with the Division of Clinical Research to advance interventions to first-in-human studies. DTR supports the development of drugs, devices, and biologics, including cell and gene therapies. Programs for advanced development gate funding based on milestones of progress and provide expert consultation and contract services that are often not readily available to academic investigators. Projects may lead to NIH clinical trials or "de-risk" the development path sufficiently to attract private partnerships and hand-offs for further development.

DTR programs include:

- The Innovation Grants to Nurture Initial Translational Efforts (IGNITE) Program, which funds early stages of therapy development, for example, validation of assays to evaluate candidate drugs, demonstrations that proposed therapies have sufficient biological activity to warrant further development, and development of model systems for therapy development.
- The Cooperative Research to Enable and Advance Translational Enterprises (CREATE), which supports development of biologics (large biological molecules, gene therapies, and cell therapies) to advance into early phase clinical trials. Fifteen candidate therapies have moved on to clinical trials.
- The Blueprint Neurotherapeutics Network (BPN). which supports the development of small molecule drugs. Eight drugs have attracted outside investment or licensing deals.
- The Translational Neural Devices (TND) program, which supports preclinical and small clinical studies to develop therapeutic or diagnostic devices. Since 1970, this program and its NINDS precursors have pioneered development of neural prosthetics, such as cochlear implants for hearing impairment, brain computer interfaces, and other therapeutic devices.
- The Epilepsy Therapy Screening Program (ETSP), which screens candidate drugs from academia and industry in standardized models. The longstanding ETSP has contributed to advancing nine antiseizure drugs to the market.
- The Biomarkers program, begun in 2018, which supports development and validation of biomarkers for neurological disease, which will improve clinical trials and clinical practice.
- NINDS SBIR/STTR programs, which support development of therapeutics, diagnostics, and research tools at different stages of development, including applied bench research, translational research, and early stage clinical trials.
- The NIH Countermeasures Against Chemical Threats (CounterACT) program, which is funded via separate appropriation but led by DTR, to understand fundamental mechanisms of toxicity caused by chemical threat agents and to develop promising therapeutics to reduce mortality and morbidity caused by these agents.

Budget Policy: The FY 2020 President's Budget request is $59.4 million, a decrease of $9.7 million, or 14.0 percent, from the FY 2019 Enacted level.

Training and Workforce Diversity: The Office of Training and Workforce Development, coordinates NINDS extramural programs for training and career development. NINDS offers institutional and individual grants tailored to the specific needs of physicians and scientists at different stages of their careers, from pre-doctoral students onward. For example, specific programs enable neurosurgeons to accommodate research preparation into their already demanding clinical training requirements. Over the last few years, NINDS has revamped its training programs to improve opportunities for early-career neuroscientists and to bolster their transition to independent research careers. In FY 2018, NINDS initiated a Mentor Award that recognizes the value of outstanding mentorship in developing each new generation of exceptional neuroscientists. In FY 2019, NINDS is revising its institutional training awards to enhance training in rigor and experimental design.

NINDS research depends on recruiting and supporting outstanding researchers from the full breadth of the nation's talent pool. The Office of Programs to Enhance Neuroscience Workforce

Diversity focuses on enhancing the diversity of the neuroscience workforce and supports and coordinates activities throughout NINDS extramural research, including outreach and supplements to support students from under-represented groups on research grants. In 2018 NINDS led a new NIH Neuroscience Blueprint predoctoral/postdoctoral (F99/K00) award to help recruit and retain faculty who represent the diverse make-up of our country.

Budget Policy: The FY 2020 President's Budget request is $141.5 million, a decrease of $23.1 million, or 14 percent, from the FY 2019 Enacted level.

Intramural Research Program (IRP): The IRP conducts research on the NIH campus in Bethesda, Maryland. The Program spans basic and translational neuroscience, neurology, and neurosurgery. Research covers a broad range of neuroscience research including molecular biophysics, synapses and circuits, neuronal development, integrative neuroscience, brain imaging, neurological disorders, and stroke. NINDS clinical research benefits from The Mark O. Hatfield Clinical Center, which is a hospital totally dedicated to clinical research. The NINDS IRP also studies patients with acute stroke and TBI who present to two area emergency departments. Clinical studies and early phase clinical trials are a strong aspect of the IRP, with studies now underway on Parkinson's disease, multiple sclerosis, dystonia, brain tumors, neuropathies, and several other diseases, using drugs, invasive and noninvasive brain stimulation techniques, and gene therapy. NINDS is also leading an NIH clinical study of ME/CFS. At the NIH, more than 150 laboratories, from NINDS and ten other Institutes conduct neuroscience research. The Porter Neuroscience Research Center integrates neuroscience across Institutes and disciplinary boundaries.

Budget Policy: The FY 2020 President's Budget request is $195.6 million, a decrease of $2.9 million, or 1.5 percent, from the FY 2019 Enacted level. Excluding HEAL funding for intramural research, the request is $174.1 million, a 8.0 percent decrease from the FY 2019 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 Institute's programs, regulatory compliance, international coordination, and liaison with other Federal agencies, Congress, and the public. NINDS analyses on key topics such as research rigor and basic research funding trends have guided programmatic changes not only within NINDS but also throughout NIH.

Budget Policy: The FY 2020 President's Budget request is $75.7 million, a decrease of $6.1 million, or 7.4 percent, from the FY 2019 Enacted level. Excluding HEAL funding for RMS, the request is $72.6 million, a 9.0 percent decrease from the FY 2019 Enacted level.

NATIONAL INSTITUTES OF HEALTH
National Institute of Neurological Disorders and Stroke

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

		FY 2019 Enacted	FY 2020 President's Budget	FY 2020 +/- FY 2019
Total compensable workyears:				
	Full-time equivalent	532	532	0
	Full-time equivalent of overtime and holiday hours	0	0	0
	Average ES salary	$190	$190	$0
	Average GM/GS grade	12.5	12.5	0.0
	Average GM/GS salary	$115	$115	$0
	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 2019 Enacted**	**FY 2020 President's Budget**	**FY 2020 +/- FY 2019**
	Personnel Compensation			
11.1	Full-Time Permanent	35,188	35,485	296
11.3	Other Than Full-Time Permanent	25,661	25,344	-318
11.5	Other Personnel Compensation	1,900	1,717	-184
11.7	Military Personnel	653	675	22
11.8	Special Personnel Services Payments	11,743	8,294	-3,449
11.9	**Subtotal Personnel Compensation**	**$75,146**	**$71,514**	**-$3,632**
12.1	Civilian Personnel Benefits	20,693	20,738	45
12.2	Military Personnel Benefits	377	390	13
13.0	Benefits to Former Personnel	0	0	0
	Subtotal Pay Costs	**$96,216**	**$92,642**	**-$3,574**
21.0	Travel & Transportation of Persons	3,867	3,545	-322
22.0	Transportation of Things	220	223	3
23.1	Rental Payments to GSA	7	6	-1
23.2	Rental Payments to Others	66	59	-7
23.3	Communications, Utilities & Misc. Charges	875	787	-87
24.0	Printing & Reproduction	7	7	0
25.1	Consulting Services	2,129	2,395	266
25.2	Other Services	54,068	43,613	-10,455
25.3	Purchase of goods and services from government accounts	176,044	161,206	-14,838
25.4	Operation & Maintenance of Facilities	3,891	3,502	-389
25.5	R&D Contracts	27,130	43,869	16,739
25.6	Medical Care	312	281	-31
25.7	Operation & Maintenance of Equipment	3,645	3,582	-64
25.8	Subsistence & Support of Persons	74	73	-1
25.0	**Subtotal Other Contractual Services**	**$267,294**	**$258,520**	**-$8,774**
26.0	Supplies & Materials	12,689	17,649	4,960
31.0	Equipment	8,101	7,342	-759
32.0	Land and Structures	0	0	0
33.0	Investments & Loans	0	0	0
41.0	Grants, Subsidies & Contributions	1,885,069	1,645,248	-239,822
42.0	Insurance Claims & Indemnities	0	0	0
43.0	Interest & Dividends	2	2	0
44.0	Refunds	0	0	0
	Subtotal Non-Pay Costs	**$2,178,197**	**$1,933,389**	**-$244,808**
	Total Budget Authority by Object Class	**$2,274,413**	**$2,026,031**	**-$248,382**

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

NATIONAL INSTITUTES OF HEALTH
National Institute of Neurological Disorders and Stroke

Salaries and Expenses
(Dollars in Thousands)

OBJECT CLASSES	FY 2019 Enacted	FY 2020 President's Budget	FY 2020 +/- FY 2019
Personnel Compensation			
Full-Time Permanent (11.1)	$35,188	$35,485	$296
Other Than Full-Time Permanent (11.3)	25,661	25,344	-318
Other Personnel Compensation (11.5)	1,900	1,717	-184
Military Personnel (11.7)	653	675	22
Special Personnel Services Payments (11.8)	11,743	8,294	-3,449
Subtotal Personnel Compensation (11.9)	**$75,146**	**$71,514**	**-$3,632**
Civilian Personnel Benefits (12.1)	$20,693	$20,738	$45
Military Personnel Benefits (12.2)	377	390	13
Benefits to Former Personnel (13.0)	0	0	0
Subtotal Pay Costs	**$96,216**	**$92,642**	**-$3,574**
Travel & Transportation of Persons (21.0)	$3,867	$3,545	-$322
Transportation of Things (22.0)	220	223	3
Rental Payments to Others (23.2)	66	59	-7
Communications, Utilities & Misc. Charges (23.3)	875	787	-87
Printing & Reproduction (24.0)	7	7	0
Other Contractual Services:			
Consultant Services (25.1)	2,053	2,319	266
Other Services (25.2)	54,068	43,613	-10,455
Purchases from government accounts (25.3)	117,252	110,482	-6,771
Operation & Maintenance of Facilities (25.4)	3,891	3,502	-389
Operation & Maintenance of Equipment (25.7)	3,645	3,582	-64
Subsistence & Support of Persons (25.8)	74	73	-1
Subtotal Other Contractual Services	**$180,984**	**$163,570**	**-$17,414**
Supplies & Materials (26.0)	$12,689	$17,649	$4,960
Subtotal Non-Pay Costs	**$198,707**	**$185,841**	**-$12,867**
Total Administrative Costs	**$294,923**	**$278,483**	**-$16,441**

NATIONAL INSTITUTES OF HEALTH
National Institute of Neurological Disorders and Stroke

Detail of Full-Time Equivalent Employment (FTE)

OFFICE/DIVISION	FY 2018 Final			FY 2019 Enacted			FY 2020 President's Budget		
	Civilian	Military	Total	Civilian	Military	Total	Civilian	Military	Total
Division of Clinical Research									
Direct:	14	-	14	15	-	15	15	-	15
Reimbursable:	-	-	-	-	-	-	-	-	-
Total:	14	-	14	15	-	15	15	-	15
Division of Extramural Activities									
Direct:	61	-	61	65	-	65	65	-	65
Reimbursable:	-	-	-	-	-	-	-	-	-
Total:	61	-	61	65	-	65	65	-	65
Division of Intramural Research									
Direct:	282	5	287	296	5	301	296	5	301
Reimbursable:	17	-	17	17	-	17	17	-	17
Total:	299	5	304	313	5	318	313	5	318
Division of Neuroscience									
Direct:	41	-	41	45	-	45	45	-	45
Reimbursable:	4	-	4	4	-	4	4	-	4
Total:	45	-	45	49	-	49	49	-	49
Division of Translational Research									
Direct:	17	-	17	17	-	17	17	-	17
Reimbursable:	3	-	3	3	-	3	3	-	3
Total:	20	-	20	20	-	20	20	-	20
Office of the Director									
Direct:	60	-	60	65	-	65	65	-	65
Reimbursable:	-	-	-	-	-	-	-	-	-
Total:	60	-	60	65	-	65	65	-	65
Total	499	5	504	527	5	532	527	5	532
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
2016	12.3
2017	12.3
2018	12.5
2019	12.5
2020	12.5

NATIONAL INSTITUTES OF HEALTH
National Institute of Neurological Disorders and Stroke

Detail of Positions[1]

GRADE	FY 2018 Final	FY 2019 Enacted	FY 2020 President's Budget
Total, ES Positions	1	1	1
Total, ES Salary	189,600	189,600	189,600
GM/GS-15	52	57	57
GM/GS-14	53	55	55
GM/GS-13	97	99	99
GS-12	51	55	55
GS-11	19	20	20
GS-10	2	2	2
GS-9	17	17	17
GS-8	9	9	9
GS-7	7	7	7
GS-6	1	1	1
GS-5	0	0	0
GS-4	1	1	1
GS-3	0	0	0
GS-2	1	1	1
GS-1	1	1	1
Subtotal	311	325	325
Grades established by Act of July 1, 1944 (42 U.S.C. 207)	0	0	0
Assistant Surgeon General	0	0	0
Director Grade	2	2	2
Senior Grade	0	0	0
Full Grade	167	167	167
Senior Assistant Grade	0	0	0
Assistant Grade	0	0	0
Subtotal	169	169	169
Ungraded	0	0	0
Total permanent positions	322	337	337
Total positions, end of year	513	541	541
Total full-time equivalent (FTE) employment, end of year	504	532	532
Average ES salary	189,600	189,600	189,600
Average GM/GS grade	12.5	12.5	12.5
Average GM/GS salary	115,201	115,201	115,201

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