

National Institute of General Medical Sciences

CONGRESSIONAL JUSTIFICATION
FY 2024

Department of Health and Human Services
National Institutes of Health

NIH National Institute of General Medical Sciences

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DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

National Institute of General Medical Sciences (NIGMS)

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* *Cover: Fruit fly (*Drosophila melanogaster*) ovaries with DNA shown in magenta and actin filaments shown in light blue. Image courtesy of Wen Lu and Vladimir I. Gelfand, Feinberg School of Medicine, Northwestern University.*

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Director's Overview



Jon R. Lorsch, Ph.D.
Director, NIGMS

The National Institute of General Medical Sciences (NIGMS) supports basic biomedical research that increases our understanding of the biological principles and processes at work within living systems and lays the scientific foundation for advances in disease prevention, diagnosis, and treatment. In addition, NIGMS is committed to ensuring the vitality and productivity of the biomedical research enterprise by optimizing discovery, expanding research capacity, and providing leadership in supporting training of the next generation of scientists. To fulfill our mission, we use a comprehensive data-driven approach to assess, promote, and maintain diversity in supported scientific topics, in the biomedical research workforce at multiple career stages, and in the institutions and communities that conduct and participate in biomedical research.

Promoting and Supporting Scientific Innovation, Creativity, and Collaboration

Discoveries that fundamentally change how we understand health and disease often come from unexpected places. Consequently, NIGMS supports a broad, diverse portfolio of investigator-initiated research based on the principle that the best ideas and opportunities for discovery come from scientists with different perspectives and areas of expertise. Our data-driven programs and policies allow us to fund a wide variety of investigators and provide them with both the stability and flexibility they need to follow new scientific insights in unanticipated directions.

NIGMS's pioneering Maximizing Investigators' Research Award (MIRA) encourages scientific exploration and risk-taking, and enhances productivity, by providing flexible and stable support for a researcher's entire program of study. This means researchers spend less time writing grant applications and more time following new research directions as opportunities arise. MIRA's continued expansion has allowed NIGMS to fund a wider range of researchers, including more early-stage investigators (ESIs). Internal analyses show that MIRA funds more ESIs who are women or from historically underrepresented groups than traditional R01 grants,[1] and helps ESIs obtain funding earlier in their careers (Figure 1).

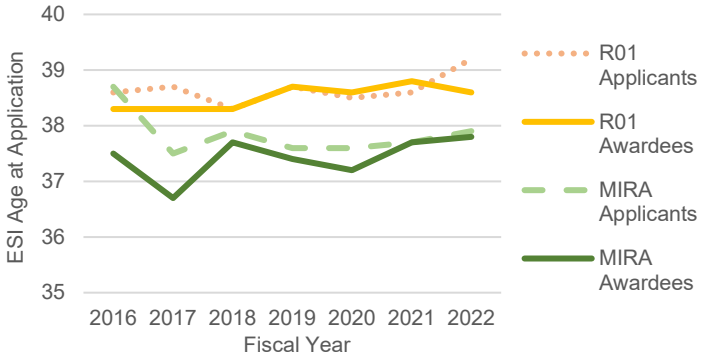


Figure 1. MIRA ESI applicants and awardees are younger on average than ESI R01 applicants and awardees.

The breadth and diversity of our investigator-initiated research portfolio is one of NIGMS's strengths. For instance, some investigators are focused on fundamental research with broad

[1] loop.nigms.nih.gov/2022/08/application-review-funding-and-demographic-trends-for-maximizing-investigators-research-awards-mira-fy-2019-2021/

applications, such as developing easier chemical methods for constructing drugs that can be attached to antibodies to selectively target cancer cells. Other investigators, including several funded through MIRA, are extending the research conducted in our basic science portfolio to clinical research in NIGMS's focus areas, such as identifying biomarkers for different sepsis subtypes to develop more targeted treatments for patients. Because some scientific problems can be too ambitious or complex for any single investigator to tackle alone, NIGMS also supports team-based approaches through our Collaborative Program Grants for Multi-Disciplinary Teams. For example, studying the bacteria in the human gut normally requires customizing genetic tools for each bacterial type, but one team is blending their bacteriology, microfluidics, and imaging expertise to develop genetic tools that can be applied to the whole microbiome at once, making it easier to understand how microbial genes affect human health.

Novel scientific tools and techniques also open up new paths to discovery. This is why NIGMS supports efforts to develop, commercialize, and distribute new technologies, ranging from assays that make it safer and easier to study SARS-CoV-2 to medical devices that use vibration to minimize tissue damage from needles during blood sample collection. Such efforts are supported through our Technology Development, Small Business Innovation Research (SBIR), and Small Business Technology Transfer (STTR) programs. These programs are effective: one NIGMS-supported small business was acquired by a large biotechnology company after their technology set a record for sequencing the longest consecutive piece of DNA.[2] Through the National and Regional Resource Program and new Biomedical Technology Development and Dissemination Centers (BTDDs), NIGMS is also expanding access to these types of cutting-edge technologies, ensuring that researchers from a wide range of regions, institutions, and backgrounds can benefit equally from their potential.

Investing in a Skilled and Diverse Next Generation Research Workforce

Expanding our understanding of living systems past the boundaries of current knowledge requires a vibrant, skilled, and diverse biomedical workforce. Engaging researchers with diverse perspectives is key to encouraging robust discovery, particularly for groups and communities that have been historically underrepresented in biomedical research. This is why our research, training, and capacity-building programs support trainees and investigators across all educational and career stages while supporting diversity across individuals, institutions, states, and regions. As of FY 2022, NIGMS funds at least one program in every state to support trainee research experiences and/or career development at the undergraduate, graduate, or postdoctoral level.

NIGMS programs emphasize the importance of early educational outreach in building workforce talent and diversity. Thus, the Science Education Partnership Award (SEPA) focuses on pre-kindergarten to grade 12 students from underserved communities, building teaching capacity and providing scientific learning opportunities. In FY 2022, in support of the National Institutes of Health (NIH)'s UNITE Initiative to address structural racism, SEPA expanded its range of activities by securing the added participation of 18 NIH Institutes, Centers, and Offices (ICOs).

Giving students at under-resourced institutions access to cutting-edge research experiences enhances diversity and strengthens the scientific skills necessary for a talented workforce. Thus,

[2] seed.nih.gov/portfolio/stories/genomics-company-helps-researchers-sequence-longer-dna

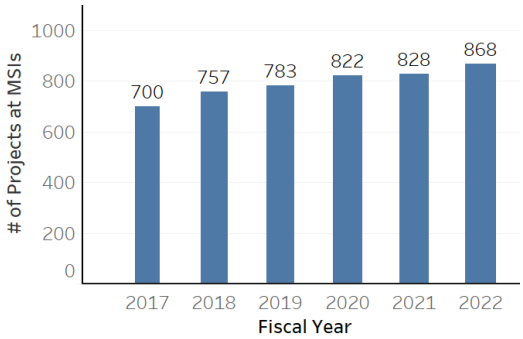


Figure 2. NIGMS has increased the number of projects funded at minority-serving institutions (MSIs).

NIGMS has funded an increasing number of projects at minority serving institutions (MSIs) over the last five years, building stronger, more inclusive research training environments (Figure 2). Further, we are expanding our highly successful medical scientist training program (MSTP) by launching Leading Equity and Diversity in MSTP (LEAD-MSTP), a new effort that further enhances diversity by supporting clinician-scientist training at historically Black colleges and universities (HBCUs), tribal colleges and universities (TCUs), and institutions in Institutional Development Award (IDeA) states. This new program offers additional opportunities for talented individuals with a diversity of lived experiences to combine their clinical skills with rigorous scientific training to better serve their communities in both clinician and scientist roles. Similarly, undergraduate components of the IDeA Networks for Biomedical Research Excellence (INBRE) give students at under-resourced institutions access to hands-on research experiences at more research-intensive institutions in their geographic region.

In addition to supporting specific career stages, NIGMS continues to innovate in scientific training by targeting key transitions *between* career stages. The Bridges to the Baccalaureate and Bridges to the Doctorate programs, for instance, support partnerships between degree-granting institutions to help students transition from community colleges to 4-year bachelor's degree institutions, and from Master's programs to Ph.D. degree-granting institutions, respectively. Similarly, the NIGMS-led Maximizing Opportunities for Scientific and Academic Independent Careers (MOSAIC) program focuses on the transition from postdoctoral scholar to independent faculty investigator, combining individual awards with a cohort-based mentoring program. MOSAIC has attracted and retained a diverse class of fellows across 24 collaborating ICOs: in FY 2021 and FY 2022 alone, 71 percent of the fellows were from underrepresented groups and 76 percent were women. In the same timeframe, 12 MOSAIC fellows have successfully transitioned to academic faculty, an early demonstration of the program's effectiveness.

Building on the success of MOSAIC, NIGMS is developing a similar program to support exceptional young researchers from diverse backgrounds as they transition from Ph.D. to postdoctoral training. NIGMS has been able to provide greater support for activities that make existing research and training programs more inclusive. Between FY 2019 and FY 2022, NIGMS was able to nearly double the awards made each year through the NIGMS Diversity Supplement Program, which facilitates the recruitment and training of promising scientists from diverse demographic and socioeconomic backgrounds.

Equitably Building Capacity and Broadening Access to High-Impact Science

NIGMS's research capacity building programs help ensure that, regardless of geographic location or institutional affiliation, scientists can participate in high-impact science through access to high-quality research experiences, mentorship, learning opportunities, and scientific technologies. NIGMS is using the Congressionally mandated IDeA program (authorized in 1993

and moved to NIGMS in 2012) in innovative ways to build research capacity in states and jurisdictions that have historically received lower aggregate levels of NIH funding.

One IDeA program, the IDeA Networks of Biomedical Research Excellence (INBRE), fosters the development, coordination, and sharing of research resources and expertise to expand an institution's ability to conduct high-quality research by enhancing the caliber of its scientific faculty. A recent evaluation of the Oklahoma INBRE found that INBRE investigators were 12 times more likely to receive a grant award and published 10 times more scientific papers than a comparison group of non-INBRE investigators.[3] NIGMS is also leveraging INBRE to create cloud-based learning and research environments at under-resourced institutions in partnership with NIH's Science and Technology Research Infrastructure of Discovery, Experimentation, and Sustainability (STRIDES) initiative. These centers give students and faculty access to, and training in, the latest tools for data gathering, storage, and analysis without the need for costly on-site computing resources. Migrating these functions to the cloud broadens access to data science tools, ensuring that scientific talent can be nurtured irrespective of location.

As with our investigator-initiated research portfolio, NIGMS-led capacity building programs also extend to areas of clinical research within our mission. IDeA Networks of Clinical and Translational Research (IDeA-CTR) build statewide networks that support clinical and translational research addressing local and regional health concerns. While IDeA-CTRs have been highly successful in building and leveraging clinical research capacity, for example in collaboratively studying COVID-19 (see Program Portrait), NIGMS is finding ways to further build clinical and translational research capacity in under-resourced regions. The recently announced IDeA Clinical Research Center (I-CRRC) program, for instance, will help IDeA-CTRs expand the ability to connect clinical trials with available trial capacity and support the growth of a specialized clinical research coordinator workforce in IDeA states. Similarly, we are developing the IDeA Clinical and Translational Research Development (I-CTRD) program, which will help institutions build new clinical and translational research capacity from the ground up, preparing them to join larger statewide networks.

NIGMS is also expanding its efforts to build research capacity in American Indian/Alaska Native (AI/AN) communities, who are underrepresented in the biomedical research workforce and have historically had limited access to the benefits of research. Following a formal evaluation of NIGMS's Native American Research Centers of Health (NARCH) program and a Tribal Consultation with Tribal leaders (see Program Descriptions), NIGMS is launching new programs to enhance NARCH and address identified research needs within AI/AN communities. Planning grants, for instance, will broaden access to the NARCH program by helping Tribes without existing NARCH grants develop strong applications to the program. Similarly, training grants will support undergraduate and graduate AI/AN students in pursuing biomedical research through partnerships between Tribal organizations and educational institutions. Other grants will support developmental programs to help Tribal Organizations train personnel and establish their own Institutional Review Boards (IRBs) to oversee clinical research on human subjects, thus giving them greater autonomy over research involving Tribal communities and ensuring that cultural norms and perspectives are maintained and respected in any research conducted.

[3] pubmed.ncbi.nlm.nih.gov/35658613/

National Institute of General Medical Sciences

Established in 1962, the National Institute of General Medical Sciences (NIGMS) supports fundamental research ranging from studies of molecules, genes, and cells to whole systems like research organisms and humans, laying a foundation that drives advances in human health. NIGMS also provides leadership in training the next generation of scientists, enhancing the diversity of the scientific workforce, and developing research capacity throughout the country.



Jon R. Lorsch, Ph.D.
Director, NIGMS

NIGMS Strategic Priorities

- Support investigator-initiated, fundamental research that drives scientific discovery and can shed light on human health and disease
- Invest in the training and development of a highly skilled, creative, adaptable, and diverse biomedical research workforce
- Build biomedical research capacity throughout the country and ensure access to essential tools, technologies, and resources for doing impactful biomedical research
- Continually evaluate, improve, and communicate the results of NIGMS' scientific investments to ensure good stewardship of public funds

Strengthening Biomedical Research Through Diversity

NIGMS promotes and leverages diversity at all levels to strengthen the biomedical research enterprise, from funding diverse scientific areas and supporting diversity across career stages, to building diversity in institutions and communities involved in research—maximizing the chances of discoveries and the return on taxpayers' investment.

NIGMS by the Numbers (in FY 2022)

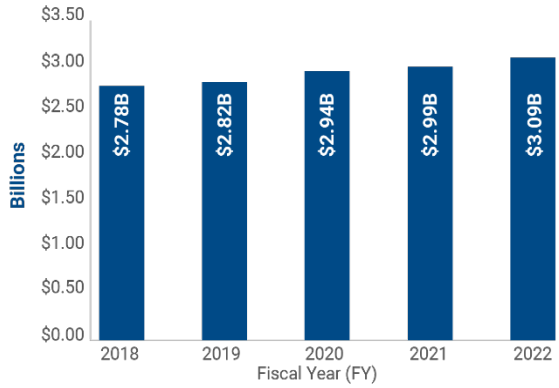
4,695 principal investigators supported

319 new awards to early stage investigators

4,906 research trainees supported

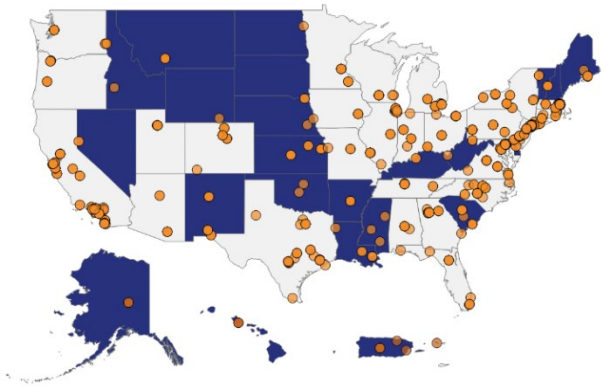
109 minority-serving institutions (MSIs) supported

NIGMS Funding History



FY 2023 Enacted: $3.24B
FY 2024 President's Budget Request: $3.24B

NIGMS funds programs that support training and student research experiences in **every state**.



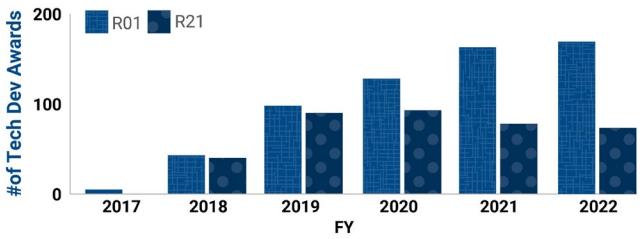
- Institutional Development Award (IDeA) state
- NIGMS-funded program

Encouraging Scientific Creativity

NIGMS' innovative R35 Maximizing Investigators' Research Award (MIRA) program allows grantees to follow the science in **new directions**, such as using artificial intelligence to find new antibiotics hidden among human proteins. MIRA has provided increased stability and intellectual flexibility to 2,250 investigators, including 1,137 early stage investigators, from FY 2016 through FY 2022.

Developing Technology to Advance Biomedical Research

The NIGMS technology development pathway supports new technologies from high-risk, high-reward proof-of-concept studies (R21) to prototype validation studies (R01) to biomedical technology optimization and dissemination centers.



NIGMS-funded research has resulted **in 50 new startups from FY 2015 to FY 2021**, including two from technology development awards: one for building technologies to study cell surface proteins and the other for developing RNA tools to monitor and influence cellular processes.

Supporting Scientific Collaboration

NIGMS has funded **12** collaborative program grants for multidisciplinary teams as of FY 2022, building teams to tackle ambitious topics such as constructing next-generation mathematical models of biomolecules and investigating how initial inflammation turns into sepsis.

Addressing the Health Research Needs of Tribal Communities

In response to a formal evaluation of the Native American Research Centers for Health (NARCH) program and a Tribal consultation that solicited input from Tribes and Tribal leaders, NIGMS is launching new grants in FY 2023 and FY 2024 to:

- Build capacity in Tribes without existing NARCH programs to broaden access to the program and help them apply for NARCH grants
- Establish Tribal Institutional Review Boards and train key personnel to give Tribes greater autonomy over research involving Tribal communities
- Support undergraduate and graduate students in biomedical research-related fields through Tribal training grants to grow a skilled biomedical research workforce

Targeting Key Career Stages and Transition Points with New Training Programs



The new Leading Equity and Diversity in the Medical Scientist Training Program (LEAD-MSTP) supports dual-degree (e.g., M.D.-Ph.D.) training programs at historically Black colleges and universities, Tribal colleges and universities, and IDeA-state institutions to develop a diverse pool of highly trained clinician-scientist leaders to meet the nation's biomedical research needs.

The new Advancing Research Careers (ARC) program will support a diverse cadre of trainees through the transition from graduate student to postdoctoral researcher, just as the Maximizing Opportunities for Scientific and Academic Independent Careers (MOSAIC) program does for the postdoctoral-to-faculty transition.

In its first 2 years, the MOSAIC program supported 82 scholars (71% of whom were from underrepresented backgrounds and 76% of whom were women). Twelve fellows had already successfully transitioned to academic faculty by the end of FY 2022.

Major Changes in the Budget Request

Major changes by budget mechanism and/or budget activity detail are briefly described below. The FY 2024 budget request for NIGMS is $3,239.7 million, equal to the FY 2023 Enacted level. The FY 2024 President's Budget reflects the Administration's fiscal policy goals for the Federal Government. Within this framework, NIGMS will pursue its highest research priorities through strategic investments and careful stewardship of appropriated funds:

Research Project Grants (-$23.3 million; total $2,142.4 million):

For FY 2024, NIGMS will continue the support of investigator-initiated Research Project Grants (RPGs). By prioritizing the funding of new and early-stage investigators via programs like the Maximizing Investigators' Research Award, NIGMS will continue to invest in the pipeline of a diverse representation of researchers across the Nation.

FY 2024 will be the third year of the Support for Research Excellence (SuRE) Award. This program will augment the opportunities of scientists and students from diverse backgrounds to better participate in investigator-initiated RPG research. SuRE evolves from its predecessor the Support of Competitive Research (SCORE) program, once funded through the Minority Biomedical Research Support (MBRS) sub-mechanism.

NIGMS will increase the competing RPG average cost up to 3.0 percent to partially offset recent inflation. Overall, RPG funding will decrease 1.1 percent relative to the FY 2023 Enacted level.

Research Center Grants (-$0.2 million; total $472.3 million):

In FY 2024, NIGMS will continue to maintain its research center grant portfolio. Like the overall net change for the Institute, the Institutional Development Award (IDeA) program will remain flat to the FY 2023 Enacted level. The IDeA total program level in FY 2024 is proposed at $426.0 million.

Other Research (-$0.3 million; total $205.3 million):

This budget represents a -0.8 percent decrease in Other Research funding from the FY 2023 Enacted level. FY 2024 will be the fifth year of transitioning programs from Other Research and MBRS into Institutional Training awards. The transition includes moving the Initiative for Maximizing Student Development (IMSD) and the Research Initiative for Scientific Enhancement (RISE), from the MBRS sub-mechanism, as well as Bridges to the Baccalaureate and Bridges to the Doctoral, from the Other sub-mechanism to new programs under the Training mechanism. Established in FY 2020, the Graduate Research Training Initiative for Student Enhancement (G-RISE), the Undergraduate Research Training Initiative for Student Enhancement (U-RISE) and the Bridges Programs are similar to their predecessors. The transition of these innovative NIGMS programs will better equip the institute to assist and track these trainees along the various stages of their career. This will result in reallocating $7.8 million from MBRS RISE and IMSD to NRSA Training and $11.7 million from SCORE to RPGs to support the SuRE program. While this budget represents a -46.2 percent reduction in

MBRS, the intent of this evolution and shift allows for greater research opportunities for students and trainees from diverse backgrounds in the research pipeline, along with more substantive training opportunities in the Ruth L. Kirchstein Training Awards. The Institute has maintained overall support for its workforce diversity programs in this shift.

The Other, Other sub-mechanism includes a 17.3 percent net increase. This change accounts for $5.0 million in new SuRE programs, $19.5 million in the transformative high-resolution Cryoelectron Microscopy program transitioning to NIGMS from the NIH Common Fund, and a reduction of $3.4 million in Bridges program transitions to NRSA training (mentioned above).

Ruth L. Kirchstein Training Awards (+$18.2 million; total $295.3 million):

Within this budget, full-time training positions receive a weighted 1.4 percent increase due to 2.0 percent stipend increases for predoctoral and postdoctoral trainees, combined with flat levels of training related expenses and childcare per NIH training policy. Institutional Training sees a 6.9 percent increase due to $9.8 million transitioning from MBRS RISE, and $3.4 million for the Bridges program in Other Research, as described above. An additional $1.1 million will be used to support the first year of the new Leading Equity and Advancing Diversity in the Medical Scientist Training Program (LEAD MSTP).

Research Management and Support (+$5.4 million; total $95.5 million):

Along with covering the costs of employee pay raises and benefit increases, this budget includes an increase for associated pay costs for 10 new full-time equivalent (FTE) employees. NIGMS relies on the efforts of its workforce to accomplish its core activities of effectively reviewing, awarding, and managing its grants and contracts.

NATIONAL INSTITUTES OF HEALTH
National Institute of General Medical Sciences

Budget Mechanism*
(Dollars in Thousands)

Mechanism	FY 2022 Final		FY 2023 Enacted		FY 2024 President's Budget		FY 2024 +/- FY 2023	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount
Research Projects:								
Noncompeting	3,381	$1,388,632	3,569	$1,490,716	3,712	$1,587,019	143	$96,303
Administrative Supplements	*(726)*	$67,366	*(912)*	$84,600	*(912)*	$84,600	*(0)*	$0
Competing:								
Renewal	291	$131,067	306	$131,111	174	$98,852	-132	-$32,260
New	916	$362,671	827	$354,486	655	$267,192	-172	-$87,293
Supplements	0	$0	0	$0	0	$0	0	$0
Subtotal, Competing	**1,207**	**$493,738**	**1,133**	**$485,597**	**829**	**$366,044**	**-304**	**-$119,553**
Subtotal, RPGs	4,588	$1,949,736	4,702	$2,060,913	4,541	$2,037,663	-161	-$23,250
SBIR/STTR	163	$100,424	170	$104,747	191	$104,732	21	-$15
Research Project Grants	4,751	$2,050,160	4,872	$2,165,660	4,732	$2,142,395	-140	-$23,265
Research Centers								
Specialized/Comprehensive	164	$435,207	170	$451,237	165	$451,237	-5	$0
Clinical Research	0	$0	0	$0	0	$0	0	$0
Biotechnology	13	$22,486	11	$18,936	11	$18,936	0	$0
Comparative Medicine	1	$2,343	1	$2,344	1	$2,141	0	-$203
Research Centers in Minority Institutions	0	$0	0	$0	0	$0	0	$0
Research Centers	**178**	**$460,037**	**182**	**$472,517**	**177**	**$472,314**	**-5**	**-$203**
Other Research:								
Research Careers	137	$32,925	147	$37,206	147	$37,206	0	$0
Cancer Education	0	$0	0	$0	0	$0	0	$0
Cooperative Clinical Research	0	$0	0	$0	0	$0	0	$0
Biomedical Research Support	0	$20,284	0	$21,257	0	$11,719	0	-$9,539
Minority Biomedical Research Support	228	$66,862	158	$46,210	88	$24,844	-70	-$21,366
Other	233	$91,014	224	$100,894	220	$131,524	-4	$30,631
Other Research	**598**	**$211,086**	**529**	**$205,567**	**455**	**$205,293**	**-74**	**-$274**
Total Research Grants	5,527	$2,721,283	5,583	$2,843,744	5,364	$2,820,002	-219	-$23,742
Ruth L Kirschstein Training Awards:	FTTPs		FTTPs		FTTPs		FTTPs	
Individual Awards	301	$16,914	301	$17,337	301	$17,580	0	$243
Institutional Awards	4,604	$242,031	5,033	$259,721	5,257	$277,683	224	$17,962
Total Research Training	**4,905**	**$258,945**	**5,334**	**$277,058**	**5,558**	**$295,263**	**224**	**$18,205**
Research & Develop. Contracts	21	$28,381	18	$24,602	18	$24,602	0	$0
SBIR/STTR (non-add)	*(0)*	*($1,033)*	*(0)*	*($1,083)*	*(0)*	*($1,009)*	*(0)*	*-($74)*
Intramural Research	0	$3,721	0	$4,109	0	$4,272	0	$163
Res. Management & Support	185	$80,042	209	$90,166	219	$95,540	10	$5,374
SBIR Admin. (non-add)		*($0)*		*($0)*		*($0)*		*($0)*
Construction		$0		$0		$0		$0
Buildings and Facilities		$0		$0		$0		$0
Total, NIGMS	**185**	**$3,092,373**	**209**	**$3,239,679**	**219**	**$3,239,679**	**10**	**$0**

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

NATIONAL INSTITUTES OF HEALTH

NATIONAL INSTITUTE OF GENERAL MEDICAL SCIENCES

For carrying out section 301 and title IV of the PHS Act with respect to general medical sciences, $3,239,679,000, of which [$1,412,482,000]*$1,948,109,000* shall be from funds available under section 241 of the PHS Act: *Provided*, That not less than $425,956,000 is provided for the Institutional Development Awards program.

NATIONAL INSTITUTES OF HEALTH
National Institute of General Medical Sciences

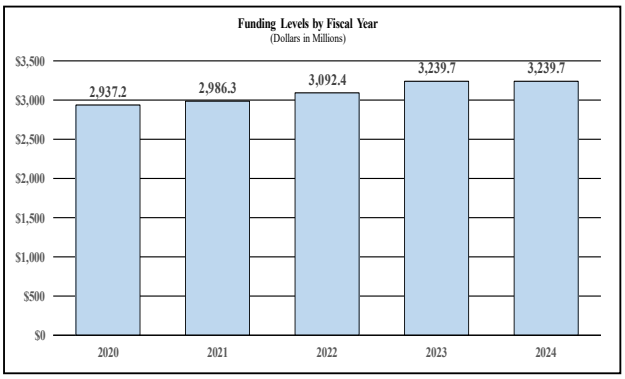
Summary of Changes
(Dollars in Thousands)

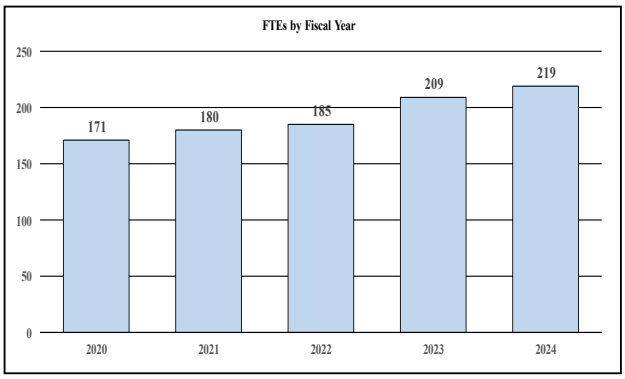
FY 2023 Enacted	$3,239,679
FY 2024 President's Budget	$3,239,679
Net change	$0

CHANGES	FY 2023 Enacted FTEs	FY 2023 Enacted Budget Authority	FY 2024 President's Budget FTEs	FY 2024 President's Budget Budget Authority	Built-In Change from FY 2023 Enacted FTEs	Built-In Change from FY 2023 Enacted Budget Authority
A. Built-in:						
1. Intramural Research:						
a. Annualization of FY 2023 pay and benefits increase		$2,285		$2,409		$26
b. FY 2024 pay and benefits increase		$2,285		$2,409		$88
c. Paid days adjustment		$2,285		$2,409		$9
d. Differences attributable to change in FTE		$2,285		$2,409		$0
e. Payment for centrally furnished services		$110		$112		$2
f. Cost of laboratory supplies, materials, other expenses, and non-recurring costs		$1,714		$1,752		$38
Subtotal						$163
2. Research Management and Support:						
a. Annualization of FY 2023 pay and benefits increase		$41,919		$46,268		$463
b. FY 2024 pay and benefits increase		$41,919		$46,268		$1,603
c. Paid days adjustment		$41,919		$46,268		$161
d. Differences attributable to change in FTE		$41,919		$46,268		$2,503
e. Payment for centrally furnished services		$9,696		$9,852		$155
f. Cost of laboratory supplies, materials, other expenses, and non-recurring costs		$38,551		$39,420		$870
Subtotal						$5,756
Subtotal, Built-in						$5,918

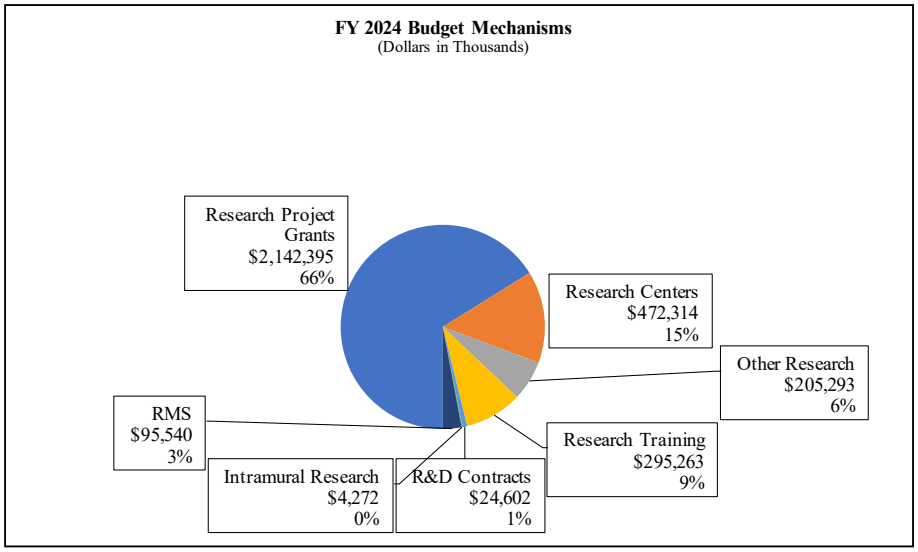
CHANGES	FY 2023 Enacted No.	FY 2023 Enacted Amount	FY 2024 President's Budget No.	FY 2024 President's Budget Amount	Program Change from FY 2023 Enacted No.	Program Change from FY 2023 Enacted Amount
B. Program:						
1. Research Project Grants:						
a. Noncompeting	3,569	$1,575,316	3,712	$1,671,619	143	$96,303
b. Competing	1,133	$485,597	829	$366,044	-304	-$119,553
c. SBIR/STTR	170	$104,747	191	$104,732	21	-$15
Subtotal, RPGs	4,872	$2,165,660	4,732	$2,142,395	-140	-$23,265
2. Research Centers	182	$472,517	177	$472,314	-5	-$203
3. Other Research	529	$205,567	455	$205,293	-74	-$274
4. Research Training	5,334	$277,058	5,558	$295,263	224	$18,205
5. Research and development contracts	18	$24,602	18	$24,602	0	$0
Subtotal, Extramural		$3,145,404		$3,139,867		-$5,537
6. Intramural Research	0	$4,109	0	$4,272	0	$0
7. Research Management and Support	209	$90,166	219	$95,540	10	-$382
8. Construction		$0		$0		$0
9. Buildings and Facilities		$0		$0		$0
Subtotal, Program	209	$3,239,679	219	$3,239,679	10	-$5,918
Total built-in and program changes						$0

History of Budget Authority and FTEs:

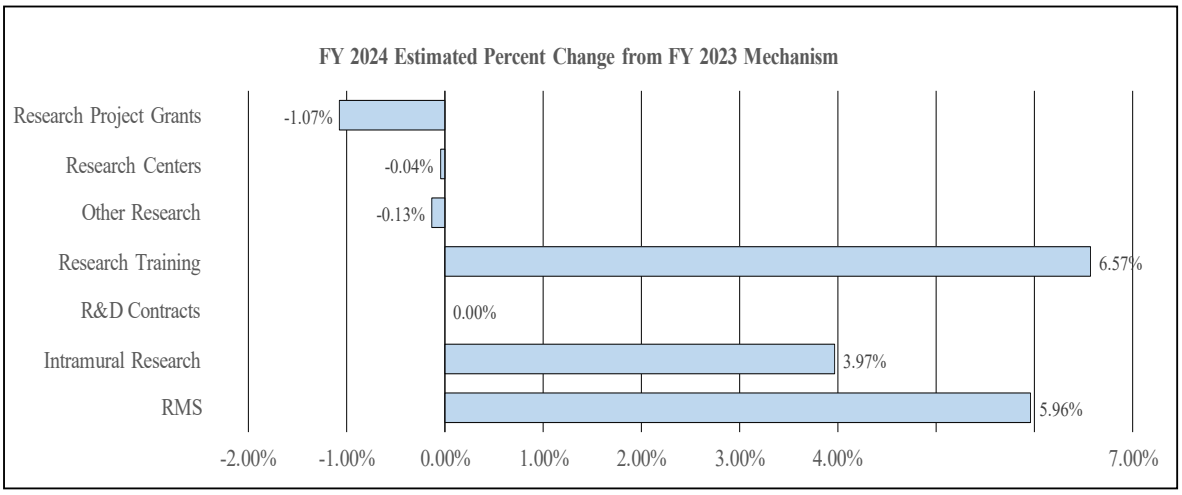




Distribution by Mechanism:



Change by Selected Mechanisms:



National Institutes of Health
National Institute of General Medical Sciences

Organizational Chart



NATIONAL INSTITUTES OF HEALTH
National Institute of General Medical Sciences

Budget Authority by Activity *
(Dollars in Thousands)

	FY 2022 Final		FY 2023 Enacted		FY 2024 President's Budget		FY 2024 +/- FY 2023 Enacted	
Extramural Research	**FTE**	**Amount**	**FTE**	**Amount**	**FTE**	**Amount**	**FTE**	**Amount**
Detail								
Biophysics, Biomedical Technology, and Computational Biosciences		$599,733		$623,584		$634,559		$10,975
Genetics and Molecular, Cellular, and Developmental Biology		$914,499		$950,868		$937,869		-$12,999
Pharmacology, Physiology and Biological Chemistry		$618,629		$643,232		$634,438		-$8,793
Training, Workforce Development and Diversity		$361,735		$393,264		$405,850		$12,587
Division for Research Capacity Building		$514,014		$534,456		$527,150		-$7,306
(Institutional Development Award (IDeA))		*($409,957)*		*($425,956)*		*($425,956)*		*($0)*
Subtotal, Extramural		**$3,008,610**		**$3,145,404**		**$3,139,867**		**-$5,537**
Intramural Research	**0**	**$3,721**	**0**	**$4,109**	**0**	**$4,272**	**0**	**$163**
Research Management & Support	**185**	**$80,042**	**209**	**$90,166**	**219**	**$95,540**	**10**	**$5,374**
TOTAL	**185**	**$3,092,373**	**209**	**$3,239,679**	**219**	**$3,239,679**	**10**	**$0**

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

NIGMS

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

Budget Authority (BA):

	FY 2022 Final	FY 2023 Enacted	FY 2024 President's Budget	FY 2024 +/- FY 2023
BA	$3,092,373,000	$3,239,679,000	$3,239,679,000	+$0
FTE	185	209	219	0

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

Overall Budget Policy: The FY 2024 President's Budget request for NIGMS is $3,239.7 million, the same as the FY 2023 Enacted level. Within this budget, NIGMS will continue its highest research priorities through careful stewardship of appropriated funds. This request allows NIGMS to continue the evolution of programs addressing research into issues of health disparities, training a broad biomedical research workforce for the future, and building research capacity across the nation.

Program Descriptions

Genetics and Molecular, Cellular, and Developmental Biology (GMCDB): The GMCDB division supports research to understand the structure and function of cells and cellular components, as well as the cellular and molecular mechanisms that underlie inheritance, gene expression, and development. The results of this research form the foundation for advances in diagnosing, preventing, treating, and curing a wide variety of diseases. Most of the projects supported by the division make use of research organisms, which advance the general understanding of biological processes. For example, in FY 2022, a GMCDB-supported investigator created unique tools to visualize multiple signaling processes occurring simultaneously within cells, leading to new insights into the regulation of signaling networks. This knowledge could help facilitate the development of strategies to reduce cell signaling issues that lead to developmental disorders and cancer. In addition to GMCDB's research organism portfolio, the division employs funds to bolster human research studies aimed at revealing the generalizable principles of the genetics of human biology and human disease.

Budget Policy

The FY 2024 President's Budget request for the GMCDB program is $937.9 million, a decrease of $13.0 million or 1.4 percent compared to the FY 2023 Enacted level. GMCDB expenditures will support individual investigators seeking fundamental knowledge about biological processes. GMCDB will also continue its support for collaborative research on cellular, molecular, and

genomic studies, as well as research into specific genetic variants within complex disorders.

Pharmacology, Physiology, and Biological Chemistry (PPBC): The PPBC division supports a broad spectrum of research aimed at improving the molecular-level understanding of fundamental biological processes and discovering approaches to their control.

Research supported by the division takes a multifaceted approach to problems in pharmacology, physiology, and biological chemistry that are very basic in nature. The goals of this research include mechanisms underlying responses to drugs; new methods and targets for drug discovery and production; an enhanced understanding of biological catalysis; an improved understanding of drug action and of anesthesia; and knowledge of metabolic regulation and fundamental physiological processes. Work supported by PPBC applies basic physiological, pharmacological, biochemical and data science research to clinical issues in sepsis, traumatic injury, and critical illness. The division works to ensure that research approaches are state-of-the-art and employ the optimal research organisms for the problems being addressed. Finally, a core area of PPBC's portfolio is the development of new methods to build or synthesize molecules: two of the three winners of the 2022 Nobel Prize in Chemistry are longtime PPBC grantees whose discovery and application of "click chemistry" to living organisms have made the technique an essential tool in fields ranging from basic science to materials science to drug discovery.

In FY 2022, the division funded multiple awards to discover new information and create tools that predict the trajectory and resolution of sepsis and related critical illnesses. These projects are identifying new techniques for biospecimen collection and sampling, novel analytical methodologies, and rigorous and comprehensive protocols to extract maximum value from biospecimens of patients who later develop sepsis. NIGMS has also joined the National Heart, Lung, and Blood Institute (NHLBI) to support the formation of the Acute Respiratory Distress Syndrome (ARDS), Pneumonia, and Sepsis Phenotyping (APS) Consortium, a multisite study that seeks to better define the heterogeneity underlying critical illness syndromes and to identify the mechanisms of illness development and recovery, as well as relationships and overlap between these syndromes.

Budget Policy

The FY 2024 President's Budget request for the PPBC program is $634.4 million, a decrease of $8.8 million or 1.4 percent compared to the FY 2023 Enacted level. PPBC investments will emphasize the support of investigator-initiated research grants related to basic pharmacology, biochemistry, and chemistry that inform knowledge of how small molecules influence human health. Additionally, the division supports clinical research about fundamental health and disorders that affect multiple organ systems, and partners with others to accomplish specific objectives including in critical illness and sepsis.

Biophysics, Biomedical Technology, and Computational Biosciences (BBCB): The BBCB division advances fundamental biomedical research by supporting the development and dissemination of cutting-edge technologies. BBCB programs also support the development of new computational and data science tools for the biosciences, including artificial intelligence and machine learning (AI/ML) approaches, and the application of biophysical and computational methods and techniques to decipher the mechanisms that govern biological processes. Through

Predicting Health Outcomes with Electronic Health Records

NIGMS-funded researchers are applying "big data" methods to draw cutting-edge insights from large, complicated electronic health records (EHRs). With patient data stored electronically in EHRs, researchers can access vast datasets of information that weren't available previously, while safeguarding patients' privacy. However, finding useful diagnostic patterns from the datasets requires sifting through more information than a human can realistically analyze, so researchers are creating algorithms using artificial intelligence and machine learning to perform this enormous task.

Predicting health conditions earlier gives medical professionals more time to intervene to prevent or treat life-threatening conditions. Some researchers are programming algorithms that comb through EHRs to identify predictive markers for conditions like postpartum depression, pregnancy complications, surgical recovery, stroke recuperation, and type 2 diabetes. One researcher, Dr. Nima Aghaeepour, is using machine learning to analyze immune system data in EHRs to identify patients who are likely to develop the severe and life-threatening disease of sepsis. "Ultimately, I hope to create a platform that helps us predict what's going to happen to a patient and suggest interventions that can modulate their immune system to prevent adverse outcomes," he says.

Another application of predicting health outcomes with EHR data is through the development of algorithms that search for potential drug allergies and negative drug reactions. Researchers are studying how patients' genes affect their responses to drugs by scanning EHRs for labels like "drug allergy" and then searching the patients' genes for markers that are commonly associated with reactions to the specified drug. Genetic differences in detoxification enzymes, for instance, are often linked to adverse drug reactions, and identifying that issue before giving the patient a drug that is dangerous to them because of their genetics could be lifesaving.

the NIH-wide Knowledgebase and Data Repository Programs, the division funds resources that provide the biomedical community access to reliable "big data" that is foundational to modern research.

In FY 2022, the division continued to expand the availability of cutting-edge technologies to a substantial number of NIH-supported researchers. For example, the Biomedical Technology Development and Dissemination (BTDD) Centers program has enhanced access to biological imaging technology, and the National and Regional Resources Program (NRR) has made an award that broadens access to cryo-electron microscopy (cryoEM) to IDeA state investigators. Research funded by the division included improving treatment of spinal cord injuries through the use of artificial intelligence and robotics, and using cryoEM to uncover the structure of proteins used by a virus to inject large amounts of viral DNA into a host cell. The continued funding of the Models of Infectious Disease Agent Study coordination center has also provided invaluable support to the community of researchers developing models to predict infectious disease progression.

In FY 2024, the BBCB Division will continue to advance the NIGMS mission to support fundamental biomedical research. The division will also be co-leading the development of a funding opportunity for equipment purchases by Minority Serving Institutions to help them build research capacity. BBCB is also developing a funding opportunity that will transition support of the National CryoEM Centers from the Common Fund to NIGMS, to provide researchers throughout the country with continued access to cutting edge methods for determining the structures of biomolecules.

Budget Policy

The FY 2024 President's Budget request for the BBCB program is $634.6 million, an increase of $11.0 million or 1.8 percent compared to the FY 2023 Enacted level. BBCB will continue to fund investigator-initiated research to unravel the mechanisms that govern biological processes and develop novel methods, instruments, and computational approaches to advance biomedical

discovery. The division will also maintain support for resources that facilitate research by the broad biomedical research community.

Division of Training, Workforce Development, and Diversity (TWD): The TWD division supports programs that foster the development of a strong and diverse biomedical research workforce. The division funds research training, student development, and career development activities through a variety of programs across all educational and career stages (see Figure 3).

In addition to these training programs, TWD funds support for research training conferences, the Research on Interventions Program, and the Science of Science Policy Awards. TWD also administers the Common Fund Diversity Program Consortium, including the Coordination and Evaluation Center, Building Infrastructure Leading to Diversity, National Research Mentoring Network, Sponsored Programs Administration Development Program, and the Diversity Program Consortium Dissemination and Translation Awards.

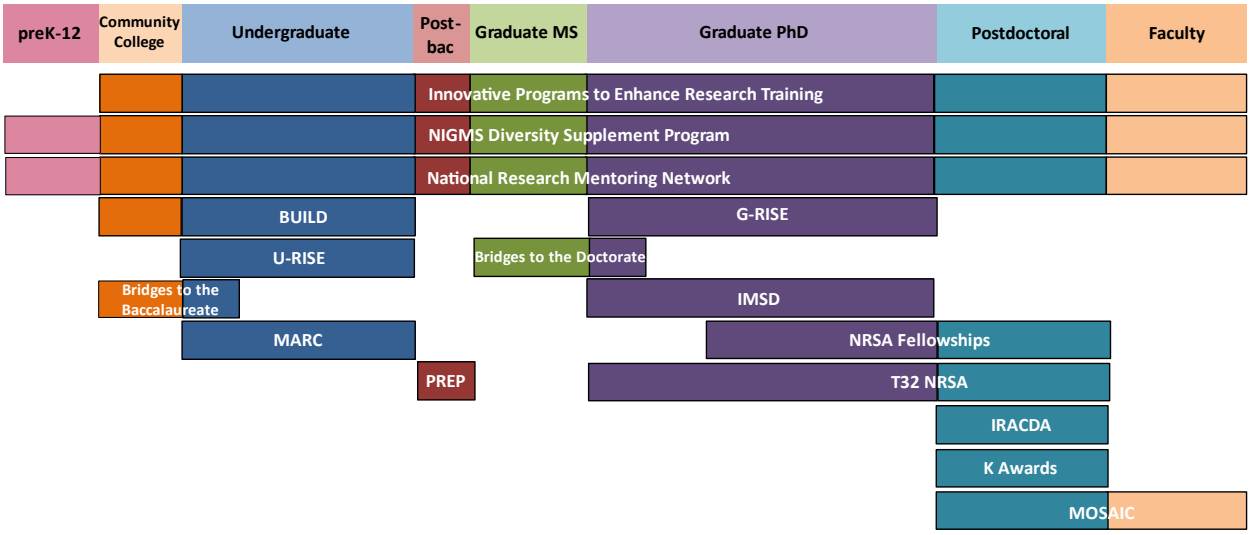


Figure 3. TWD Programs Span All Educational and Career Stages.
List of acronyms: BUILD (Building Infrastructure Leading to Diversity), IMSD (Initiative for Maximizing Student Development), IRACDA (Institutional Research and Academic Career Development Awards), MARC (Maximizing Access to Research Careers), MOSAIC (Maximizing Opportunities for Scientific and Academic Independent Careers), NRSA (Ruth L. Kirschstein National Research Service Award), PREP (Postbaccalaureate Research Education Program), U-RISE & G-RISE (Undergraduate & Graduate Research Training Initiative for Student Enhancement).

This year, TWD developed administrative supplements for training programs to improve and innovate on training-related activities such as curriculum development, enhancing student resilience, and promoting safe and inclusive training environments. In the near future, TWD also plans to release a new set of diversity-enhancing NRSA training grants for Tribal Organizations to address disparities in access to biomedical research training for Native American students.

NIGMS seeks to enhance the diversity of the biomedical research workforce by supporting individuals from a variety of backgrounds at multiple training and career stages in a variety of institutions and educational settings across the country. Collectively, these programs are designed to ensure that future generations of researchers will be drawn from the entire pool of

Training Undergraduate Students as the Future Biomedical Research Workforce

NIGMS strives to increase diversity in the biomedical research workforce by funding undergraduate research and career development programs. These programs can set the trajectory of students' careers because when they succeed in the lab, they often see their potential future in science for the first time.

Bridges to the Baccalaureate Research Training Programs partner community colleges with local research-intensive universities, helping community college students from diverse backgrounds to gain research experiences and transition to the four-year institute. At the undergraduate level, programs like Maximizing Access to Research Careers (MARC) and Undergraduate Research Training Initiative for Student Enhancement provide students from diverse backgrounds with mentorship and career development, with the goal that they will complete their undergraduate degrees and transition into a biomedical, research-focused Ph.D. or M.D.-Ph.D program. Participants in these diversity-oriented programs often comment on how they were inspired seeing people from backgrounds like theirs doing—and succeeding in—science. Victor Torres, Ph.D., a 2021 MacArthur Fellow, credits his undergraduate MARC program for setting him on his path: "Without the MARC program, I wouldn't be where I am today."

Institutional Development Award (IDeA) Networks of Biomedical Research Excellence (INBRE) partner research-intensive institutions with primarily undergraduate institutions in IDeA states, which historically have had lower levels of NIH funding. INBRE programs enhance the caliber of scientific research done by faculty at both institution types, attracting more talented students to augment the state's biomedical research workforce. Josh Sakon, Ph.D., director of the University of Arkansas' INBRE-supported X-ray crystallography center, is optimistic students will consider scientific careers after using the center's equipment in an unconventional way. "I hope that analyzing art pieces will make chemistry more approachable for some students who are normally scared of it," he says.

talented individuals, bringing different perspectives, interests, and experiences to address complex scientific problems.

Budget Policy

The FY 2024 President's Budget request for the TWD program is $405.9 million, an increase of $12.6 million or 3.2 percent compared to the FY 2023 Enacted level. TWD will continue to support these programs and the Individual and Institutional Training awards. The FY 2024 request provides for a 2.0 percent stipend increase and continues the childcare allowance implemented in FY 2021 for Individual awards and extended to Institutional awards in FY 2022. TWD will continue transitioning a number of previous institutional research education awards to National Research Service Award Institutional Training Grants, thereby increasing the number of individuals supported by this mechanism.

Division for Research Capacity Building (DRCB): DRCB administers four major programs that support research, research infrastructure improvement, faculty development, and research training. The IDeA program broadens the geographic distribution of NIH funding for biomedical research in 23 states and Puerto Rico (i.e., states that historically have 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 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 Networks for Clinical and Translational Research (IDeA-CTR) initiative promotes the advancement of clinical and translational research that addresses 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) (STTR) program supports small business concerns in

IDeA states to develop educational products that promote entrepreneurship in IDeA states' academic institutions and biotechnology sectors. These training and education modules are expected to build the entrepreneurial skills that biomedical researchers and students need to move scientific discoveries and innovative technologies out of the lab and into commercial products.

NIGMS plans to strengthen support for clinical and translational research in IDeA states in the near future – the existing IDeA-CTRs will become Clinical and Translational Research Network (CTRN) Awards, while a new program, Clinical and Translational Research Development (CTRD) Awards, will be available to support institutions to build clinical and translational research capacity from the ground up. Furthermore, another new program, IDeA Clinical Research Resource Center (I-CRRC) is on schedule to be funded to provide clinical trial services to IDeA state institutions as well as training to develop clinical research coordinators to manage clinical trials and observational studies in IDeA states.

The Support for Research Excellence (SuRE) program is a research capacity building program that seeks to develop and sustain research excellence at higher education institutions that receive limited research grant support from the NIH and educate students from under-served backgrounds. The program includes three funding initiatives: SuRE-First specifically supports early-stage investigators seeking their first independent research award; SuRE supports all investigators who do not have a major NIH grant; and the SuRE Resource Center provides mentoring and assistance to institutions and investigators to broaden participation in the SuRE program nationwide. Research supported by the SuRE program must include student participation.

IDeA-CTRs: More Than the Sum of Their Parts

Institutional Development Award (IDeA) Networks for Clinical and Translational Research (IDeA-CTRs) build capacity for clinical and translational research that addresses health concerns in IDeA states. Early in the COVID-19 pandemic, NIGMS funded a group of CTRs to collaborate with NCATS's National COVID Cohort Collaborative (N3C), a research repository for COVID-19 patient electronic health record data.

IDeA-CTRs have contributed over 1.1 million electronic health records to N3C that reflect a diverse population of different racial/ethnic groups, with a strong representation of rural populations. In 2022 alone, these data have been used to draw additional insights about COVID-19, such as analyzing outcomes in rural America, studying how comorbidities affect risk of severe COVID illnesses, and identifying potential protective factors that might improve outcomes.

Connecting the IDeA-CTRs to the N3C laid a groundwork for additional collaboration, leading to the creation of the IDeA States Consortium for Clinical Research (ISCORE) across nine IDeA-CTRs and two IDeA state Clinical and Translational Science Award Programs. ISCORE has received funding from the NIH RECOVER initiative to study long COVID recovery in adults over time, its biological mechanisms, and a potential inflammation-reducing therapy for it. The creation and success of ISCORE is a strong example of how NIGMS efforts allow institutions in IDeA states to move beyond research funded by the IDeA grants themselves, leveraging the capacity they have built to obtain new funding from other sources for cutting-edge research, and becoming a crucial part of the nation's clinical and translational research enterprise.

The Science Education Partnership Awards (SEPA) program invests in capacity building projects geared towards pre-kindergarten to grade 12 students, along with their communities, that complement or enhance training for a future biomedical research workforce. SEPA has recently been expanded to include the participation of 18 additional NIH ICOs.

The Native American Research Centers for Health (NARCH) program funds research by American Indian (AI)/Alaska Native (AN) tribes or tribally based organizations, supports research infrastructure, and develops the biomedical research capabilities of AI/AN communities. To further strengthen AI/AN health research and address additional challenges raised by the tribal leaders during a recent formal Tribal Consultation,[4] NIGMS is planning to release a new funding opportunity for Tribes and Tribal Organizations that do not hold active NARCH awards to plan and develop applications for the awards. Furthermore, NIGMS is working on new funding opportunities to support Tribes and Tribal Organizations in training key personnel to serve on tribal Institutional Review Boards (IRBs), establishing IRBs, and providing IRB services to the AI/AN research community. The first of these FOAs created in response to the NARCH evaluation and Tribal Consultation are planned to be released beginning in late FY 2023, with others planned for FY 2024.

Budget Policy

The FY 2024 President's Budget request for the DRCB program is $527.2 million, a decrease of $7.3 million or 1.4 percent compared to the FY 2023 Enacted level. DRCB will support new and continuing awards in these programs. DRCB also supports the use of SBIR/STTR funds to initiate small business and technology transfer activities in IDeA states and to promote the commercialization of STEM education resources.

Intramural Research: NIGMS has a small but unique intramural research training program, the NIGMS Postdoctoral Research Associate Training (PRAT) Program. The NIGMS PRAT Program is a competitive three-year postdoctoral fellowship program that provides high quality research training in the basic biomedical sciences in intramural research laboratories at other NIH institutes and centers. The program prepares trainees for leadership positions in biomedical careers through mentored laboratory research, networking, and intensive career and leadership development activities. The program places special emphasis on training fellows in all areas that are within the NIGMS mission, including but not limited to biological chemistry, biophysics, bioinformatics, cellular and molecular biology, computational biosciences, developmental biology, genetics, immunology, pharmacology, physiology, and technology development. The PRAT program includes professional development activities tailored to the PRAT fellows, such as a monthly seminar series featuring presentations by current PRAT fellows and outside speakers whom the fellows have invited, and training sessions focused on grant-writing, career planning, communications skills, and leadership skills.

Budget Policy

The FY 2024 President's Budget request for NIGMS intramural research is $4.3 million, an increase of $0.2 million or 4.0 percent compared to the FY 2023 Enacted level.

Research Management and Support (RMS): RMS provides administrative, budgetary, logistical, and scientific support toward the review, award, and monitoring of research grants, training awards, and research and development contracts. RMS funds also support strategic planning, coordination, and evaluation of NIGMS programs; regulatory compliance; and coordination and engagement with other Federal agencies, Congress, and the general public. RMS continues to fund development and enhancements to enterprise information technology

[4] nigms.nih.gov/Research/DRCB/NARCH/Documents/narch-tribal-consultation-report092121.pdf

(IT) tools which facilitate the review, award, funding, and monitoring of grants and contracts. Utilizing technologies such as Natural Language Processing, Artificial Intelligence, and data reporting and visualization toolsets, funds are allocated to enterprise applications that facilitate the overall grants business process lifecycle and improve decision support capability. In addition, RMS is funding the expansion of NIGMS' presence in the enterprise cloud environment. Migration of the NIGMS infrastructure to the NIH enterprise cloud environment allows for systems to be developed and hosted in an environment that results in reduced resource dependencies, operational and maintenance cost savings, and enhanced cybersecurity and disaster recovery, while ensuring compliance with the Federal Information Technology Acquisition Reform Act.

Budget Policy

The FY 2024 President's Budget request for RMS at NIGMS is $95.5 million, an increase of $5.4 million or 6.0 percent compared to the FY 2023 Enacted level. RMS funds support the operational needs of the Institute, including its necessary investments in information technology and efforts to maintain a high-quality dynamic workforce. Examples include enhancing cloud presence and optimizing automated decision support capability within NIGMS.

NATIONAL INSTITUTES OF HEALTH
National Institute of General Medical Sciences

Appropriations History

Fiscal Year	Budget Estimate to Congress	House Allowance	Senate Allowance	Appropriation
2015	$2,368,877,000			$2,371,476,000
Rescission				$0
2016	$2,433,780,000	$2,439,437,000	$2,511,431,000	$2,512,073,000
Rescission				$0
2017 [1]	$2,512,437,000	$2,538,851,000	$2,633,755,000	$2,650,838,000
Rescission				$0
2018	$2,185,509,000	$2,713,775,000	$2,887,194,000	$2,785,400,000
Rescission				$0
2019	$2,572,669,000	$2,818,667,000	$2,874,292,000	$2,872,780,000
Rescission				$0
2020	$2,472,838,000	$3,033,183,000	$2,969,113,000	$2,937,218,000
Rescission				$0
2021	$2,672,074,000	$2,972,479,000	$3,046,962,000	$2,991,417,000
Rescission				$0
2022	$3,096,103,000	$3,139,656,000	$3,067,557,000	$3,092,373,000
Rescission				$0
2023	$3,097,557,000	$3,200,157,000	$3,218,237,000	$3,239,679,000
Rescission				$0
2024	$3,239,679,000			

[1] Budget Estimate to Congress includes mandatory financing.

NATIONAL INSTITUTES OF HEALTH
National Institute of General Medical Sciences

Authorizing Legislation

	PHS Act/ Other Citation	U.S. Code Citation	2023 Amount Authorized	FY 2023 Enacted	2024 Amount Authorized	FY 2024 President's Budget
Research and Investigation	Section 301	42§241	Indefinite	$3,239,679,000	Indefinite	$3,239,679,000
National Institute of General Medical Sciences	Section 401(a)	42§281	Indefinite		Indefinite	
Total, Budget Authority				$3,239,679,000		$3,239,679,000

NATIONAL INSTITUTES OF HEALTH

National Institute of General Medical Sciences

Amounts Available for Obligation [1]

(Dollars in Thousands)

Source of Funding	FY 2022 Final	FY 2023 Enacted	FY 2024 President's Budget
Appropriation	$3,092,373	$3,239,679	$3,239,679
Secretary's Transfer	$0	$0	$0
OAR HIV/AIDS Transfers	$0	$0	$0
Subtotal, adjusted budget authority	$3,092,373	$3,239,679	$3,239,679
Unobligated balance, start of year	$0	$0	$0
Unobligated balance, end of year (carryover)	$0	$0	$0
Subtotal, adjusted budget authority	**$3,092,373**	**$3,239,679**	**$3,239,679**
Unobligated balance lapsing	-$63	$0	$0
Total obligations	$3,092,310	$3,239,679	$3,239,679

[1] Excludes the following amounts (in thousands) for reimbursable activities carried out by this account:
FY 2022 - $1,185 FY 2023 - $5,000 FY 2024 - $5,000

NATIONAL INSTITUTES OF HEALTH
National Institute of General Medical Sciences

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

		FY 2023 Enacted	FY 2024 President's Budget	FY 2024 +/- FY 2023
Total compensable workyears:				
	Full-time equivalent	209	219	10
	Full-time equivalent of overtime and holiday hours	0	0	0
	Average ES salary	$213	$224	$12
	Average GM/GS grade	13.4	13.4	0.0
	Average GM/GS salary	$142	$150	$8
	Average salary, Commissioned Corps (42 U.S.C. 207)	$0	$0	$0
	Average salary of ungraded positions	$234	$246	$13
	OBJECT CLASSES	**FY 2023 Enacted**	**FY 2024 President's Budget**	**FY 2024 +/- FY 2023**
	Personnel Compensation			
11.1	Full-Time Permanent	$26,969	$29,801	$2,832
11.3	Other Than Full-Time Permanent	$2,709	$2,993	$284
11.5	Other Personnel Compensation	$991	$1,095	$104
11.7	Military Personnel	$0	$0	$0
11.8	Special Personnel Services Payments	$2,017	$2,127	$110
11.9	**Subtotal Personnel Compensation**	**$32,686**	**$36,016**	**$3,330**
12.1	Civilian Personnel Benefits	$11,518	$12,661	$1,142
12.2	Military Personnel Benefits	$0	$0	$0
13.0	Benefits to Former Personnel	$0	$0	$0
	Subtotal Pay Costs	**$44,204**	**$48,677**	**$4,473**
21.0	Travel & Transportation of Persons	$474	$485	$11
22.0	Transportation of Things	$8	$8	$0
23.1	Rental Payments to GSA	$0	$0	$0
23.2	Rental Payments to Others	$6	$6	$0
23.3	Communications, Utilities & Misc. Charges	$26	$27	$1
24.0	Printing & Reproduction	$0	$0	$0
25.1	Consulting Services	$17,537	$17,880	$342
25.2	Other Services	$14,474	$14,821	$347
25.3	Purchase of Goods and Services from Government Accounts	$75,603	$77,032	$1,429
25.4	Operation & Maintenance of Facilities	$0	$0	$0
25.5	R&D Contracts	$603	$617	$14
25.6	Medical Care	$0	$0	$0
25.7	Operation & Maintenance of Equipment	$842	$862	$20
25.8	Subsistence & Support of Persons	$0	$0	$0
25.0	**Subtotal Other Contractual Services**	**$109,059**	**$111,212**	**$2,153**
26.0	Supplies & Materials	$79	$81	$2
31.0	Equipment	$615	$630	$15
32.0	Land and Structures	$18	$19	$0
33.0	Investments & Loans	$0	$0	$0
41.0	Grants, Subsidies & Contributions	$1,672,707	$1,130,425	-$542,282
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	**$1,782,993**	**$1,242,893**	**-$540,100**
	Total Budget Authority by Object Class	**$1,827,197**	**$1,291,570**	**-$535,627**

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

NATIONAL INSTITUTES OF HEALTH

National Institute of General Medical Sciences

Salaries and Expenses

(Dollars in Thousands)

Object Classes	FY 2023 Enacted	FY 2024 President's Budget	FY 2024 +/- FY 2023
Personnel Compensation			
Full-Time Permanent (11.1)	$26,969	$29,801	$2,832
Other Than Full-Time Permanent (11.3)	$2,709	$2,993	$284
Other Personnel Compensation (11.5)	$991	$1,095	$104
Military Personnel (11.7)	$0	$0	$0
Special Personnel Services Payments (11.8)	$2,017	$2,127	$110
Subtotal, Personnel Compensation (11.9)	**$32,686**	**$36,016**	**$3,330**
Civilian Personnel Benefits (12.1)	$11,518	$12,661	$1,142
Military Personnel Benefits (12.2)	$0	$0	$0
Benefits to Former Personnel (13.0)	$0	$0	$0
Subtotal Pay Costs	**$44,204**	**$48,677**	**$4,473**
Travel & Transportation of Persons (21.0)	$474	$485	$11
Transportation of Things (22.0)	$8	$8	$0
Rental Payments to Others (23.2)	$6	$6	$0
Communications, Utilities & Misc. Charges (23.3)	$26	$27	$1
Printing & Reproduction (24.0)	$0	$0	$0
Other Contractual Services			
Consultant Services (25.1)	$12,874	$13,104	$231
Other Services (25.2)	$14,474	$14,821	$347
Purchase of Goods and Services from Government Accounts (25.3)	$59,051	$60,083	$1,031
Operation & Maintenance of Facilities (25.4)	$0	$0	$0
Operation & Maintenance of Equipment (25.7)	$842	$862	$20
Subsistence & Support of Persons (25.8)	$0	$0	$0
Subtotal Other Contractual Services	**$87,241**	**$88,870**	**$1,630**
Supplies & Materials (26.0)	$79	$81	$2
Subtotal Non-Pay Costs	**$87,834**	**$89,477**	**$1,644**
Total Administrative Costs	**$132,038**	**$138,154**	**$6,116**

NATIONAL INSTITUTES OF HEALTH
National Institute of General Medical Sciences

Detail of Full-Time Equivalent Employment (FTE)

Office	FY 2022 Final			FY 2023 Enacted			FY 2024 President's Budget		
	Civilian	Military	Total	Civilian	Military	Total	Civilian	Military	Total
Division of Extramural Activities									
Direct:	67	-	67	69	-	69	74	-	74
Total:	67	-	67	69	-	69	74	-	74
Office of the Director									
Direct:	4	-	4	7	-	7	7	-	7
Total:	4	-	4	7	-	7	7	-	7
Division of Data, Integration, Modeling and Analytics									
Direct:	8	-	8	9	-	9	9	-	9
Total:	8	-	8	9	-	9	9	-	9
Division of Management									
Direct:	42	-	42	46	-	46	46	-	46
Total:	42	-	42	46	-	46	46	-	46
Division of Genetics and Molecular, Cellular, and Developmental Biology									
Direct:	14	-	14	16	-	16	17	-	17
Total:	14	-	14	16	-	16	17	-	17
Division of Pharmacology, Physiology and Biological Chemistry									
Direct:	14	-	14	15	-	15	16	-	16
Total:	14	-	14	15	-	15	16	-	16
Division of Biophysics, Biomedical Technology, and Computational Biosciences									
Direct:	13	-	13	17	-	17	18	-	18
Total:	13	-	13	17	-	17	18	-	18
Division of Training, Workforce Development and Diversity									
Direct:	11	-	11	14	-	14	15	-	15
Total:	11	-	11	14	-	14	15	-	15
Division for Research Capacity Building									
Direct:	12	-	12	16	-	16	17	-	17
Total:	12	-	12	16	-	16	17	-	17
Total	185	-	185	209	-	209	219	-	219
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
2020	13.0
2021	13.1
2022	13.2
2023	13.4
2024	13.4

NATIONAL INSTITUTES OF HEALTH
National Institute of General Medical Sciences

Detail of Positions[1]

GRADE	FY 2022 Final	FY 2023 Enacted	FY 2024 President's Budget
Total, ES Positions	1	1	1
Total, ES Salary	$203,700	$212,500	$224,187
General Schedule			
GM/GS-15	26	29	29
GM/GS-14	68	87	93
GM/GS-13	50	63	63
GS-12	14	5	11
GS-11	3	4	3
GS-10	0	0	0
GS-9	4	4	3
GS-8	5	5	5
GS-7	5	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	175	200	210
Commissioned Corps (42 U.S.C. 207)			
Assistant Surgeon General	0	0	0
Director Grade	0	0	0
Senior Grade	0	0	0
Full Grade	0	0	0
Senior Assistant Grade	0	0	0
Assistant Grade	0	0	0
Subtotal	0	0	0
Ungraded	23	23	23
Total permanent positions	176	201	211
Total positions, end of year	199	224	234
Total full-time equivalent (FTE) employment, end of year	185	209	219
Average ES salary	$203,700	$212,500	$224,187
Average GM/GS grade	13.2	13.4	13.4
Average GM/GS salary	$135,855	$141,724	$149,519

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