

NATIONAL INSTITUTE OF GENERAL MEDICAL SCIENCES

CONGRESSIONAL JUSTIFICATION
FY 2026

Department of Health and Human Services
National Institutes of Health

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DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

National Institute of General Medical Sciences

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General Notes

1. The restructured National Institute of General Medical Sciences (NIGMS) will consolidate the research activities of the existing NIGMS with the National Library of Medicine (NLM), the National Institute of Biomedical Imaging and Bioengineering (NIBIB), the National Center for Advancing Translational Sciences (NCATS), and the National Human Genome Research Institute (NHGRI). Figures for FY 2024 and FY 2025 in this document aggregate NIGMS, NLM, NIBIB, NCATS, and NHGRI to provide for comparability to the FY 2026 estimates for the restructured NIGMS.
2. FY 2025 Enacted levels cited in this document reflect the FY 2025 full-year continuing resolution (Public Law 119-4) and include the effects of the FY 2025 HIV/AIDS transfer.
3. FY 2026 FTE levels reflect estimates and are subject to change.
4. Detail in this document may not sum to the subtotals and totals due to rounding.

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Summary

The National Institute of General Medical Sciences (NIGMS) consolidates multiple NIH Institutes and Centers to create an Institute with a unique focus on research capacity building and programs that push biomedical research forward. Specifically, the newly re-imagined NIGMS includes the existing National Institute of General Medical Sciences along with the National Library of Medicine (NLM), the National Institute of Biomedical Imaging and Bioengineering (NIBIB), the National Center for Advancing Translational Sciences (NCATS), and the National Human Genome Research Institute (NHGRI). The mission of these institutes and centers will constitute the new NIGMS portfolio.

Currently, NIGMS supports basic research that increases understanding of biological processes and lays the foundations for advances in disease diagnosis, treatment, and prevention. NIGMS focuses on fundamental research aimed at understanding the principles, mechanisms, and processes that underlie living organisms. NIGMS provides leadership in supporting the training of the next generation of scientists and in developing biomedical research capacity throughout the country. It provides investigators with opportunities to conduct creative and ambitious scientific research through a combination of innovative funding mechanisms and access to research-enabling technological resources. Through programs focusing on important ideas rather than preliminary data, NIGMS also emphasizes support for early-stage investigators (ESIs).

NLM is the world's largest biomedical library and a global leader in biomedical informatics and computational health data science research. NLM's mission to acquire, organize, preserve, and disseminate trustworthy biomedical data and information drives it to provide real-time, reliable access to high-quality information through its products and services. NLM conducts and funds cutting-edge research that drives medical breakthroughs and expands the use of data in scientific discovery and health care, trains the next generation of biomedical informaticists and computational health data scientists, and manages and disseminates trusted biomedical and consumer health information. NLM resources are used every day by millions of people in support of scientific discovery, clinical research, education, health management and health care, and public health response.

NIBIB's mission is to transform, through technology development, our understanding of disease and its prevention, detection, diagnosis, and treatment. NIBIB is the central hub for biomedical technology research and is a leader in facilitating technology translation and commercialization, ultimately enhancing technology access. To successfully drive the development of cutting-edge technology, NIBIB supports a multidisciplinary research community and depends on robust partnerships across NIH, federal agencies, academia and the private sector.

NCATS' mission is to turn research observations into health solutions through translational science. Translational science is the discipline that effectively bridges lab, clinic, and communities to improve health for all people. NCATS uses innovation and team science to break through barriers, enabling rapid translation of research into real world solutions. NCATS leverages expertise to address inefficiencies in translation that slow and even stop research efforts. In this way, NCATS' vision is to bring more treatments for all people more quickly.

NHGRI is the leading authority in genomics, and NHGRI's mission is to accelerate scientific and medical breakthroughs that improve human health by driving cutting-edge research, developing new technologies, and studying the impact of genomics on society. Building on NHGRI's leadership role in the initial sequencing of the human genome, NHGRI collaborates with the scientific and medical communities to enhance genomic technologies and expand the field of genomics to accelerate breakthroughs and improve lives.

The newly re-imagined NIGMS will invest in bold strategies that push the biomedical research enterprise forward in new and innovative ways, combining the expertise found across NIH to expand capacity and develop transformative change in biomedical research.

The FY 2026 budget request for NIGMS is \$3,677.3 million, consisting of \$3,427.3 million in discretionary budget authority and \$250.0 million in program evaluation financing.

Major Changes in the Budget Request

Major changes by budget mechanism and/or budget activity detail are briefly described below. The FY 2026 budget request for NIGMS is \$3,677.3 million, including \$250.0 million in Public Health Service Act program evaluation funds. This budget level represents a restructured NIGMS that incorporates NHGRI, NLM, NIBIB, and NCATS into the existing NIGMS. On a comparable basis, the FY 2026 President's Budget represents a \$2,091.3 million decrease when compared to the FY 2025 Full-Year Continuing Resolution (CR) level. The FY 2026 President's Budget reflects the Administration's fiscal policy goals for the Federal Government. All extramural grant mechanisms reflect the Administration's policy to limit indirect costs for research grants to a maximum of 15 percent of direct costs.

Research Project Grants (-\$1,276.6 million; total \$1,861.1 million):

Noncompeting Research Project Grants (RPGs) assume a default decrease of 10.0 percent from committed levels, with previous NCATS commitments reduced by 20.0 percent to allow for competing awards in that mission area. The FY 2026 request will continue the FY 2025 NIH policy of allocating half of the budget for competing RPGs for awards that fully fund their outyear commitments as part of the initial grant awards. Overall, the RPG budget will decrease 41.0 percent relative to the FY 2025 Full-Year CR level.

Research Centers (-\$282.7 million; total \$425.6 million):

Similar to RPGs, non-competing Research Centers awards are reduced by 10.0 percent with previous NCATS commitments reduced by 20.0 percent. The amounts represent mostly commitments, allowing for some flexibility to fund competing awards. Under the framework of this budget, funding for Research Centers decreases by 39.9 percent from the FY 2025 Full-Year CR level.

Other Research (-\$145.8 million; total \$305.5 million):

Consistent with RPGs, non-competing Other Research grants are reduced by 10.0 percent with previous NCATS commitments reduced by 20.0 percent. This budget represents a 32.3 percent budget decrease from the FY 2025 Full-Year CR level. The amounts represent mostly commitments, allowing for some flexibility to fund competing awards.

Research Training (-\$141.6 million; total \$193.1 million):

The request for National Research Service Awards (NRSA) is \$193.1 million, which is a 42.3 percent reduction when compared to the FY 2025 Full-Year CR. This level accounts for reductions in awards due to the effects of the Administration's policies and Executive Orders on applicable programs and institutions. The budget request funds 2,983 fewer slots for Full-Time Equivalent Training Positions. Training Related Expenses and Institutional Allowance benefits for predoctoral and postdoctoral trainees are frozen in FY 2026. NIH institutes will provide the annual childcare costs (currently \$3,000) for 25.0 percent of the full-time predoctoral or postdoctoral NRSA training appointment slots at the time of award.

Research and Development (R&D) Contracts (-\$48.4 million; total \$131.7 million):

The FY 2026 President's Budget requests \$131.7 million for R&D Contracts, a 26.9 percent reduction from FY 2025 Full-Year CR levels, due to the overall funding NIGMS funding reduction.

Intramural Research (-\$154.6 million; total \$513.3 million):

This budget requests \$513.3 million for Intramural Research, a 23.2 percent budget reduction from FY 2025 levels and a reduction of 102 full-time equivalent (FTE) employees. The budget assumes staff resignations associated with the budget proposal to cap Title 42 salaries, with associated potential laboratory closures and reduced operating costs.

Research Management and Support (-\$41.7 million; total \$247.0 million):

The Research Management and Support (RMS) budget request in the FY 2026 President's Budget is \$247.0 million, a 14.4 reduction from the FY 2025 Full-Year CR. Compared to the FY 2025 levels, this budget represents a reduction of 176 FTE. The FY 2026 FTE levels also reflect the effects of recent reductions in force and separation incentives, including the use of Voluntary Early Retirement Authority and Voluntary Separation Incentive Payments. Estimates also include pay and benefit mandatory increases consistent with OPM and NIH-wide policy, including annualization of the enacted 2.0 percent average civilian pay raise in January 2025 and a proposed civilian pay freeze in January 2026.

BUDGET MECHANISM TABLE

NATIONAL INSTITUTES OF HEALTH National Institute of General Medical Sciences

Budget Mechanism *

(Dollars in Thousands)

Mechanism	FY 2024 Final		FY 2025 Full-Year CR		FY 2026 President's Budget		FY 2026 +/- FY 2025	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount
Research Projects:								
Noncompeting	4,528	\$2,111,064	4,578	\$2,199,384	3,425	\$1,369,326	-1,153	-\$830,057
Administrative Supplements	(1,095)	\$120,948	(583)	\$72,040	(3)	\$170	-(580)	-\$71,870
Competing:								
Renewal	344	\$172,702	196	\$141,826	67	\$63,698	-129	-\$78,129
New	1,032	\$500,684	720	\$559,222	357	\$282,637	-363	-\$276,584
Supplements	0	\$0	0	\$0	27	\$36,877	27	\$36,877
Subtotal, Competing	1,376	\$673,385	916	\$701,048	451	\$383,212	-465	-\$317,836
Subtotal, RPGs	5,904	\$2,905,397	5,494	\$2,972,472	3,876	\$1,752,708	-1,618	-\$1,219,763
SBIR/STTR	244	\$161,092	239	\$165,255	181	\$108,419	-58	-\$56,836
Research Project Grants	6,148	\$3,066,489	5,733	\$3,137,726	4,057	\$1,861,127	-1,676	-\$1,276,600
Research Centers								
Specialized/Comprehensive	180	\$462,290	185	\$472,708	151	\$333,099	-34	-\$139,608
Clinical Research	36	\$252,427	22	\$198,722	13	\$72,913	-9	-\$125,809
Biotechnology	32	\$46,237	28	\$34,660	14	\$17,456	-14	-\$17,203
Comparative Medicine	1	\$2,140	1	\$2,140	1	\$2,088	0	-\$52
Research Centers in Minority Institutions	0	\$0	0	\$0	0	\$0	0	\$0
Research Centers	249	\$763,094	236	\$708,230	179	\$425,556	-57	-\$282,673
Other Research:								
Research Careers	257	\$105,798	260	\$108,583	177	\$74,890	-83	-\$33,693
Cancer Education	0	\$0	0	\$0	0	\$0	0	\$0
Cooperative Clinical Research	0	\$0	0	\$0	0	\$0	0	\$0
Biomedical Research Support	19	\$21,520	14	\$20,699	23	\$12,976	9	-\$7,723
Other Biomedical Research Support	83	\$23,850	29	\$10,966	24	\$6,799	-5	-\$4,167
Other	517	\$307,061	523	\$311,020	354	\$210,846	-169	-\$100,174
Other Research	876	\$458,229	826	\$451,267	578	\$305,511	-248	-\$145,756
Total Research Grants	7,273	\$4,287,812	6,795	\$4,297,223	4,814	\$2,592,194	-1,981	-\$1,705,029
Ruth L Kirschstein Training Awards:	FTTPs		FTTPs		FTTPs		FTTPs	
Individual Awards	279	\$16,291	273	\$16,220	170	\$10,041	-103	-\$6,178
Institutional Awards	5,946	\$311,775	5,979	\$318,449	3,099	\$183,061	-2,880	-\$135,387
Total Research Training	6,225	\$328,065	6,252	\$334,668	3,269	\$193,103	-2,983	-\$141,565
Research & Develop. Contracts	219	\$199,687	177	\$180,134	137	\$131,706	-40	-\$48,428
SBIR/STTR (non-add)	(4)	(\$5,279)	(0)	(\$3,141)	(0)	(\$2,127)	(0)	-\$1,015
Intramural Research	913	\$668,457	946	\$667,909	844	\$513,284	-102	-\$154,625
Res. Management & Support	712	\$284,606	735	\$288,693	559	\$247,010	-176	-\$41,682
SBIR Admin. (non-add)		(\$619)		(\$642)		(\$474)		-\$168
Construction		\$0		\$0		\$0		\$0
Buildings and Facilities		\$0		\$0		\$0		\$0
Total, NIGMS	1,625	\$5,768,627	1,681	\$5,768,627	1,403	\$3,677,297	-278	-\$2,091,330

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

SUMMARY OF CHANGES

NATIONAL INSTITUTES OF HEALTH National Institute of General Medical Sciences

Summary of Changes

(Dollars in Thousands)

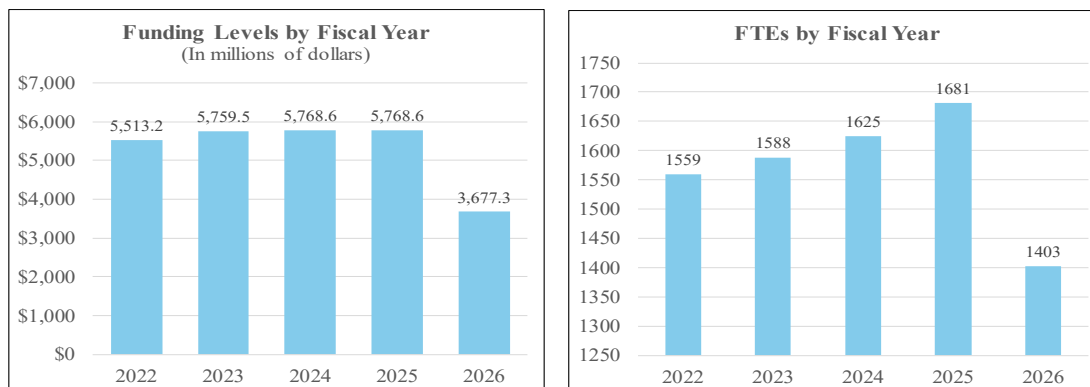
FY 2025 Full-Year CR	\$5,768,627
FY 2026 President's Budget	\$3,677,297
Net change	-\$2,091,330

CHANGES	FY 2025 Full-Year CR		FY 2026 President's Budget		Built-In Change from FY 2025 Full-Year CR	
	FTEs	Budget Authority	FTEs	Budget Authority	FTEs	Budget Authority
A. Built-in:						
1. Intramural Research:						
a. Annualization of FY 2025 pay and benefits increase		\$217,788		\$210,879		\$1,340
b. FY 2026 pay and benefits increase		\$217,788		\$210,879		\$522
c. Paid days adjustment		\$217,788		\$210,879		\$0
d. Differences attributable to change in FTE		\$217,788		\$210,879		-\$24,321
e. Payment for centrally furnished services		\$29,337		\$22,239		-\$7,098
f. Cost of laboratory supplies, materials, other expenses, and non-recurring costs		\$420,784		\$280,166		-\$14,563
Subtotal						-\$44,120
2. Research Management and Support:						
a. Annualization of FY 2025 pay and benefits increase		\$149,505		\$124,641		\$923
b. FY 2026 pay and benefits increase		\$149,505		\$124,641		\$382
c. Paid days adjustment		\$149,505		\$124,641		\$0
d. Differences attributable to change in FTE		\$149,505		\$124,641		-\$34,340
e. Payment for centrally furnished services		\$12,080		\$9,664		-\$2,416
f. Cost of laboratory supplies, materials, other expenses, and non-recurring costs		\$127,108		\$112,705		-\$3,762
Subtotal						-\$39,213
Subtotal, Built-in						-\$83,333

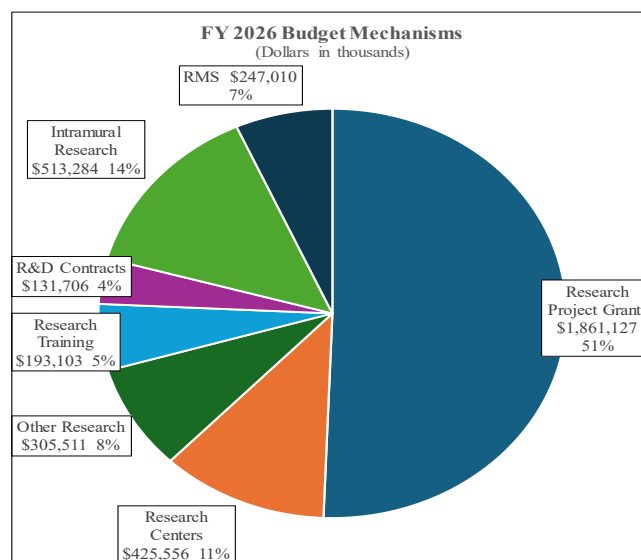
CHANGES	FY 2025 Full-Year CR		FY 2026 President's Budget		Program Change from FY 2025 Full-Year CR	
	No.	Amount	No.	Amount	No.	Amount
B. Program:						
1. Research Project Grants:						
a. Noncompeting	4578	\$2,271,424	3425	\$1,369,497	-1153	-\$901,927
b. Competing	916	\$701,048	451	\$383,212	-465	-\$317,836
c. SBIR/STTR	239	\$165,255	181	\$108,419	-58	-\$56,836
Subtotal, RPGs						-\$1,276,600
2. Research Centers	236	\$708,230	179	\$425,556	-57	-\$282,673
3. Other Research	826	\$451,267	578	\$305,511	-248	-\$145,756
4. Research Training	6252	\$334,668	3269	\$193,103	-2983	-\$141,565
5. Research and development contracts	177	\$180,134	15	\$131,706	-162	-\$48,428
Subtotal, Extramural						-\$1,895,022
6. Intramural Research	946	\$667,909	844	\$513,284	-102	-\$110,505
7. Research Management and Support	735	\$288,693	559	\$247,010	-176	-\$2,469
8. Construction	0	\$0	0	\$0	0	\$0
9. Buildings and Facilities	0	\$0	0	\$0	0	\$0
Subtotal, program changes						-\$2,007,997
Total built-in and program changes	1,681	\$5,768,627	1,403	\$3,677,297	-278	-\$2,091,330

BUDGET GRAPHS

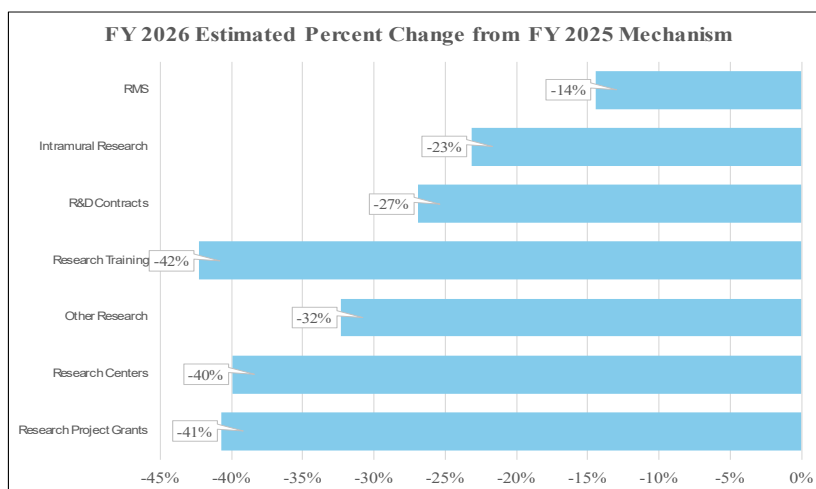
History of Budget Authority and FTEs:



Distribution by Mechanism:



Change by Selected Mechanisms:



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JUSTIFICATION OF BUDGET REQUEST

National Institute of General Medical Sciences

Budget Authority (BA):

	<u>FY 2024 Final</u>	<u>FY 2025 Enacted</u>	<u>FY 2026 President's Budget</u>	<u>FY 2026 +/- FY 2025</u>
Direct BA	\$4,356,145,000	\$4,356,145,000	\$3,427,297,000	-\$928,848,000
NIGMS PE	<u>1,412,482,000</u>	<u>1,412,482,000</u>	<u>250,000,000</u>	<u>-1,162,482,000</u>
NIGMS Total	5,768,627,000	5,768,627,000	3,677,297,000	-2,091,330,000
FTE ¹	1,625	1,681	1,403	-278

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

Overall Budget Policy: The FY 2026 President's Budget request for the National Institute of General Medical Sciences (NIGMS) is \$3,677.3 million, a decrease of \$2,091.3 million or 36.3 percent compared with the FY 2025 full-year CR level. This funding level includes \$250.0 million in Public Health Service program evaluation funds, \$1,162.5 million less than the FY 2025 full-year CR level. Within the total, the request provides \$270.2 million for the Institutional Development Awards (IDeA) program, \$394.7 million for the Clinical and Translational Sciences Awards (CTSA) program, and \$48.7 million for the Cures Acceleration Network.

Program Descriptions and Accomplishments

NIGMS will leverage programs that further biomedical research as a whole including programs focused on research capacity building and support early-stage investigators. In addition, NIGMS will continue to invest resources in key programs, technologies, and platforms that have the potential to transform health and biomedical research such as artificial intelligence, data science research, and innovative technologies. Finally, NIGMS will continue to further commercialization and translational science to help ensure that NIH research is benefiting Americans and improving health.

Capacity Building

NIH plays a key role in supporting the infrastructure that keeps the biomedical research environment competitive and innovative. This includes increasing the geographic distribution of NIH funding, supporting research training opportunities, and enhancing research infrastructure.

¹ FY 2026 FTE levels reflect estimates and are subject to change.

IDeA Program

One of the programs that enables NIH to broaden the geographic distribution of NIH funding is the Institutional Development Award (IDeA) program, which provides additional resources in 23 states and Puerto Rico (i.e., jurisdictions that have historically had low levels of NIH funding). There are five major IDeA funding initiatives: (1) the Centers of Biomedical Research Excellence (COBRE) initiative funds biomedical research centers of excellence in a research area that aligns with the grantee institution's strategic priorities, with a particular emphasis on developing the independent research careers of early-stage investigators; (2) the IDeA Networks of Biomedical Research Excellence (INBRE) initiative supports statewide networks of higher education institutions, including primarily undergraduate institutions and biomedical research institutions, to expand research capabilities and develop the biomedical research workforce; (3) the IDeA Clinical and Translational Research (CTR) programs promote the advancement of clinical and translational research that address health concerns in IDeA eligible states; (4) the IDeA co-funding initiative aims to increase the pool of NIH-funded investigators supported by all NIH institutes and centers; and (5) the IDeA Regional Entrepreneurship Development (I-RED) program supports small business concerns in IDeA states to develop educational products that promote entrepreneurship in academic institutions and biotechnology sectors of the state. These educational products are expected to build the entrepreneurial skills that biomedical researchers and students need to move scientific discoveries and innovative technologies from the lab into commercial products.

NIH also continues to implement plans for strengthening clinical and translational research through its IDeA programs. In FY 2024, four new Clinical and Translational Research Development (CTR-D) awards were funded to support institutions in building clinical and translational research capacity from the ground up. In addition, the IDeA State Consortium for Clinical Research Resource Center (ISCORE-RC), which is charged with increasing the number of trials and observational cohort studies in IDeA states, trained 54 clinical research coordinators in 10 IDeA states in FY 2024 and expanded its curriculum to include a pediatrics module. To demonstrate to pharmaceutical sponsors the capacity of IDeA states to enroll and retain rural and other populations of interest for clinical trials, ISCORE-RC is now collecting metrics from its participating sites.

Training

NIGMS seeks to promote biomedical research by strengthening research training environments and supporting individuals at multiple training and career stages in a variety of institutions and educational settings across the country. NIH supports this workforce development through National Research Service Award (NRSA) institutional training grants beginning at the undergraduate level, mentored career development awards for postdoctoral and early-career researchers, and bridging programs that support trainees' transition from each career stage to the next. Collectively, these programs are designed to ensure that future researchers are drawn from a pool of talented individuals, bringing scientific and professional perspectives, interests, and skills to address complex scientific problems.

Research Infrastructure

Many organizations lack the staff, resources, and/or infrastructure to assemble competitive NIH grant applications, including for institutional training grants. To remedy this, NIGMS launched the Biomedical Research Environment & Sponsored Programs Administration Development (BRE-SPAD) program, which focuses on institutions with few to no biomedical research doctoral students. BRE-SPAD will support these institutions in increasing their capacity to apply for and administer grants, enhancing their research environments for the benefit of trainees.

Through the Support for Research Excellence (SuRE) program, NIGMS further enhances the institutional scientific research culture at resource-limited institutions by providing research grant support for faculty investigators who are not currently funded by other NIH Research Project Grants and plan to engage students in high-quality undergraduate and/or graduate research experiences. The SuRE Resource Center assists SuRE-eligible institutions to build research infrastructure, conducts outreach and training with OSP staff and faculty investigators, and tracks grantee institutions' progress in research capacity building.

In addition to these training programs, NIGMS provides support for research and research training capacity building as well as research training conferences. These activities are meant to fund: 1) programs to build research training capacity at resource-limited institutions; 2) development and sharing of evidence-informed practices and resources for training; and 3) scientific analyses of important aspects of the biomedical research enterprise and efforts to foster an innovative, productive and efficient scientific workforce from which future research discoveries and scientific leaders will emerge.

Early-Stage Investigators

Preliminary data can be a useful tool for reviewers to determine the feasibility of a proposed research plan. Yet for early-stage investigators just beginning to chart their own scientific path, or established investigators branching out in new directions, the need for preliminary data can often act as a barrier to obtaining funding. NIGMS's R35 Maximizing Investigators' Research Award (MIRA) provides funding for an investigator's program of research rather than for specific projects, thus allowing investigators the opportunity to explore fundamental questions and to flexibly capitalize on unexpected insights or breakthroughs. Specifically, early-stage investigator MIRA applications do not require preliminary data, focusing instead on the quality and potential of proposed ideas.

NIGMS is taking a similar approach for early-stage investigators through the COBRE program, which builds capacity for thematically focused research centers in states that have historically received less NIH funding. COBREs have an emphasis on the career development of early-stage investigators. As part of its capacity building activities, each COBRE funds research projects led by either early-stage investigators or new investigators who have not previously held major NIH research project grants, providing them with mentorship and professional development. As with early-stage investigator MIRA awards, these projects do not require preliminary data, allowing researchers to explore new ideas and build the evidence base they need to acquire further funding.

Artificial Intelligence and Data Science

NIH has a number of key investments in Artificial Intelligence, machine learning, and data science. This includes leveraging AI and machine learning in making new discoveries, managing biomedical research data, advancing biomedical imaging, and supporting data science advances for genomic data.

New Discoveries

As biomedical research generates bigger, richer datasets, researchers need more powerful tools to interpret them. AI and machine learning (ML) can quickly draw insights from large amounts of data that human researchers may not notice. Computers can make logical decisions about data, such as categorizing it, determining how closely it matches a standard, or recognizing patterns. Increasingly, biomedical researchers are using AI to better understand biology and find new ways to prevent, detect, diagnose, and treat diseases.

Using AI/ML in the drug development process can decrease the time and costs of discovering, testing, and bringing a drug to market. Using a PocketMiner program, NIH funded researchers are finding binding pockets in proteins previously deemed “undruggable.” PocketMiner found potential binding pockets in 35 cancer-related proteins, which can now be targeted as new approaches to treat cancers—including currently untreatable ones.

Sepsis ImmunoScore, the first FDA-approved algorithm to predict sepsis, uses machine learning to identify and categorize a patient’s biological responses to evaluate their risk of having or developing sepsis within the next 24 hours. NIGMS funded the inception of this test, which uses a total of 22 parameters, including medical history, vitals, demographic data, traditional lab results, and new biomarker measurements, on patients suspected of having a serious infection that could lead to a deadly immune response like sepsis, which causes 350,000 deaths each year.

Biomedical Data

NIH has cultivated more than two centuries of experience as a global leader within the scientific community to support the broader biomedical data ecosystem. NIH leverages AI and other emerging technologies to ensure that biomedical information services provided by NIH can best facilitate the translation of biomedical research into practice. NIH is uniquely positioned to integrate data from basic and social science research, public health, and clinical care to provide patients, their care partners, health care professionals, and the public with access to the most current and accurate information to make informed decisions. Collaborations with federal and non-federal partners ensure that interoperable data are readily available and usable by supporting the development, adoption, and application of health and biomedical data standards.

NIH continues to invest in revolutionary biomedical informatics and computational health data science research. NIH investigators are using AI and machine learning to more effectively derive insights from biomedical images and clinical care data. Researchers are identifying novel applications of emerging technologies such as AI and ML to develop tools that can analyze large datasets and uncover patterns and insights valuable for disease diagnosis, drug discovery, and patient care management.

NIH-managed biomedical information services, including key products such as PubMed and MedlinePlus, are consistently ranked among the most-used government websites and support the scientific enterprise. NIH stays at the forefront of research and health by continuously modernizing services to increase and improve access to biomedical data and information.

In FY 2024, NIH researchers also continued to develop and use informatics methods and AI tools to advance understanding of biomedical images and clinical records. Investigators developed an effective and efficient algorithm that can provide visual answers to first aid, medical emergency, and medical education questions by searching and retrieving relevant medical images from several heterogeneous sources.

NIH researchers also developed an AI-based system that automates the analysis of echocardiograms, which could support cardiac diagnostics applications by ensuring analysis is accurate and consistent. Additionally, investigators have developed large language model approaches to capture temporal relationships from clinical notes, furthering understanding of disease progression that could facilitate diagnosis and treatment. NIH is also using deep learning methods to automate the identification and indexing of gene and chemical names in biomedical literature, which improves literature retrieval and information access.

Biomedical Imaging

NIH will continue to support the growth of AI in biomedical imaging by facilitating the development and validation of powerful AI algorithms, as has been achieved within the Medical Imaging and Data Resource Center (MIDRC). NIH led the development of MIDRC, an open discovery data repository with AI algorithm development and validation capabilities for the detection, diagnosis, monitoring, and prognosis of COVID-19. This multi-institutional coalition collected hundreds of thousands of chest X-ray images and related medical data from partners across the country.

The collaborative structure of MIDRC and its specialized tools serve as a template for new initiatives that NIH and its partners are utilizing in other areas of human health. MIDRC is participating in a pilot program with the National Science Foundation (NSF) to build a National AI Research Resource (NAIRR). The NAIRR infrastructure, supported by 12 federal agencies and 26 non-government partners, aims to connect U.S. researchers to computational, data, software, modeling, and training resources to enhance AI research. MIDRC will provide unique expertise in data commons technology, helping gather and organize medical imaging data from diverse sources.

With advances in imaging capabilities, the vast data found in a single picture can easily overwhelm researchers and clinicians alike. To combat this problem, researchers have trained AI/ML to quickly and thoroughly analyze tissue sample images, including determining burn severity or tumor aggressiveness to help guide treatment decisions. NIH funded researchers used databases with hundreds of millions of images to train an AI model that can perform many different tasks, including classifying cancers and identifying rare diseases.

Data Science and Genomic Data

To maximize the utility of the ever-increasing amounts of genomic data, NIH is supporting transformative research in computational biology and data science. For example, NIH expanded its support of research aimed at developing AI and machine learning tools for analyzing genomic and related data – in basic, translational and clinical settings. Such methods will have broad applications, including enhancing the accuracy of predicting how genomic variants influence genome function and, in some cases, increase risk for a disease. To improve such predictions, the NIH Machine Learning AI Tools to Advance Genomic Translational Research (MAGen) Program develops, refines and applies machine learning and AI technologies for analyzing multiple data types at once. These efforts promise to shed new light on the interplay between genomic and non-genomic factors in health and disease.

In addition to these promising tools, NIH has also developed the Biomedical Data Translator System (Translator),² a powerful knowledge-driven software approach developed by NIH and NIH-supported researchers that enables biomedical researchers to aggregate information that could help in developing and identifying treatments for diseases. Translator pulls together data from 200 trusted open-source research databases plus scientific publications, as well as open clinical data so researchers can discover novel connections that are virtually impossible for a person to find alone. Translator allows researchers to, among other things, identify potential new uses for existing drugs and compounds, and propose new ideas for testing. The data and coding standards developed specifically for Translator are now being shared and adopted by other NIH projects, as well as the NSF and other federal agencies.

Early uses of Translator have already shown the power of this approach. A research team using Translator found that a common blood pressure medicine, guanfacine, could potentially be used to treat a young girl with a rare neurodevelopmental disorder, SHINE Syndrome, also known as *DLG4*-related synaptopathy. With no known treatment, this debilitating disease includes symptoms such as severe muscle weakness and epilepsy. Given guanfacine's known safety profile and mechanism of action, the researchers shared this information with the medical team, who decided to try it as a treatment. After a few months on this medication, the girl's motor, social, and behavioral skills had markedly improved.

Advancing Innovation

NIGMS will continue to innovate and support advances that will further scientific discovery. Researchers have already made key progress in areas like visualizing blood flow and developing new techniques to mimic human tissues.

Visualizing Blood Flow

Researchers are developing a new imaging technique that is low cost and non-invasively provides a three-dimensional visualization of blood flow in real time. The method, called Photoacoustic Computed Tomography through an Ergodic Relay (PACTER), was successfully evaluated in animals and humans. Key vital information is hidden within the dynamics of flowing blood. Clinicians have great interest in knowing how fast blood flows, the amount of

² ui.transltr.io

oxygen present in the blood, and if blood is reaching extremities. These are important factors when it comes to diagnosing, treating, or preventing vascular diseases.

Vascular diseases, such as aneurysms, atherosclerosis, and strokes, affect the blood vessel network and can prevent the proper flow of oxygen-rich blood from the heart to other parts of the body. Current imaging methods can detect blood flow, but the most advanced methods require expensive equipment along with dyes and ionizing radiation, which pose their own health risks. The team utilized an alternative imaging method called photoacoustic imaging where optical imaging and ultrasound methods are combined. In this way, tissue structures in the body can be visualized by detecting the sound waves generated by biological tissues as it absorbs light. The new system allows researchers to generate images quickly and simultaneously collect vast amounts of data.

In this study, PACTER successfully mapped out the abdominal vasculature of live mice and enabled detection of periodic changes in vessel size to help identify the animals' breathing rates.³ Researchers were also able to observe vessels and measure blood flow speed in the hands and feet of two human subjects. As expected, when applying a blood pressure cuff, changes in blood flow and blood vessel shape could be detected in a subject's hand. Next, the researchers hope to measure the amount of oxygen in flowing blood and make their system more portable. The ability to visualize blood flow could aid clinicians in treating vascular diseases, a leading cause of death globally.

Mimicking Human Tissue

NIH-supported researchers are building innovative soft robots that are designed to mimic skin and muscle. The robot's electronic skin and artificial muscles enable them to sense their surroundings and adapt to movements in real-time which will make them safer when implanted inside the body. These new robotic sensors have the potential to be used to measure things like bladder volume or cardiac contractions and then deliver therapeutic electrical stimulation if needed.

The soft robot's base layer is a temperature-sensitive hydrogel, or a flexible network of molecules, that contracts and relaxes like muscle. This layer could allow the robot to bend and grip organs or structures within the body. Researchers designed the outer layer to be an electronic skin which contains many different sensors and stimulators that provide signals to the robot or surrounding tissues, allowing the robot to measure temperature, electrical activity, and mechanical strain.

In a proof-of-concept study, the team evaluated their soft robot based on clinical needs described by physicians.⁴ One test shows a potential use in bladder dysfunction. The robot can measure strain in a balloon that is filled and emptied with water, simulating changes in bladder volume. The robot softly grips the "bladder," measures strain, and once a threshold of strain is reached, responds with an electrical stimulation to empty. The new device has the potential to address many clinical challenges; future work will focus on evaluating the sensor in more advanced models and real-world settings.

³ pubmed.ncbi.nlm.nih.gov/38036618/

⁴ pubmed.ncbi.nlm.nih.gov/38196588/

Commercialization and Translation

Translating discoveries into advances and engaging industry to help commercialize research is absolutely crucial to delivering for the American people. The newly re-imagined NIGMS will focus on key aspects of this complex endeavor to ensure that NIH research benefits Americans.

Commercialization

NIGMS has multiple technology programs, such as the Biomedical Technology Optimization and Dissemination (BTOD) Centers, the NIH Research Evaluation and Commercialization Hubs (REACH), and the IDeA Regional Entrepreneurship Development (I-RED) hubs help researchers take later-stage technologies and prepare them for dissemination and commercialization. As new technologies continue to mature, NIGMS programs leverage economies of scale to provide investigators across the country with cost-effective access to new technologies. The NIGMS National and Regional Resources (NRR), Mature Synchrotron Resources (MSR), as well as the Common Fund's National Centers for Cryoelectron Microscopy (Cryo-EM) programs allow researchers to access large-scale technological resources their individual institutions would otherwise be unable to provide due to cost or complexity. In recent years NIGMS funded highly successful national Cryo-EM Centers.

Translational Science

Translational science is instrumental to the many stages in launching a clinical trial: from study design to study startup and ethical review, to patient engagement, recruitment, retention, and through study completion. Under NIH leadership, the Clinical and Translational Science Awards (CTSA) Program supports a national network of medical institutions that innovates in testing treatments and speeds the translation of research discoveries into improved care for all. NIH has demonstrated how combining data collected during routine healthcare visits (known as real-world data) with clinical trials can accelerate discoveries. This dual approach — randomized controlled trials alongside real-world data — not only helps accelerate the identification of treatments but also strengthens the evidence by examining results in both controlled and real-world environments. These efforts aim to improve clinical trial design and lower the barriers that prevent patients from participating in clinical trials, so that clinical research truly benefits all people.

The CTSA Program is a collaborative consortium working locally, regionally, and nationally to speed the translation of clinical research discoveries into health benefits for all people. Historically a nationwide network of over 60 biomedical research institutions, the FY 2026 budget level will support 51 primary research institutions, serve as the program's backbone and tackles key bottlenecks in clinical research and translational science and trains the next generation of clinical and translational scientists.

From 2021-2023, the CTSA Program contributed to nine investigational new drugs, directly demonstrating CTSA's impact on developing more treatments. In addition, the CTSA Collaborative Innovation Awards (CCIA) program develops, demonstrates, and disseminates innovative solutions to improve the quality, efficiency, and impact of turning observations into interventions. The CTSA Trial Innovation Network (TIN) develops innovative ways, such as the use of electronic health record-driven recruitment strategies, to enhance research and clinical

trial design, and enrollment and retention in trials. This allows more efficient clinical trials to reach underserved populations, such as rural communities, and develop more effective treatments. More progress on this approach is expected as the CTSA Program expands upon its strong foundation of real-world data and electronic health records research — including allowing researchers to explore and validate feasibility for clinical studies from their desktops, a strategy created by the CTSA's Evolve to Next-Gen Accrual to Clinical Trials Network.

CTSA activities, such as streamlined clinical research practices and access to resources impact the speed of translation. For example, a regional collaboration to broaden newborn screening approaches is speeding diagnosis and fostering earlier interventions critical for effective treatment. Early Check is a genomic screening program involving a unique collaboration between Research Triangle Institute, the North Carolina Department of Health and Human Services State Lab of Public Health, and three CTSA institutions. Aimed at diagnosing newborns within the first 3-4 months of life and helping to find medical care before serious illness can develop, the free program covers 200 serious health conditions not part of traditional newborn screens and now includes an option for determining the risk of developing Type 1 diabetes. To date, over 2,000 babies have been screened and over 50 babies have had positive screening results, most of which would likely have been missed through limited traditional screening methods. While NIH support was key to initiating the program, Early Check is now sustained through a state level partnership.⁵

⁵ earlycheck.org/what-is-early-check/who-we-are

APPROPRIATIONS HISTORY

**NATIONAL INSTITUTES OF HEALTH
National Institute of General Medical Sciences**

Appropriations History¹

Fiscal Year	Budget Estimate to Congress¹	House Allowance	Senate Allowance	Appropriation
2017 Rescission	\$4,450,271,000	\$4,541,688,000	\$4,655,279,000	\$4,649,897,000 \$0
2018 Rescission	\$3,798,376,000	\$4,745,770,000	\$4,955,271,000	\$4,891,059,000 \$0
2019 Rescission	\$4,512,778,000	\$4,949,472,000	\$5,088,863,000	\$5,086,193,000 \$0
2020 Rescission Supplemental	\$4,378,847,000	\$5,354,773,000	\$5,303,604,000	\$5,237,004,000 \$0 \$106,000,000
2021 Rescission	\$4,793,669,000	\$5,292,044,000	\$5,450,437,000	\$5,337,133,000 \$0
2022 Rescission	\$5,504,936,000	\$5,601,613,000	\$5,477,918,000	\$5,517,729,000 \$0
2023 Rescission	\$5,491,856,000	\$5,693,631,000	\$5,716,920,000	\$5,764,377,000 \$0
2024 Rescission	\$5,759,451,000	\$5,679,377,000	\$5,764,377,000	\$5,774,377,000 \$0
2025 Rescission	\$5,807,861,000		\$5,904,377,000	\$5,774,377,000 \$0
2026	\$3,677,297,000			

¹ FY 2017 Budget Estimate to Congress includes mandatory financing.

BUDGET AUTHORITY BY OBJECT CLASS

NATIONAL INSTITUTES OF HEALTH National Institute of General Medical Sciences

Budget Authority by Object Class¹

(Dollars in Thousands)

	FY 2025 Full-Year CR	FY 2026 President's Budget	FY 2026 +/- FY 2025
Total compensable workyears:			
Full-time equivalent	1,681	1,403	-278
Full-time equivalent of overtime and holiday hours	0	0	0
Average ES salary	\$205	\$224	\$19
Average GM/GS grade	12.7	12.9	0.2
Average GM/GS salary	\$142	\$144	\$2
Average salary, Commissioned Corps (42 U.S.C. 207)	\$104	\$99	-\$5
Average salary of ungraded positions	\$141	\$142	\$1
OBJECT CLASSES	FY 2025 CR	FY 2026 President's Budget	FY 2026 +/- FY 2025
Personnel Compensation			
11.1 Full-Time Permanent	\$151,566	\$118,195	-\$33,371
11.3 Other Than Full-Time Permanent	\$88,916	\$82,233	-\$6,683
11.5 Other Personnel Compensation	\$8,426	\$7,835	-\$591
11.7 Military Personnel	\$946	\$774	-\$172
11.8 Special Personnel Services Payments	\$18,913	\$17,169	-\$1,744
11.9 Subtotal Personnel Compensation	\$268,766	\$226,206	-\$42,560
12.1 Civilian Personnel Benefits	\$94,935	\$82,196	-\$12,739
12.2 Military Personnel Benefits	\$297	\$233	-\$65
13.0 Benefits to Former Personnel	\$3,295	\$26,885	\$23,591
Subtotal Pay Costs	\$367,294	\$335,520	-\$31,773
21.0 Travel & Transportation of Persons	\$3,773	\$3,381	-\$393
22.0 Transportation of Things	\$591	\$530	-\$62
23.1 Rental Payments to GSA	\$61	\$63	\$1
23.2 Rental Payments to Others	\$168	\$165	-\$4
23.3 Communications, Utilities & Misc. Charges	\$368	\$362	-\$6
24.0 Printing & Reproduction	\$91	\$93	\$2
25.1 Consulting Services	\$122,784	\$74,212	-\$48,573
25.2 Other Services	\$235,576	\$171,306	-\$64,270
25.3 Purchase of Goods and Services from Government Accounts	\$285,290	\$216,192	-\$69,098
25.4 Operation & Maintenance of Facilities	\$2,609	\$1,651	-\$958
25.5 R&D Contracts	\$33,456	\$21,883	-\$11,573
25.6 Medical Care	\$1,668	\$1,413	-\$255
25.7 Operation & Maintenance of Equipment	\$32,193	\$20,569	-\$11,624
25.8 Subsistence & Support of Persons	\$0	\$0	\$0
25.0 Subtotal Other Contractual Services	\$713,577	\$507,225	-\$206,351
26.0 Supplies & Materials	\$19,527	\$13,623	-\$5,904
31.0 Equipment	\$19,206	\$12,097	-\$7,109
32.0 Land and Structures	\$4,432	\$930	-\$3,502
33.0 Investments & Loans	\$0	\$0	\$0
41.0 Grants, Subsidies & Contributions	\$3,183,404	\$2,509,656	-\$673,748
42.0 Insurance Claims & Indemnities	\$0	\$0	\$0
43.0 Interest & Dividends	\$64	\$64	\$0
44.0 Refunds	\$0	\$0	\$0
94.0 Financial Transfers	\$43,590	\$43,590	\$0
Subtotal Non-Pay Costs	\$3,988,851	\$3,091,777	-\$897,075
Total Budget Authority by Object Class	\$4,356,145	\$3,427,297	-\$928,848

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

DETAIL OF POSITIONS

NATIONAL INSTITUTES OF HEALTH
National Institute of General Medical Sciences

Detail of Positions ¹

GRADE	FY 2024 Final	FY 2025 Full-Year CR	FY 2026 President's Budget
Total, ES Positions	4	6	6
Total, ES Salary	\$887,600	\$1,230,816	\$1,342,352
General Schedule			
GM/GS-15	155	127	114
GM/GS-14	270	266	223
GM/GS-13	386	351	296
GS-12	171	163	132
GS-11	63	72	57
GS-10	1	1	1
GS-9	44	42	32
GS-8	27	25	17
GS-7	18	15	15
GS-6	3	3	3
GS-5	4	3	3
GS-4	2	1	0
GS-3	1	0	0
GS-2	3	1	2
GS-1	2	2	2
Subtotal	1,150	1,072	897
Commissioned Corps (42 U.S.C. 207)			
Assistant Surgeon General	0	0	0
Director Grade	5	5	5
Senior Grade	0	0	0
Full Grade	0	0	0
Senior Assistant Grade	1	1	0
Assistant Grade	0	0	0
Junior Assistant	0	0	0
Subtotal	6	6	5
Ungraded	560	608	549
Total permanent positions	1,132	1,079	908
Total positions, end of year	1,720	1,692	1,457
Total full-time equivalent (FTE) employment, end of year	1,625	1,681	1,403
Average ES salary	\$221,900	\$205,136	\$223,725
Average GM/GS grade	12.7	12.7	12.9
Average GM/GS salary	\$139,254	\$142,279	\$144,427

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