

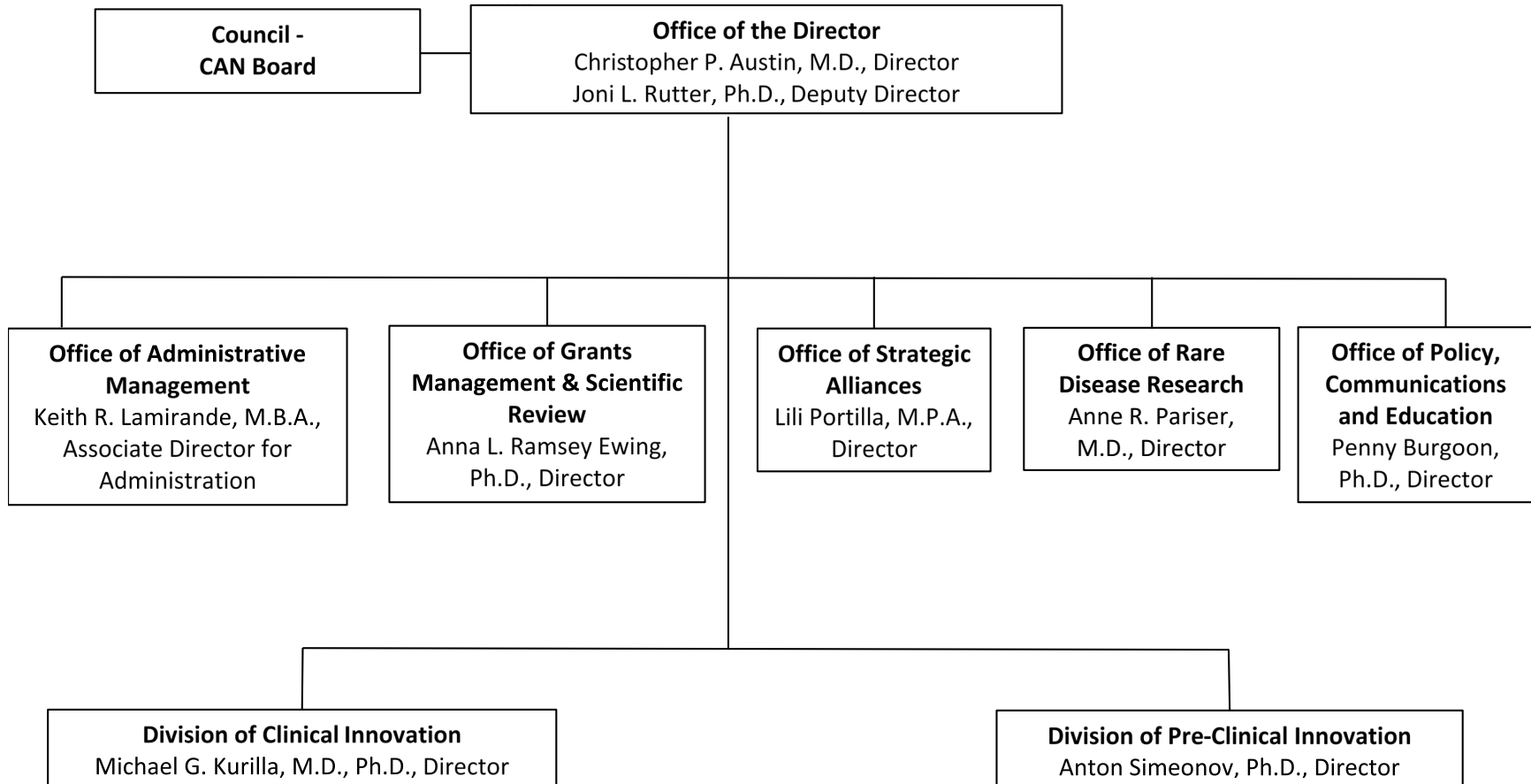
DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

National Center for Advancing Translational Sciences (NCATS)

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National Center for Advancing Translational Sciences



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For carrying out section 301 and title IV of the PHS Act with respect to translational sciences, [~~\$832,888,000~~]~~\$787,703,000~~: *Provided*, That up to [~~\$60,000,000~~]*10 percent of the amounts made available under this heading* shall be available to implement section 480 of the PHS Act, relating to the Cures Acceleration Network[: *Provided further*, That at least \$578,141,000 is provided to the Clinical and Translational Sciences Awards program].

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Amounts Available for Obligation¹

(Dollars in Thousands)

Source of Funding	FY 2019 Final	FY 2020 Enacted	FY 2021 President's Budget
Appropriation	\$806,373	\$832,888	\$787,703
Mandatory Appropriation: (non-add)			
<i>Type 1 Diabetes</i>	(0)	(0)	(0)
<i>Other Mandatory financing</i>	(0)	(0)	(0)
Rescission	0	0	0
Sequestration	0	0	0
Secretary's Transfer	-2,770	0	0
Subtotal, adjusted appropriation	\$803,603	\$832,888	\$787,703
OAR HIV/AIDS Transfers	0	0	0
HEAL Transfer from NINDS	12,000	0	0
Subtotal, adjusted budget authority	\$815,603	\$832,888	\$787,703
Recovery of prior year unpaid HEAL obligations	799		
Unobligated HEAL balance, start of year ²	6,603		
Unobligated HEAL balance transferred from NINDS	24,500	0	0
Unobligated balance, end of year	0	0	0
Subtotal, adjusted budget authority	\$847,505	\$832,888	\$787,703
Unobligated balance lapsing	-75	0	0
Total obligations	\$847,430	\$832,888	\$787,703

¹ Excludes the following amounts (in thousands) for reimbursable activities carried out by this account:
FY 2019 - \$17,957 FY 2020 - \$40,000 FY 2021 - \$40,000

² Reflects HEAL Initiative funding not obligated in FY 2018, and carried over into FY 2019.

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Budget Mechanism - Total¹

(Dollars in Thousands)

MECHANISM	FY 2019 Final ²		FY 2020 Enacted		FY 2021 President's Budget		FY 2021 +/- FY 2020 Enacted	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount
<u>Research Projects:</u>								
Noncompeting	48	\$41,713	54	\$45,917	56	\$42,953	2	-\$2,964
Administrative Supplements	(8)	1,339	(9)	1,481	(3)	254	(-6)	-1,227
<u>Competing:</u>								
Renewal	0	0	0	0	0	0	0	0
New	23	14,840	35	19,046	17	7,551	-18	-11,494
Supplements	0	0	0	0	0	0	0	0
Subtotal, Competing	23	\$14,840	35	\$19,046	17	\$7,551	-18	-\$11,494
Subtotal, RPGs	71	\$57,893	89	\$66,444	73	\$50,758	-16	-\$15,686
SBIR/STTR	32	20,176	31	20,571	29	19,300	-2	-1,271
Research Project Grants	103	\$78,069	120	\$87,015	102	\$70,058	-18	-\$16,957
<u>Research Centers:</u>								
Specialized/Comprehensive	0	\$13,139	0	\$10,985	0	\$10,667	0	-\$318
Clinical Research	60	400,977	60	413,134	60	385,330	0	-27,803
Research Centers	60	\$414,115	60	\$424,118	60	\$395,997	0	-\$28,121
<u>Other Research:</u>								
Research Careers	60	\$58,671	60	\$59,186	60	\$55,607	0	-\$3,579
Other	35	57,476	29	45,006	17	36,559	-12	-8,447
Other Research	95	\$116,147	89	\$104,193	77	\$92,166	-12	-\$12,026
Total Research Grants	258	\$608,332	269	\$615,326	239	\$558,222	-30	-\$57,104
<u>Ruth L Kirchstein Training Awards:</u>								
Individual Awards	<u>FTTPs</u> 0	\$0	<u>FTTPs</u> 0	\$0	<u>FTTPs</u> 0	\$0	<u>FTTPs</u> 0	\$0
Institutional Awards	521	31,597	481	29,865	401	24,926	-80	-4,939
Total Research Training	521	\$31,597	481	\$29,865	401	\$24,926	-80	-\$4,939
Research & Develop. Contracts <i>(SBIR/STTR) (non-add)</i>	132 (8)	\$46,676 (3,940)	130 (9)	\$42,526 (4,266)	134 (7)	\$70,811 (3,877)	4 (-2)	\$28,284 (-388)
Intramural Research	48	85,023	45	96,218	45	87,239	0	-8,979
Res. Management & Support <i>(SBIR Admin) (non-add)</i>	124 (0)	43,975 (268)	122 (0)	48,953 (265)	122 (0)	46,505 (252)	0 (0)	-2,448 (-13)
Total, NCATS	172	\$815,603	167	\$832,888	167	\$787,703	0	-\$45,185

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

² Includes \$12.0 million HEAL transfer from NINDS

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Major Changes in the Fiscal Year 2021 President's Budget Request

The budget request for NCATS of \$787.7 million represents a \$45.2 million or 5.4 percent decrease from the FY 2020 level. NCATS will support priority research programs. NCATS will pay most non-competing grant awards at 7.0 percent below committed levels and fund high priority new awards.

Research Project Grants (-\$17.0 million; total \$70.1 million):

The total number of awards funded, excluding SBIR/STTR, will drop from 89 to 73 awards, and the number of non-competing awards funded will increase from 54 to 56 .

Research Centers (-\$28.1 million; total \$396.0 million):

NCATS will fund a total of 60 hub center awards under the Clinical and Translational Science Awards (CTSA) Program in FY 2021, the same number funded as in both FY 2019 and FY 2020.

Research and Development Contracts (+\$28.3 million; total \$70.8 million):

The increase in R&D contracts in FY 2021 is due to \$30.0 million included in this mechanism for the proposed consortium for innovation in large-scale gene vector production, as described in the narrative for the Cures Acceleration Network.

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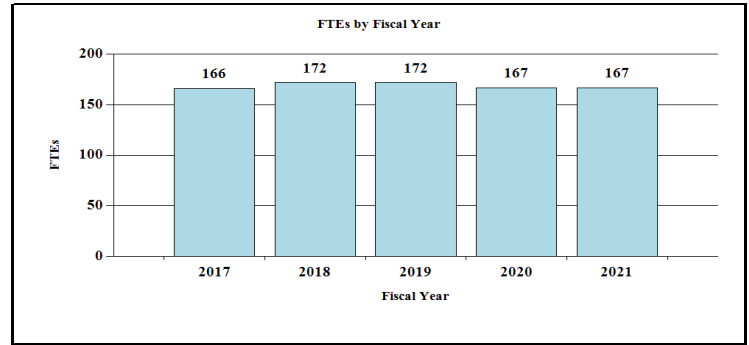
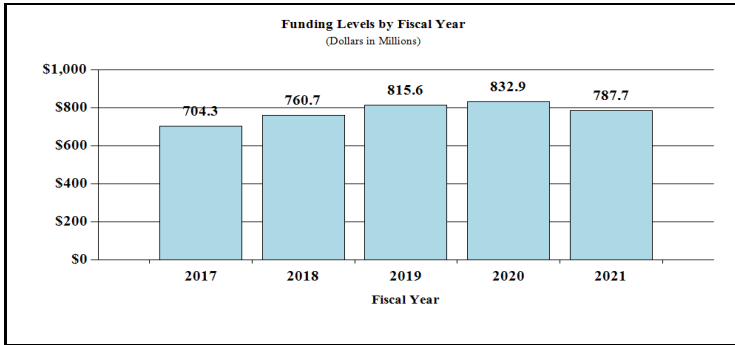
Summary of Changes

(Dollars in Thousands)

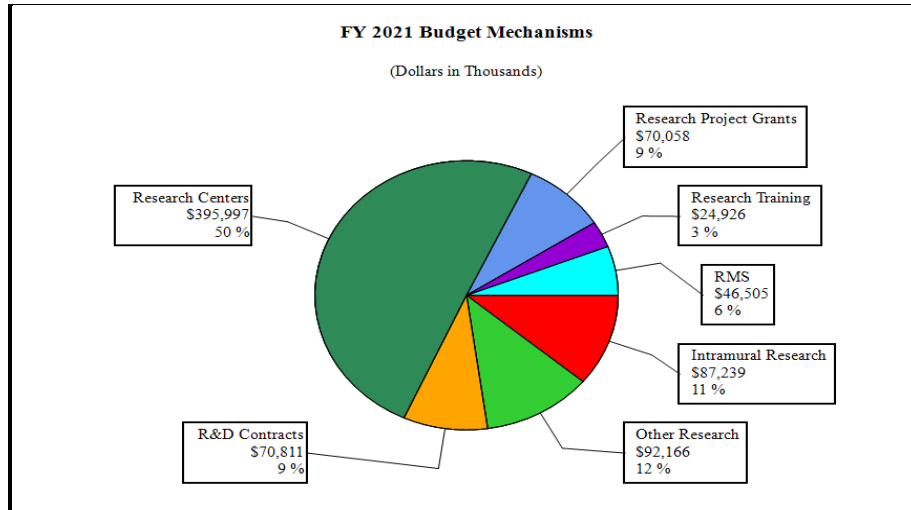
FY 2020 Enacted				\$832,888
FY 2021 President's Budget				\$787,703
Net change				-\$45,185
CHANGES	FY 2021 President's Budget		Change from FY 2020 Enacted	
	FTEs	Amount	FTEs	Amount
A. Built-in:				
1. Intramural Research:				
a. Annualization of January 2020 pay increase & benefits		\$10,840		\$70
b. January FY 2021 pay increase & benefits		10,840		161
c. Paid days adjustment		10,840		-40
d. Differences attributable to change in FTE		10,840		0
e. Payment for centrally furnished services		3,420		-16
f. Cost of laboratory supplies, materials, other expenses, and non-recurring costs		72,979		1,434
Subtotal				\$1,609
2. Research Management and Support:				
a. Annualization of January 2020 pay increase & benefits		\$21,695		\$140
b. January FY 2021 pay increase & benefits		21,695		331
c. Paid days adjustment		21,695		-81
d. Differences attributable to change in FTE		21,695		0
e. Payment for centrally furnished services		299		-16
f. Cost of laboratory supplies, materials, other expenses, and non-recurring costs		24,511		246
Subtotal				\$620
Subtotal, Built-in				\$2,228
CHANGES	FY 2021 President's Budget		Change from FY 2020 Enacted	
	No.	Amount	No.	Amount
B. Program:				
1. Research Project Grants:				
a. Noncompeting	56	\$43,207	2	-\$4,191
b. Competing	17	7,551	-18	-11,494
c. SBIR/STTR	29	19,300	-2	-1,271
Subtotal, RPGs	102	\$70,058	-18	-\$16,957
2. Research Centers	60	\$395,997	0	-\$28,121
3. Other Research	77	92,166	-12	-12,026
4. Research Training	401	24,926	-80	-4,939
5. Research and development contracts	134	70,811	4	28,284
Subtotal, Extramural		\$653,959		-\$33,759
6. Intramural Research	<u>FTEs</u> 45	\$87,239	<u>FTEs</u> 0	-\$10,587
7. Research Management and Support	122	46,505	0	-3,067
8. Construction		0		0
9. Buildings and Facilities		0		0
Subtotal, Program	167	\$787,703	0	-\$47,413
Total changes				-\$45,185

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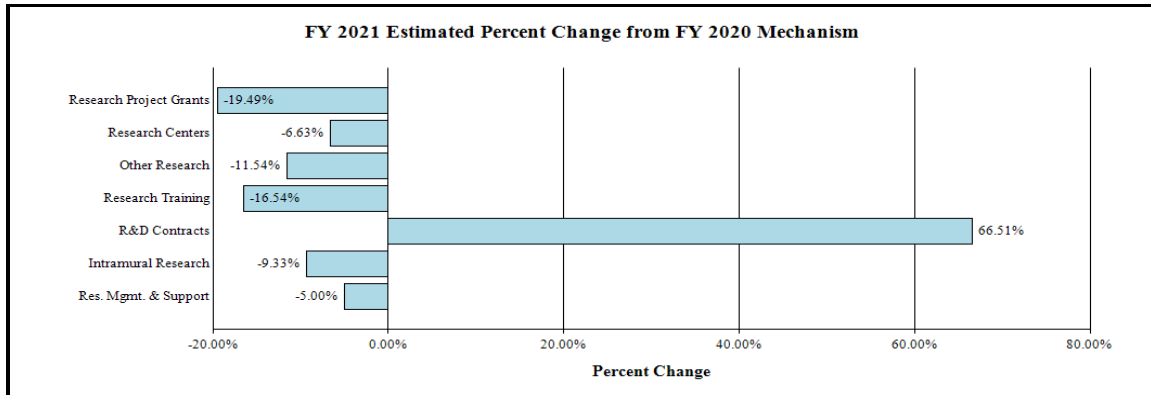
History of Budget Authority and FTEs:



Distribution by Mechanism:



Change by Selected Mechanism:



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Budget Authority by Activity¹ (Dollars in Thousands)								
Budget Activity²	FY 2019 Final		FY 2020 Enacted		FY 2021 President's Budget		FY 2021 +/- FY2020	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Clinical and Translational Science Activities	22	557,813	22	578,141	22	525,952		(52,189)
Cures Acceleration Network	5	44,487	5	49,000	5	74,577		25,577
Re-engineering Translational Sciences	145	201,303	140	205,747	140	187,174		(18,573)
Helping End Addiction Long-term	-	12,000	-	-	-	-	-	-
TOTAL	172	815,603	167	832,888	167	787,703	-	(45,185)

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

2 Amounts for each budget activity combine funding for extramural research, intramural research, and research management and support components of the activity.

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Authorizing Legislation						
	PHS Act/ Other Citation	U.S. Code Citation	2020 Amount Authorized	FY 2020 Enacted	2021 Amount Authorized	FY 2021 President's Budget
Research and Investigation	Section 301	42§241	Indefinite	\$832,888,000	Indefinite	\$787,703,000
National Center for Advancing Translational Sciences	Section 401(a)	42§281	Indefinite		Indefinite	
Total, Budget Authority				\$832,888,000		\$787,703,000

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Appropriations History

Fiscal Year	Budget Estimate to Congress	House Allowance	Senate Allowance	Appropriation
2012	\$721,601,000		\$582,326,000	\$576,456,000
Rescission				\$1,089,502
2013	\$639,033,000		\$631,346,000	\$575,366,498
Rescission				\$1,150,733
Sequestration				(\$28,879,442)
2014	\$665,688,000		\$661,264,000	\$633,267,000
Rescission				\$0
2015	\$657,471,000			\$635,230,000
Rescission				\$0
2016	\$660,131,000	\$643,111,000	\$699,319,000	\$685,417,000
Rescission				\$0
2017 ¹	\$685,417,000	\$707,335,000	\$713,849,000	\$705,903,000
Rescission				\$0
2018	\$557,373,000	\$718,867,000	\$729,094,000	\$742,354,000
Rescission				\$0
2019	\$685,087,000	\$751,219,000	\$806,787,000	\$806,373,000
Rescission				\$0
2020	\$694,112,000	\$845,783,000	\$849,159,000	\$832,888,000
Rescission				\$0
2021	\$787,703,000			

¹ Budget Estimate to Congress includes mandatory financing.

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Justification of Budget Request

Authorizing Legislation: Section 301 and title IV of the Public Health Service Act, as amended, and Section 480 of the PHS Act, relating to the Cures Acceleration Network

Budget Authority (BA):

	FY 2019 Final	FY 2020 Enacted	FY 2021 President's Budget	FY 2020 +/- FY 2019
BA	\$815,603,000	\$832,888,000	\$787,703,000	- \$45,185,000
FTEs	172	167	167	-

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

Director's Overview

The National Center for Advancing Translational Sciences (NCATS) was established in FY 2012 to address a singular problem in biomedical science: the wide and increasing disparity between scientific insights and the interventions developed from these promising beginnings. The average length of time to develop and approve a new drug is approximately 13 years, with a failure rate above 95 percent, and a cost exceeding \$1 billion;¹ with similar time and failure rate for other interventions including devices and behavioral interventions. And once an intervention is developed and shown to be safe and effective, another 17 years is required to disseminate the intervention to all patients who could benefit.²

Solving this problem is NCATS' mission. NCATS is advancing the *science* of translation, the process by which observations in the laboratory, clinic, and community are transformed into interventions that improve the health of individuals and the public. By understanding the translational process at a scientific and operational level, NCATS is making it faster and more successful for all diseases, so that more treatments can get to more patients more quickly.

¹ Collins, F.S., Reengineering Translational Science: The Time Is Right. Science Translational Medicine. 06 Jul 2011: 90cm17.

² Brownson, R. C., Kreuter, M. W., Arrington, B. A., & True, W. R. (2006). Translating scientific discoveries into public health action: how can schools of public health move us forward?. Public health reports (Washington, D.C. : 1974), 121(1), 97-103.

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For the past several decades, technology and scientific ingenuity have contributed to an explosion of foundational basic and clinical science discoveries and knowledge. For example, around 30 years ago, there were only about a dozen diseases with a known molecular basis. Today, that number is closer to 7,000, largely due to advances in genomics and molecular biology. While fundamental science - much of it supported by NIH - has advanced to an almost unfathomable degree, the ability to treat most diseases has changed little during that time. There are only approximately 500 treatments for those 7,000 diseases. Importantly, almost all NIH Institutes/Centers support research that translates research results into treatments. NCATS' mission is to figure out how to improve, streamline, and otherwise increase the success of the translational process so that the promise of this science will reach and benefit patients. This is why NCATS was created.

Today, here is the situation being faced: Developing a treatment and getting it to all patients who can benefit takes too long, costs too much, and fails too often. A key reason is what is commonly referred to as the “valley of death,” which are the numerous translational roadblocks to getting successful treatments to patients.

What does the valley of death look like? NCATS played a lead role in creating dynamic representations of the modern therapeutic development process and presenting the complex nature of the process and the multiple stakeholders involved. These “maps” of the small molecule and biologics development space also identify the multitude of steps, processes, and roadblocks when translating a basic discovery to public health implementation.³ Interactive versions of the Drug Discovery, Development and Deployment Maps are online, and new software features continue to be added to make them more useful and user-friendly, for both scientists and patients trying to navigate the system, and for translational systems engineers working to improve it.⁴

Translational science is focused on all stages of research along the path from the biological basis of health and disease, to developing interventions—drugs, devices, behavioral interventions, and medical procedures--that improve the health of individuals and the public. Given the numerous and often complex challenges in translational research, NCATS invests its resources strategically with the intent of making transformative, order-of-magnitude improvements in speeding the translation of discoveries into interventions. NCATS strives for innovations that reduce, remove, or bypass costly and time-consuming bottlenecks in translation, to speed the delivery of interventions to those that need them. A few examples to illustrate NCATS' approach and objectives:

Addressing issues common across translational research: NCATS takes a disease-agnostic approach when developing innovations and utilizes disease-specific projects as case studies to determine the effectiveness of the innovation and determine how it may be applied to other

³ Wagner, J., et. al, A dynamic map for learning, communicating, navigating and improving therapeutic development. *Nat Rev Drug Discov.* 2018 Feb; 17(2): 150; and

Wagner, JA, et. al, Application of a Dynamic Map for Learning, Communicating, Navigating, and Improving Therapeutic Development. *Clin Transl Sci.* 2018 Mar; 11(2): 166-174

⁴ 4dmap.ncats.nih.gov/#/

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diseases. Research has uncovered common principles and pathways for many diseases and common underlying issues across research disciplines, so the Center's translational science strategy encourages efforts that benefit *many diseases at a time*. For example, in NCATS Rare Disease Platform Vector Gene Therapy program, well-characterized viruses are being studied as gene delivery vehicles, or vectors, for clinical trials for the treatment of three or more rare genetic diseases that share the same therapeutic target tissue or cell type. As such, the vectors are being studied as a common pathway or platform not only for gene therapies for rare diseases but also potentially for any disease with a known genetic basis.

Innovation is key: NCATS designs programs with the intent that they may lead to transformational improvements in translational understanding and effectiveness, producing innovation that establishes fundamentally new ways of doing translation that are multiplicative in their effects. The original Tissue Chip for Drug Screening program supported innovative ideas to not only develop the organ-on-a-chip technology but also to establish processes for validating the technology and testing its reproducibility. As a result of NCATS' efforts, Tissue Chip research and utilization has exploded with the recognition of the potential of this innovative technology. NCATS has subsequently supported a suite of additional Tissue Chip programs in disease modeling and clinical trial qualification, continuing to drive rapid evolution of Tissue Chip technologies and applications.

Collaboration is a team sport: Translation requires the expertise of multiple scientific disciplines and groups as the research is carried from a basic insight, to a prototype intervention, to a fully developed intervention shown to be safe and effective in preclinical and then controlled clinical studies, to medical practice, to the community. Collaborations are essential to everything the Center does. In NCATS intramural research program, the scientists work on research teams in approximately 200 collaborations within and outside of NIH. NCATS partners include other NIH institutes and centers, patient advocacy organizations, private companies, non-profit organizations, research institutions, pharmaceutical companies, and federal agencies such as the Food and Drug Administration (FDA), the Environmental Protection Agency, the National Aeronautics and Space Administration, and the National Science Foundation, to name a few. Each collaborator brings valuable research expertise and access to resources to the team. This collaborative model is driving unprecedented productivity; for example, in 2019 alone, the program produced eight Investigational New Drug (IND) applications that were approved by the FDA—far more than other organizations of equivalent size.

The future includes harnessing the data NCATS and others are producing in new and innovative ways to drive breakthrough improvements in the efficiency and disease reach of translational science. The ability to generate, share, connect, access, connect, and explore diverse types of research data holds tremendous promise for all areas of translational research. Innovative translational data science efforts and activities within all of the Center's major translational science areas – pre-clinical translational research, clinical translational research, and rare diseases research – are being moved into the NCATS Cloud where the Center provides computational resources and access to data for researchers at, and funded by, NCATS. The common data science principles and issues being addressed by NCATS programs, such as the Biomedical Data Translator and the Clinical and Translational Science Awards (CTSA) National

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Center for Data to Health (CD2H), have enormous potential to benefit patients and researchers across all diseases, conditions, and stages of research.

When NCATS was created in 2012, it was unclear if the daunting scope of the translational problem and NCATS' ambitious mission to close the translational gap between the laboratory and patient health could actually be achieved. NCATS' many accomplishments since then, driven by its unique scientific and operational model, makes NCATS more optimistic than ever that it is possible to both understand translation as a science, and to use that knowledge to dramatically increase the efficiency of the process of developing treatments and cures – and in so doing, help bring the promise of science to patients in need.

Overall Budget Policy: The FY 2021 President's Budget request is \$787.7 million, a decrease of \$45.2 million or 5.4 percent compared with the FY 2020 Enacted level. Reductions are distributed across all programmatic areas and reflect payment of non-competing Research Project Grant awards at 7 percent below committed levels. The FY 2021 President's Budget reflects the Administration's fiscal policy goals for the Federal Government. Within that framework, NCATS will pursue its highest research priorities through strategic investments and careful stewardship of appropriated funds.

Program Accomplishments and Descriptions

NCATS promotes biomedical innovation, both scientific and operational, that accelerates the translation of scientific research towards improved human health. NCATS supports efforts that identify more efficient translational processes that reduce, remove, or bypass costly and time-consuming bottlenecks that impede the development of improved medical interventions. NCATS supports hundreds of clinical and translational scientists and health researchers at medical institutions across the United States (extramural) and in the Center's internal research program (intramural). The Center coordinates the extramural and intramural programs for maximal impact. By FY 2021, NCATS will have been in existence for 10 years. Since its inception, NCATS has made great strides in building the bridges that are needed to enable research that spans all aspects of translational science, and often encompasses research that navigates the "valley of death," a term coined to reflect the numerous translational roadblocks to getting successful treatments to patients. Because NCATS is disease agnostic, its mission is expansive, and translational science is conducted where opportunities emerge or are created. Select programs, initiatives, and accomplishments are highlighted below.

Innovations in Clinical and Translational Science

NCATS' flagship **Clinical and Translational Science Awards (CTSA) Program** comprises a dynamic suite of initiatives **focused on fostering and improving clinical and translational research and science**. The Program supports a nationwide network of institutions capable of addressing important roadblocks in clinical translation by working together locally, regionally, and nationally. CTSA Program support enables research teams, including scientists, patient advocacy organizations, and community members to tackle system-wide scientific and operational problems in clinical and translational research that no one team can overcome. NCATS supports biomedical research institutions across the nation to improve clinical

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translation and to develop a cadre of investigators trained to become translational scientists. CTSA activities described below are addressing nation-wide issues in clinical translation and developing approaches to strengthen the network.

- **Catalyzing Clinical Research Innovation and Innovating Clinical Trial Conduct:** The primary component of the CTSA Program is a national network of medical research institutions that form hubs of clinical and translational research. The hubs collaborate locally and regionally to catalyze innovation in training, research tools, and processes. The CTSA **Trial Innovation Network (TIN)**, composed of Trial Innovation Centers (TICs), a Recruitment Innovation Center (RIC), and the CTSA hubs, is a national laboratory to innovate clinical trial processes, particularly for multisite trials. These innovations include novel recruitment and participant engagement strategies, data-driven approaches to participant identification utilizing anonymized electronic health records as a site selection tool, as well as testing of new statistical or trial designs such as for adaptive trials. NCATS makes TIN expertise and resources available to investigators within and outside of the CTSA Program, providing an experimental environment for conducting clinical trials and tackling emerging public health issues. The **NIH's HEALSM Pain Management Effectiveness Research Network** initiative is leveraging the infrastructure of the CTSA TIN to support clinical trials that compare the effectiveness of existing non-addictive therapies or of existing or novel approaches for prevention and management of pain. This initiative aims to improve pain care by evaluating the effectiveness of a broad range of therapies to guide clinical practice in real-world settings.

- **Addressing Rural Health and Health Disparities:** In early 2019, NCATS announced an expansion of the CTSA Program's efforts to accelerate clinical and translational research to address rural health outcomes and work to eliminate health disparities. Project areas include improving access to clinical trials for rural communities, harnessing technology to deliver effective care that obviates the need for travel to a major medical center to access specialists and specialized equipment, and enhancing rural community outreach. Other important rural health-related activities include:
 - Issued a call for papers for a special themed issue of the Journal of Clinical and Translational Science which focuses on Clinical and Translational Science to Improve Rural Health⁵
 - Issued NIH Guide Notice of NCATS CTSA Program's Interest in Improving Rural Health Outcomes and Eliminating Health Disparities⁶
 - Issued NIH Guide Notice for the CTSA Collaborative Innovation Award U01 (PAR-19-099), expanding eligible organizations to include NIH Institutional Development Award (IDeA) Program Infrastructure for Clinical and Translational Research⁷
 - Sponsored Rural Health and Health Equity meeting at the University of Florida CTSA Program⁸

⁵ www.cambridge.org/core/journals/journal-of-clinical-and-translational-science/information/call-for-papers

⁶ grants.nih.gov/grants/guide/notice-files/NOT-TR-19-015.html

⁷ www.nigms.nih.gov/Research/DRCB/IDeA/Pages/IDeA-CTR.aspx

⁸ clic-ctsa.org/events/un-meeting-rural-health-and-health-equity

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- Initiated a trans-NIH annual seminar series on Rural Health with support from over 10 other NIH institutes and centers in celebration of National Rural Health Day
- **Putting Data and Information to Work to Improve Clinical Translation:** Biomedical tools and technologies are evolving rapidly, enabling scientists to both generate and analyze more research data than ever before. But what happens when datasets become too large to share or when the data from various sources are so dissimilar that they cannot be combined easily with another related but different dataset? These types of data roadblocks slow or prevent the translation of scientific research into medical knowledge and, ultimately, health benefits. Making data more meaningful, open, and accessible is a key goal in NCATS' efforts to improve translational science. The CTSA National Center for Data to Health (CD2H) accelerates advancements in informatics by promoting data reuse and interoperability, tool sharing, informatics fluency, and collaboration across the CTSA community. The goal of the CD2H is to help CTSA Program hubs accelerate advancements in informatics and improve patient care. The CTSA Program is also working on the development, enhancement, standardization, and use of artificial intelligence (AI) and machine learning approaches – with the potential to enhance efficiency in the health research and care system.
- **Receiving Input to Strengthen the CTSA Program:** NCATS is considering updates to the CTSA Program to meet its broad scientific mission to improve the efficiency and effectiveness of clinical research and translational science. As part of the process, the Center sought broad input from stakeholder communities through a Request for Information issued in September 2019 and will seek additional input at a “town hall” to be held in early 2020. This requested input will provide suggestions on how the CTSA Program might be strengthened to deliver on its promise to develop, demonstrate, and disseminate innovative approaches, methodologies, and interventions that translate into improved human health. Prior to implementation, NCATS will share any planned updates to the CTSA Program with the appropriations committees.

Budget Policy: The FY 2021 President's Budget request for Clinical and Translational Science Activities is \$526.0 million, a decrease of \$52.2 million or 9.0 percent compared with the FY 2020 Enacted level. NCATS will maintain the same number of CTSA hubs as funded in FY 2020, which is 60 hubs.

Cures Acceleration Network

The Cures Acceleration Network (CAN) was created by Congress to advance the development of high-need cures and reduce significant barriers between research discovery and clinical trials. It provides a high-risk/high-reward research space for NCATS to test innovative approaches to translational science. CAN supports potentially transformative initiatives in translational science discoveries and developments, while also focusing on reducing barriers to their development. CAN investments are guided by the CAN Review Board. A strategic objective of NCATS is for CAN-supported programs to catalyze the field and generate additional interest and support from other stakeholders willing to continue utilizing and supporting the technology in real-world settings. Below are highlighted CAN-supported programs.

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- **Developing New Approaches to Connecting and Translating Existing Data - NCATS Biomedical Data Translator (Translator):** Despite the explosion of fundamental science discoveries in the past several decades, existing biomedical data often remain disconnected, disorganized, and mired in discipline-specific jargon. The NCATS-supported Translator will serve as a resource for machine-based learning, exploration, and construction of new research hypotheses by connecting and distilling existing knowledge spanning all types of biomedical data, including environmental, molecular, and clinical data and other related information. Ultimately, Translator will accomplish this through an informatics platform that bridges pre-clinical basic research data with clinical data, which will enable exploration of relationships across the full spectrum of data types. The initial feasibility phase, which utilized CAN's Flexible Research Awards, resulted in the demonstration of the transformative potential of this approach through several use cases. The Translator program is advancing to its next phase, which will transition from software prototyping to Translator system development.

Program Portrait: *Translator – Zero to 60 Potential Drugs in Three Seconds – Finding New Uses for Existing Drugs to Treat Parkinson's Disease*

Parkinson's disease (PD) is a brain disorder that affects predominantly dopamine-producing neurons in a specific area of the brain. Symptoms generally develop slowly over years and include tremors, impaired posture/balance, slow movements, anxiety/depression, nausea, and other gastrointestinal difficulties.

While there are some therapies to help treat PD, new treatment options are needed. PD research requires studying data that exists in many forms such as gait analysis, brain imaging, protein sequences, and cognitive behavioral outcomes. These types of data are dispersed and stored in different formats, which can cause difficulty when attempting to integrate and understand information.

In the feasibility phase of NCATS Translator program, a team of investigators posed an inquiry to test how Translator could pull together disparate sources of data to find approved drugs that target proteins linked to PD. Within seconds, Translator created a ranked list of options by linking data sources using Translator's reasoning tools. Among these results, a novel association between PD and the drug cilnidipine was discovered, connected through the molecular function of a protein known to be important in brain signaling. This connection between PD and cilnidipine represents a promising new direction for research into the disease.

- **Applying Tissue Chips to Inform Clinical Trials:** In FY 2021, NCATS will focus efforts on how human cell-based microphysiological systems, also known as tissue chips or "organs-on-chips," could be used to inform clinical trial planning and execution. Collection of tissue chip data in a study designed to inform a human clinical trial will generate needed information regarding the potential of tissue chips to inform clinical trial design and elucidate the disease biology; inform an understanding of past trial successes and failures; assist with

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the selection of drug candidates for clinical trials; and improve the selection of patient populations and identification of reliable clinical trial endpoints.

The early success of the original *Tissue Chip for Drug Screening Program* led to the evolution of new initiatives: *Tissue Chip Testing Centers* (supporting testing and validation centers of new chip platforms and encouraging adoption by research, biotechnology companies and regulatory organizations); *Tissue Chips for Disease Modeling and Efficacy Testing* (developing human cell-based models of human diseases); and *Tissue Chips in Space* (deploying Tissue Chip Platforms at the International Space Station U.S. National Laboratory to study the effects of a microgravity environment on the human body as a rapid, reversible model of aging-associated conditions). Due to CAN investments in the development of tissue chip technologies, other institutes and centers at NIH are now encouraging the use of this innovative platform to model mission-specific diseases. It is anticipated that by FY 2021, earlier Tissue Chip initiatives will have matured for graduation out of CAN funding support while NCATS focuses on new applications to inform clinical trials.

- **Designing Chemical Compounds Important to Biology - A Specialized Platform for Innovative Research Exploration (ASPIRE):** Mapping chemical compounds to biological targets holds tremendous potential for the development of new treatments. New, biologically active chemicals can help researchers understand biological functions or become new drugs for treatment of diseases. The exploration of possible chemicals that could be biologically relevant remains largely understudied, and it is currently impossible to predict the chemicals that will affect a particular biological target. By integrating computer-aided drug design, automated synthetic chemistry, and high-throughput biological screening, ASPIRE brings the power of technology to the field of chemistry to address issues of standardization, low reproducibility, and biochemical predictability. It is anticipated that additional funding through CAN will power up the ASPIRE program to realize its full potential of identifying new chemical entities from the largely untapped chemical space to address the more finite biological targets.
- **Rare Disease Gene Therapy Strategies**
 - **Rare Disease Platform Vector Gene Therapy Trials:** The goal of the PaVe-GT (Platform Vector Gene Therapy) pilot program is to streamline and accelerate the development of gene therapies for rare diseases by moving from the current “one disease at a time” to a “many diseases at a time” approach. Modified viruses that are well-characterized for their capacity and safety have been utilized as vehicles, or “vectors,” in FDA-approved human gene therapy products. Through the initiative, NCATS, in collaboration with intramural investigators from the National Human Genome Research Institute (NHGRI) and the National Institute of Neurological Disorders and Stroke (NINDS), will use one of these vectors as a common delivery platform for gene therapy trials in four different diseases, with the goal of determining how this platform approach can increase the speed and efficiency of clinical trial start-up. Importantly, all the data generated from this project will be placed into the public domain so that others can use it for their own clinical trials.

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- **Consortium for Innovation in Large-Scale Gene Vector Production:** Gene therapy and gene editing approaches are some of the most promising treatment modalities for a growing number of disease conditions. Vectors are the “vehicle” by which a gene can be delivered to a targeted location in the body, and Adeno-Associated Viruses (AAVs) are currently the most prevalent type of vector used in both gene therapy and gene editing studies. Wait times to produce vector therapies that meet the manufacturing standards necessary for clinical trials are long, often one to two years. Resolving this production bottleneck is critical for gene-based therapies to reach all people who need them. NCATS proposes to create a consortium to: 1) establish expanded clinical-grade material production capacity using current methods, 2) develop technologies to increase the efficiency of vector production, 3) design the next generation of vectors with more definable tissue environment or tropism; and 4) develop vector methodologies to enable control of their level of expression with an externally applied signal. The consortium will focus on providing clinical grade vectors for academic and government-funded clinical trials, but standardization and data sharing efforts will benefit the private sector as well. In the short term, the proposed consortium would plan to fund additional good manufacturing practices (GMP) vector production capacity at existing academic or industry GMP production facilities, thereby increasing access to gene therapy through clinical trials for those with inherited diseases.

- **Addressing Common Barriers to Gene Therapy Development:** At the January 2019 Joint Advisory Council meeting at NCATS, the CAN Review Board identified gene therapy as an area in which NCATS can have a great and immediate positive impact by eliminating barriers to future product development. The Board noted that hundreds of gene therapy trials are underway, but all gene therapy programs face common barriers, such as manufacturing bottlenecks, that cause multiyear delays and drive costs up. These impediments will only get worse if it is up to individual programs to dismantle the barriers. The initial recommendation was to convene a set of workshops to set priorities within the issues and discuss potential solutions. In response to this recommendation, NCATS is hosting workshops with several partners within NIH and outside NIH to address these important barriers such as developing more platforms, addressing capacity for vector manufacturing, and understanding immune responses.

Budget Policy: The FY 2021 President’s Budget request for the Cures Acceleration Network is \$74.6 million, an increase of \$25.6 million or 52.2 percent compared with the FY 2020 Enacted level. At this budget level, NCATS would invest \$30 million to launch the previously described “Consortium for Innovation in Large-Scale Gene Vector Production.”

Re-engineering Translational Sciences

NCATS has several important programs that are collectively considered to be “re-engineering translational sciences.” The focus of these different efforts is to tackle important translational roadblocks in a number of different areas that include both intramural and extramural programs.

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- **Addressing Rare Diseases:** With approximately 7,000 different rare diseases affecting an estimated 25-30 million Americans, rare diseases are complex, and anything but rare. NCATS is utilizing several approaches to help those suffering from rare diseases with the objectives of raising awareness about rare diseases, making information about rare diseases accessible, shortening the time to diagnosis, and developing treatments.
 - **Raising Awareness - Rare Diseases are Not Rare!:** NCATS held a communications challenge program in late 2018 to highlight the need for research and new treatments for rare diseases. The first place entry was a series of posters titled “Unicorns and Super Heroes Are Rare – Rare Diseases Are Not” depicting unicorns, superheroes, and other mythical figures combined with brief rare disease facts and humor to show how common rare diseases are and that more people know about fictional figures than real rare diseases. NCATS plans to hold another similar prize challenge around the same theme to continue raising awareness about rare diseases and further develop communication strategies using social media and other platforms. All challenge entries are posted on NCATS’ website.⁹
 - **Making Information Accessible and Shortening the Time to Diagnosis - Genetic and Rare Diseases Information Center (GARD):** NCATS partners with NHGRI to support GARD, an information center designed to provide comprehensive information about rare and genetic diseases for patients, their families, health care providers, researchers, and the public. The online GARD database,¹⁰ in English and Spanish, provides accurate, up-to-date information about ongoing research, symptoms, treatment options, and other details. In addition, GARD information specialists are available to discuss questions by phone in English and in Spanish. NCATS is updating GARD to enhance the information it contains as well as improve the search capabilities it provides. Two initiatives built on the GARD platform provide rare disease patient groups with the tools they need:
 - **Toolkit for Patient-Focused Therapy Development:** The Toolkit provides a collection of online resources that can help patient groups advance through the process of therapy development and provide them with the tools they need to advance medical research. It includes resources that have been developed *by and for* the rare diseases community to facilitate therapeutics research and development. These resources were defined, characterized, and organized in a centralized portal that can be helpful to patient groups, regardless of how far along in the research and development process they might be.
 - **Rare Diseases Registry (RaDaR):** RaDaR, built from the former Global Rare Diseases Patient Registry (GRDR), is an online resource website¹¹ that provides patient groups with guidance on how to develop registries for rare diseases. Good-quality registries help support research programs and

⁹ ncats.nih.gov/funding/open/rare-diseases-challenge/winners

¹⁰ [Rarediseases.info.nih.gov/](https://rarediseases.info.nih.gov/)

¹¹ [Registries.ncats.nih.gov](https://registries.ncats.nih.gov)

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stimulate treatment development. RaDaR gives an overview of what to consider before starting a registry and step-by-step guidance and tools for setting up and managing a contact registry.

- **Working in Collaboration to Develop Treatments - Rare Diseases Clinical Research Network (RDCRN):** The RDCRN program was established under the Rare Diseases Act of 2002 and is designed to advance medical research on rare diseases by providing support for clinical studies and facilitating collaboration, study enrollment, and data sharing. Through the RDCRN, physician-scientists and their multidisciplinary teams work together with patient groups as part of the research team to conduct research on related rare diseases. Collaboration is key; scientists from different institutions come together to enroll patients and collect data, experience, and resources. Together, the network has studied more than 250 rare diseases at sites across the Nation. In 2019, NCATS issued the fourth cycle of RDCRN awards, partnering with nine other NIH Institutes, Centers, and Offices. For this cycle, the consortium is encouraged to advance promising drug candidates closer to clinical testing and de-risk the processes that contribute to a successful clinical trial.
- **Data and Cloud Computing:** NCATS is encouraging the use of cloud computing by its grantees to enable better data accessibility and use. **NCATS efforts serve the translational science mission of the Center by providing computational resources and access to data, with a focus on programs and consortia that support clinical trials.** NCATS provides access and expertise in provisioning, managing, and securing cloud services. The Center has access to services from all major cloud providers for commercial and government cloud environments. NCATS CTSA and RDCRN Programs are already utilizing the cloud computing environment. With this approach, NCATS ensures that grantees adhere to the FAIR principles, in that data will be (F)indable, (A)ccessible, (I)nteroperable, and (R)eusable; in alignment with the NIH Office of Data Science Strategy. Historically, each individual member of these consortia has focused research on one or a handful of diseases at a time. By providing access to the data across the entire consortium, **researchers can look across all available data to look for trends that may lead to interventions applicable to several diseases.**
- **Ethical Issues in Translational Science:** Novel discoveries and technologies frequently come with questions and concerns about their ethical use, as well as their impact on societal norms. Potential for harms can arise related to the research and its application. NCATS plans to support research specifically to inform the ethical development or application of novel findings and technologies to improve human health.
- **Innovations in Pre-Clinical Translational Science:** After a basic research observation is made but before a discovery turns into an intervention to be tested in humans, extensive testing rigor, reproducibility, and safety and effectiveness is needed. This *pre-clinical translational phase* is often where many promising ideas fail for reasons such as the inability to reproduce the original results, lack of access to compounds and drugs to test and confirm original observations, and lack of resources and expertise to conduct necessary testing as

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required by the FDA. NCATS' intramural scientists work in this translational space through team-based collaborations with researchers from other organizations, which include academia, biotechnology companies, and industry. Researchers in NCATS' Division of Pre-Clinical Innovation use each project as a case study to also develop a broader understanding of approaches and innovations that can improve the efficiency and effectiveness of pre-clinical translation. Working within a flexible, project-based environment, NCATS applies state-of-the-art technologies and expertise in pre-clinical translational research and development to carry a project through pre-clinical testing. Ultimately, this team-based approach enables the project to proceed through completion more efficiently.

- **Therapeutics Development:** Pre-clinical therapeutic development works to help break bottlenecks in the drug development process, using specific projects as use case examples. NCATS **Therapeutics for Rare and Neglected Diseases (TRND)** and **Bridging Interventional Development Gaps (BrIDGs) programs** have established a collaborative science model which is unprecedented in its efficiency in developing rare disease treatments to the point at which biopharmaceutical companies will adopt them for clinical trials and regulatory approval. With TRND and BrIDGs, NCATS works intentionally in the unpredictable stage of therapy development that is particularly expensive and failure prone. Many research projects are abandoned at this stage because they are deemed too risky for industry investment, thus preventing potentially life-saving treatments from reaching patients. TRND and BrIDGs project teams “de-risk” therapeutic candidates and make them more attractive for adoption by outside business partners. In calendar year 2019, partnerships with TRND and BrIDGs facilitated the filing of eight Investigational New Drug applications with the FDA. The TRND and BrIDGs collaborative team science model, positioned right at the nexus between preclinical development and first-in-human studies, enables this high rate of successful translation that otherwise has required considerably higher level of resources in the conventional for-profit or non-profit drug development setting.

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Program Portrait: *Taking the Guesswork out of Drug Discovery - Finding Effective Treatment Combinations for Rare Childhood Brain Cancers*

NCATS researchers are collaborating with Stanford University to study rare childhood brain cancers called diffuse midline gliomas, including Diffuse Intrinsic Pontine Glioma (DIPG). These aggressive, hard-to-treat tumors are the leading cause of brain cancer death among U.S. children. Survival rates only range on the order of months.

To help address this challenge, the research team utilized NCATS' expertise in high-throughput screening technology and developed a matrix combination strategy to test rapidly the effects of thousands of different drug combinations on key disease processes. Scientists could then examine the most effective combinations, find the best doses of each drug, and learn more about their effects on cancer cells. The project team found that the drug panobinostat (identified by Stanford University) is more effective in combination with another drug, marizomib. The high-throughput and matrix combination screening strategies enabled the identification of potential new therapeutic options for DIPG.

Budget Policy: The FY 2021 President's Budget request for Reengineering Translational Sciences is \$187.2 million, a decrease of \$18.6 million or 9.0 percent compared with the FY 2020 Enacted level. NCATS will continue priority research programs.

Summary

FY 2021 will be the tenth year for NCATS. In reflecting, NCATS sees progress in addressing complex, challenging scientific and operational roadblocks to the translational process, such as developing human cell-based models to more closely mimic human systems, developing a prototype reasoning tool for the Biomedical Data Translator, and streamlining models and templates for negotiating agreements for different partners. NCATS is poised to utilize innovative team-based models to accelerate translation in an agile way to address emerging public health crises. As NCATS focuses on the future, it strives to address more and more of the translational roadblocks through innovation. The future is in the power of data, and a number of NCATS' programs will focus on expanding its team-based collaboration models to harness the data to inform translation and solve big translational roadblocks.

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Budget Authority by Object Class¹ (Dollars in Thousands)			
	FY 2020 Enacted	FY 2021 President's Budget	FY 2021 +/- FY 2020
Total compensable workyears:			
Full-time equivalent	167	167	0
Full-time equivalent of overtime and holiday hours	0	0	0
Average ES salary	\$195	\$195	\$0
Average GM/GS grade	13.1	13.1	0.0
Average GM/GS salary	\$124	\$124	\$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 2020 Enacted	FY 2021 President's Budget	FY 2021 +/- FY 2020
Personnel Compensation			
11.1 Full-Time Permanent	14,827	14,997	171
11.3 Other Than Full-Time Permanent	6,764	6,842	78
11.5 Other Personnel Compensation	856	866	10
11.7 Military Personnel	431	442	11
11.8 Special Personnel Services Payments	1,408	1,424	16
11.9 Subtotal Personnel Compensation	\$24,286	\$24,571	\$286
12.1 Civilian Personnel Benefits	7,299	7,584	285
12.2 Military Personnel Benefits	371	380	10
13.0 Benefits to Former Personnel	0	0	0
Subtotal Pay Costs	\$31,955	\$32,536	\$580
21.0 Travel & Transportation of Persons	578	568	-10
22.0 Transportation of Things	141	144	3
23.1 Rental Payments to GSA	65	67	1
23.2 Rental Payments to Others	0	0	0
23.3 Communications, Utilities & Misc. Charges	76	78	2
24.0 Printing & Reproduction	0	0	0
25.1 Consulting Services	2,926	2,484	-441
25.2 Other Services	54,102	46,906	-7,196
25.3 Purchase of goods and services from government accounts	54,170	54,389	219
25.4 Operation & Maintenance of Facilities	972	886	-87
25.5 R&D Contracts	9,216	37,100	27,884
25.6 Medical Care	4,183	3,968	-215
25.7 Operation & Maintenance of Equipment	9,090	8,215	-875
25.8 Subsistence & Support of Persons	0	0	0
25.0 Subtotal Other Contractual Services	\$134,658	\$153,947	\$19,288
26.0 Supplies & Materials	12,157	9,730	-2,427
31.0 Equipment	8,030	7,453	-577
32.0 Land and Structures	36	33	-3
33.0 Investments & Loans	0	0	0
41.0 Grants, Subsidies & Contributions	645,191	583,148	-62,043
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	\$800,933	\$755,167	-\$45,765
Total Budget Authority by Object Class	\$832,888	\$787,703	-\$45,185

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

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Salaries and Expenses

(Dollars in Thousands)

OBJECT CLASSES	FY 2020 Enacted	FY 2021 President's Budget	FY 2021 +/- FY 2020
Personnel Compensation			
Full-Time Permanent (11.1)	\$14,827	\$14,997	\$171
Other Than Full-Time Permanent (11.3)	6,764	6,842	78
Other Personnel Compensation (11.5)	856	866	10
Military Personnel (11.7)	431	442	11
Special Personnel Services Payments (11.8)	1,408	1,424	16
Subtotal Personnel Compensation (11.9)	\$24,286	\$24,571	\$286
Civilian Personnel Benefits (12.1)	\$7,299	\$7,584	\$285
Military Personnel Benefits (12.2)	371	380	10
Benefits to Former Personnel (13.0)	0	0	0
Subtotal Pay Costs	\$31,955	\$32,536	\$580
Travel & Transportation of Persons (21.0)	\$578	\$568	-\$10
Transportation of Things (22.0)	141	144	3
Rental Payments to Others (23.2)	0	0	0
Communications, Utilities & Misc. Charges (23.3)	76	78	2
Printing & Reproduction (24.0)	0	0	0
Other Contractual Services:			
Consultant Services (25.1)	2,926	2,484	-441
Other Services (25.2)	54,102	46,906	-7,196
Purchases from government accounts (25.3)	33,110	31,345	-1,766
Operation & Maintenance of Facilities (25.4)	972	886	-87
Operation & Maintenance of Equipment (25.7)	9,090	8,215	-875
Subsistence & Support of Persons (25.8)	0	0	0
Subtotal Other Contractual Services	\$100,200	\$89,835	-\$10,365
Supplies & Materials (26.0)	\$12,157	\$9,730	-\$2,427
Subtotal Non-Pay Costs	\$113,152	\$100,355	-\$12,797
Total Administrative Costs	\$145,108	\$132,891	-\$12,217

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Detail of Full-Time Equivalent Employment (FTE) □

OFFICE/DIVISION	FY 2019 Final			FY 2020 Enacted			FY 2021 President's Budget		
	Civilian	Military	Total	Civilian	Military	Total	Civilian	Military	Total
Division of Clinical Innovation									
Direct:	19	3	22	18	3	21	18	3	21
Reimbursable:	-	-	-	-	-	-	-	-	-
Total:	19	3	22	18	3	21	18	3	21
Division of Pre-Clinical Innovation									
Direct:	41	1	42	39	1	40	39	1	40
Reimbursable:	6	-	6	5	-	5	5	-	5
Total:	47	1	48	44	1	45	44	1	45
Office of Administrative Management									
Direct:	35	-	35	35	-	35	35	-	35
Reimbursable:	-	-	-	-	-	-	-	-	-
Total:	35	-	35	35	-	35	35	-	35
Office of Grants Management and Scientific Review									
Direct:	22	-	22	22	-	22	22	-	22
Reimbursable:	6	-	6	6	-	6	6	-	6
Total:	28	-	28	28	-	28	28	-	28
Office of Policy, Communications, and Education									
Direct:	11	-	11	11	-	11	11	-	11
Reimbursable:	-	-	-	-	-	-	-	-	-
Total:	11	-	11	11	-	11	11	-	11
Office of Rare Diseases Research									
Direct:	6	-	6	6	-	6	6	-	6
Reimbursable:	-	-	-	-	-	-	-	-	-
Total:	6	-	6	6	-	6	6	-	6
Office of Strategic Alliances									
Direct:	6	-	6	6	-	6	6	-	6
Reimbursable:	-	-	-	-	-	-	-	-	-
Total:	6	-	6	6	-	6	6	-	6
Office of the Director									
Direct:	16	-	16	15	-	15	15	-	15
Reimbursable:	-	-	-	-	-	-	-	-	-
Total:	16	-	16	15	-	15	15	-	15
Total	168	4	172	163	4	167	163	4	167
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								
2017	12.6								
2018	12.6								
2019	13.1								
2020	13.1								
2021	13.1								

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Detail of Positions¹

GRADE	FY 2019 Final	FY 2020 Enacted	FY 2021 President's Budget
Total, ES Positions	1	1	1
Total, ES Salary	192,254	194,908	194,908
GM/GS-15	24	22	22
GM/GS-14	35	35	37
GM/GS-13	39	39	39
GS-12	14	14	13
GS-11	4	4	3
GS-10	0	0	0
GS-9	4	5	5
GS-8	3	3	3
GS-7	2	3	3
GS-6	0	0	0
GS-5	0	0	0
GS-4	0	0	0
GS-3	0	0	0
GS-2	0	0	0
GS-1	0	0	0
Subtotal	125	125	125
Grades established by Act of July 1, 1944 (42 U.S.C. 207)			
Assistant Surgeon General	0	0	0
Director Grade	2	2	2
Senior Grade	1	1	1
Full Grade	1	1	1
Senior Assistant Grade	0	0	0
Assistant Grade	0	0	0
Subtotal	4	4	4
Ungraded	46	37	37
Total permanent positions	130	130	130
Total positions, end of year	176	167	167
Total full-time equivalent (FTE) employment, end of year	176	167	167
Average ES salary	192,254	194,908	194,908
Average GM/GS grade	13.1	13.1	13.1
Average GM/GS salary	121,854	123,536	123,536

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