


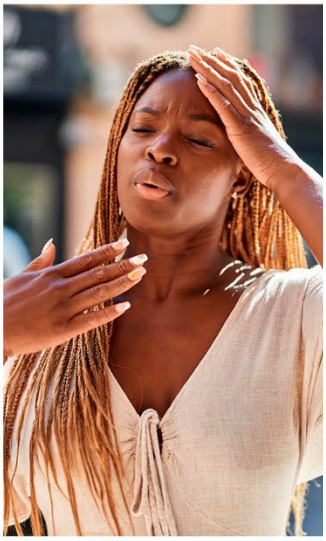



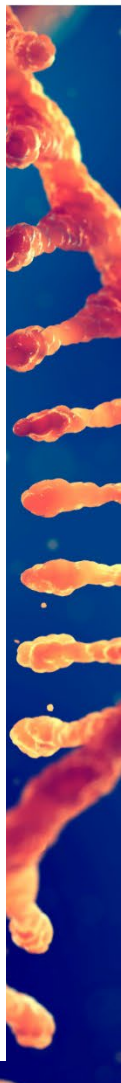

National Institute of Environmental Health Sciences

CONGRESSIONAL JUSTIFICATION
FY 2025

Department of Health and Human Services
National Institutes of Health

NIH National Institute of Environmental Health Sciences

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DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

National Institute of Environmental Health Sciences

FY 2025 Budget Table of Contents

General Notes

1. FY 2024 funding levels cited in this document are based on the Continuing Resolution in effect at the time of budget preparation (Public Law 118-35) and do not include HIV/AIDS transfers.
2. Detail in this document may not sum to the subtotals and totals due to rounding.

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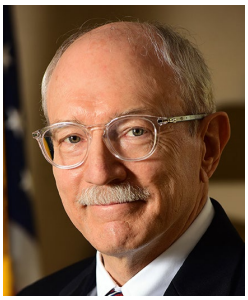
Director's Overview

Environmental Health Sciences: Preventing Disease to Save Lives

Mission

The mission of the National Institute of Environmental Health Sciences (NIEHS) is to discover how the environment affects people to promote healthier lives.



Richard Woychik, Ph.D.
Director, NIEHS

Planning for Success

Environmental health exposures impact every organ system, contribute to every major disease category, and occur from preconception through end of life. Because of this, our mission must align with the breadth of NIH priorities across its Institutes, Centers, and Offices (ICOs). In soliciting input for our next strategic plan, which will guide us in fulfilling our mission from 2024-2028, we actively sought the expertise and perspectives of a diverse group of scientists and staff from across NIH. Combined with input from across the spectrum of our stakeholders, these ideas and observations will inform our thinking as we work to frame new goals and priorities. Along with scientific priorities, we are engaged in fulfilling NIH's crosscutting priorities of diversity, equity, inclusion, and accessibility (DEIA). Building on our history of scientific support for environmental justice, we will expand our efforts to incorporate DEIA throughout our workplace and the work we fund to reduce the cumulative impacts of environmental burdens and advance environmental justice by preventing exposures to harmful chemicals. We will do this, in part, through strategic and transformative actions including renewing our Centers of Excellence in Environmental Health Disparities and Environmental Justice program, implementing an Environmental Justice Scholars program to bring diverse expertise to NIEHS, and creating an Environmental Justice Training program to help build capacity among communities, workers, healthcare professionals, policy makers, and others. Our next strategic plan will articulate a continued commitment to fulfilling our mission of improving the health of all people through actions that will capitalize on our past achievements, maximize the success of our current investments, and empower future discoveries.

On the Road to Precision Environmental Health

We continue to make steady progress in capturing knowledge on the exposome—the totality of a person's exposures over their lifespan—and integrating it with what we know about genetics and biological systems such as the microbiome and metabolome to move toward precision medicine and health. The NIEHS Personalized Environment and Genes Study (PEGS), which began as a DNA registry some 20 years ago, now comprises nearly 20,000 people (30 percent of whom are Black) and includes whole genome sequencing data for over 4,700 participants, as well as geospatial environmental data. A recent gene-environment study using PEGS data showed that participants who lived within eight miles of a large swine feeding facility were more likely to have certain genetic biomarkers associated with immune diseases and an increased risk of autoimmune disorders.[1] Plans for PEGS include working with partners at the nearby University of North Carolina and Duke University to better integrate patient health records. On a broader

[1] pubmed.ncbi.nlm.nih.gov/36527873/

level, our ongoing effort to expand inclusion of environmental exposure data in the nationwide *All of Us* Research Program is coming to fruition. In the past, program research was limited by the study participants' ability to remember and report their exposures in a questionnaire. At a symposium this past year, *All of Us* leaders met with government, industry, and academic scientists to identify new tools for measuring exposures in a person's blood or biospecimens and new analysis methodologies to determine their effect. We will work with the *All of Us* program to incorporate multiple new environmental components, which will enable us to leverage the cohort to obtain a more complete picture of the role of the environment in a person's health. Going forward, we are establishing a new Global Exposome Research Coordination to Accelerate Precision Environmental Health program to expand our efforts at the international level. The goals of the new program, conceived as the U.S. counterpart to an existing European program, will be to develop a common conceptual framework for exposomics, identify shared technologies and methodologies for characterizing the exposome, and build a global research community to build partnerships to leverage exposome initiatives and infrastructures around the world.

Knowledge to Meet New Challenges

Generating trustworthy scientific evidence that decision makers, and most importantly the public, can use to support a wide array of regulatory and policy decisions to protect the health of individuals and communities from exposure to pollutants in air, water, soil, and food, as well as extreme weather and disasters, is critical for NIEHS. Our Institute aims to use every potential avenue to support the continuous refinement and innovation of this research, including the use of both animal models and novel alternative methods (NAMs) as appropriate to answer important research questions. We have long been a leader in the development of NAMs to reduce the use of animals and increase the human relevance of models in health effects testing. Working with the National Toxicology Program Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM) in support of a potential NIH Common Fund program Complement Animal Research in Experimentation (Complement-ARIE), we are undertaking a landscape analysis of existing NAMs efforts in health and disease. Example areas include *in vitro* models such as cell lines and organoids—miniaturized and simplified versions of an organ that mimic the key function, structure, and biology of that organ; *in silico* models such as so-called digital twins, or virtual models of real-world systems; *in chemico* cell-free models that use chemical reactivity methods and biocomputers to screen compounds; and models for data aspects such as findability, accessibility, interoperability, and reusability (FAIR), AI-readiness of training data, and data ecosystem infrastructure requirements needed to train, use, and interpret NAMs data. Through NICEATM, we are also supporting initiatives to use NAMs to address DEIA and environmental justice concerns around population variability and susceptibility. To ensure broadened public participation and community engagement, interested groups have been formed to better understand community perspectives, identify scientific opportunities, address regulatory needs, and foster interdisciplinary collaborations to develop and implement the best, most responsive science in this area.

We are continuing to take a similar approach in our response to the urgency, enormity, and complexity of climate change. NIEHS partnered with ICOs across NIH to launch the NIH Climate Change and Health (CCH) Initiative. The Initiative is guided by a Strategic Framework comprising four core goals: Health Effects Research to identify climate change threats to health;

Training and Capacity Building to provide the next generation of scientists with the cutting-edge skills needed to meet this challenge; Intervention Science to develop targeted preventions and adaptations; and Health Equity to help mitigate the health effects of climate change, especially for communities that experience these burdens disproportionately. The CCH Initiative recently awarded grants for planning centers to focus on these activities; NIEHS is directly supporting centers at Emory and Tufts Universities and the University of Arizona. As part of a newly launched Intramural Targeted Climate Change & Health (ITCCH) program, we will explore the effects of heat exposure on blood DNA methylation, which can impact how a gene functions. Building on our environmental health and environmental justice expertise, we will continue to fund a broad range of research across the goals of the Initiative that incorporates DEIA principles. A new program funded through the HHS Patient-Centered Outcomes Research Trust Fund will leverage this expertise and build on it. The Climate and Health Outcomes Research Data Systems (CHORDS) will receive $4 million over three years to create a "proof of concept" data infrastructure. This research resource will integrate environmental, climate-related, societal, and health outcomes data focused on the problem of wildfires, which are becoming more frequent and severe with climate change, with devastating consequences for people around the world.

Conclusion

One has only to turn on the TV or scroll through an online news site to see that our mission has never been more relevant than it is today. As we have done since NIEHS first became an NIH Institute nearly six decades ago, we will continue to prioritize conducting the very best science to understand the impact of the world around us on the world inside of us, and translating what we learn into actions to improve the potential for all people to live healthy, productive, and meaningful lives.

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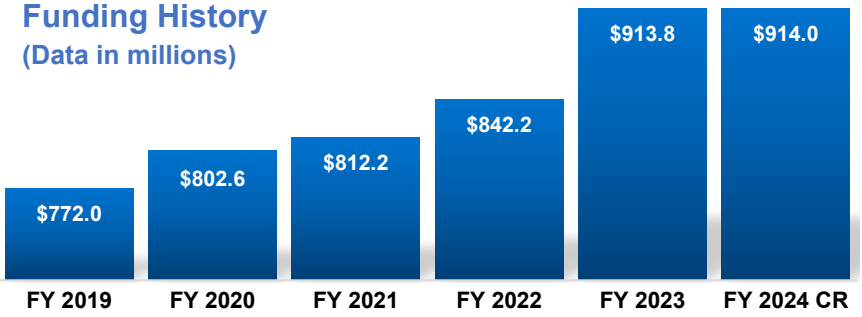
National Institute of Environmental Health Sciences

Environmental Health Sciences Now for A Healthy Future

NIEHS-funded science seeks to address concerns about environmental factors that can affect human health. Many issues, including climate change and the resulting natural disasters; pandemics; and growing health inequities of individuals, communities, and nations, bring new urgency to this research. NIEHS has long brought a unique perspective to NIH's global scientific leadership through partnerships with environmental health-disparate communities. Research efforts turn current knowledge into future prevention and interventions to address health disparities; make use of Artificial Intelligence (AI) to unravel how exposures and genetics interact to cause disease; identify targets for intervention in the body before disease occurs; and translate science to build the evidence base for policies that will improve and protect the nation's health and ensure a healthier future for all people.

NIEHS Director Richard P. Woychik, Ph.D., works to implement transformative science across the NIEHS enterprise, emphasizing core values of Workforce Diversity, Innovation, Collaboration, Communication, and Distributive Leadership. His vision is to integrate environmental health research across NIH where it intersects the missions of other ICOs. The goal of this vision is to bring environmental health sciences to bear on solving complex problems of mutual interest and global significance. Dr. Woychik recognizes that working closely with other federal partners and interested groups is critical to continuing to make progress toward ensuring health for all.

Funding History
(Data in millions)



FY 2025 President's Budget: $916.8 million

Facts and Figures
(avg/year FY19-FY23)

- **630** full-time FTEs
- **857** Principal Investigators (PIs)
- **61** Environmental Health Disparities & Environmental Justice Faculty (FY23)
- **642** Research Project Grants
- **30** Early Stage Investigators (ESIs)
  16.2% ESI success rate

Research Highlights

- A team used AI to identify geographic disparities in high-risk factors for premature cardiovascular death, including lower income and physical inactivity, higher food insecurity, smoking, and education level.
- Scientists developed a 3-D model of how exposure to cadmium might lead to congenital heart disease, the most common birth defect in the United States, which affects nearly 40,000 newborns a year.
- A study found that use of clear messages advising pregnant women to maximize their intake of low-mercury fish allowed them to reap the nutritional benefits of fish without increasing risk of harmful exposure.
- A review found that AI and machine learning can be used to effectively detect and diagnose Polycystic Ovary Syndrome (PCOS), the most common hormone disorder for women ages 15 to 45.
- A study confirmed a direct link between people's exposure to PFAS chemicals in drinking water and effects on metabolism that result in weight gain and retention.
- A global report found that, at every stage of their life cycle, plastics cause disease and premature death, with effects seen disproportionately in low-income, minority communities, especially children. Plastics chemicals detected in people are known to increase the risk of cancer, obesity, miscarriage, and cardiovascular disease.

National Institute of Environmental Health Sciences

Recent Accomplishments: From Data to Diagnosis to Treatment

Cancer and the Microbiome
Dietary restriction of methionine (MR), a protein amino acid, has been shown to be effective at decreasing tumor growth and promoting antitumor immunity in people with certain cancers. A study of intestinal cancer in a mouse model demonstrated that MR has the opposite effect, however, in mice with healthy immune systems. This difference results from varying effects of MR on gut microbiota involved in systemic immunity. If similar results are seen in humans, this will have implications for the treatment of colon cancer patients by using dietary interventions to influence their microbiomes.

Accurate Prediction of Autism
One in 36 children in the United States has autism spectrum disorder (ASD). Scientists now have a highly accurate test that can help diagnose autism as early as one month of age, well before the current average age of four years old. Hair strands grow like rings of a tree, with patterns indicating environmental exposure. The new test analyzes these patterns for the presence of metals associated with autism risk. The test will allow for far earlier behavioral and social interventions, which studies show can dramatically improve outcomes for children on the spectrum.

Women Treated for Breast Cancer May Age Faster
Biological age reflects a person's cell and tissue health and differs from chronological age. Biological aging is affected by environmental factors among others and increases risk of age-related diseases. Researchers measured naturally occurring changes to the DNA of women diagnosed and treated for breast cancer. Compared to cancer-free subjects, biological aging was increased in all women diagnosed with breast cancer, with the greatest increases in women treated with radiation versus surgery or chemotherapy. Results indicate biological aging may be a consideration in treatment options.

Current Activities

Research is showing that the environment affects men's biological clocks, particularly the 74-day period necessary for sperm to develop. During this time sperm may be affected by harmful exposures, with consequences for the health of their offspring. A mouse study that modeled what might occur in human exposure showed that phthalate exposure of fathers resulted in the presence of risk factors for diabetes in the next two generations of offspring.

Another group often overlooked in broader health disparities discussions are rural populations that often have unique exposures. A new Rural Environmental Health Ph.D. Fellowship program at Virginia Tech University will be grounded in the socio-ecological model and will help to create a cadre of researchers trained to explore public health in the rural context, including through community-engaged life science and biomedical research.

Another program focuses on the increasing legalization of marijuana in many areas of the United States, which has created one of the fastest growing job markets in the country, employing more than 400,000 people. Yet little is known about the health effects of occupational or secondhand exposure to cannabis. Evidence points to concerning respiratory exposures to allergen-containing bioaerosols, pesticides, volatile organic compounds, and other contaminants in recreational cannabis products. More research is needed to ensure the safe growth and use of such products.

Future Initiatives

NIEHS builds on the knowledge it creates, reaching for new understanding to improve people's health and lives. NIEHS will continue to investigate emerging research topics to provide insights critical to advancing actions to ensure health.

Plastic waste is a major global environmental health concern, with 19–23 million metric tons entering waterways every year. Microplastics have been found in human lungs, blood, placenta, and breastmilk. NIEHS has issued a notice of support for research on the impacts of exposure to microplastics and nanoplastics on human health.

Another new effort seeks to build international research collaborations to explore how the exposome and genetics cause diseases, including Alzheimer's, Type 2 diabetes, cancer, asthma, and cardiovascular disease. The Global Exposome Research Coordination to Accelerate Precision Environmental Health program will develop shared conceptual frameworks for exposomics, identify technologies and methodologies needed to characterize the exposome, and support the creation of a global community of exposome researchers.

NIEHS will continue to advance the science of report-back of research results (RBRR), in which results are shared with affected individuals and communities by establishing best practices and guidelines; identifying risks, benefits, and barriers; and recognizing the important role of RBRR in reducing health disparities and advancing health equity.

Major Changes in the Budget Request

Major changes by budget mechanism and/or budget program detail are briefly described below. The FY 2025 President's Budget level for the National Institute of Environmental Health Sciences (NIEHS) is $916.8 million, a $3.0 million increase from the FY 2023 Final level. The increase of $3.0 million reflects a 0.3 percent increase from the FY 2023 Final level. Note that there may be overlap between budget mechanism and activity detail and these highlights will not sum to the total change for the FY 2025 President's Budget request for NIEHS.

Research Project Grants (RPGs) (-$14.8 million, total $284.8 million):
NIEHS plans to support a total of 574 RPG awards in FY 2025, excluding Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) awards. Noncompeting RPGs will decrease by 41 awards and -$10.3 million while administrative supplements will decrease by 53 awards and -$11.3 million compared to the FY 2023 Final level. The total number of RPG awards will increase by 7 awards from FY 2023 while the amount allocated will decrease by -$14.8 million. NIEHS will continue to support new investigators in FY 2025 with 52 new competing awards (+$10.6 million over FY 2023).

Intramural Research (+6.0 million, total $262.7 million):
Intramural funding will increase $6.0 million, or 2.3 percent, above the FY 2023 Final level to cover expected pay and benefits increases for onboard intramural staff.

Research Management and Support (RMS) (+$1.8 million, total $40.8 million):
Funding for Research Management and Support will increase by $1.8 million, or 4.5 percent, above the FY 2023 Final level to support to cover expected pay and benefits increases for onboard staff.

NATIONAL INSTITUTES OF HEALTH

National Institute of Environmental Health Sciences

Budget Mechanism *

(Dollars in Thousands)

Mechanism	FY 2023 Final		FY 2024 CR		FY 2025 President's Budget		FY 2025 +/- FY 2023	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount
Research Projects:								
Noncompeting	433	$212,944	418	$218,020	392	$202,654	-41	-$10,290
Administrative Supplements	*(88)*	$14,765	*(37)*	$3,706	*(35)*	$3,500	*-(53)*	-$11,265
Competing:								
Renewal	19	$11,818	11	$6,082	15	$8,020	-4	-$3,798
New	115	$59,997	126	$52,481	167	$70,600	52	$10,603
Supplements	0	$0	0	$0	0	$0	0	$0
Subtotal, Competing	**134**	**$71,816**	**137**	**$58,562**	**182**	**$78,621**	**48**	**$6,805**
Subtotal, RPGs	567	$299,525	555	$280,289	574	$284,774	7	-$14,751
SBIR/STTR	37	$22,577	36	$22,476	40	$24,324	3	$1,747
Research Project Grants	604	$322,102	591	$302,765	614	$309,098	10	-$13,003
Research Centers								
Specialized/Comprehensive	28	$57,199	33	$68,106	31	$63,722	3	$6,523
Clinical Research	0	$0	0	$0	0	$0	0	$0
Biotechnology	0	$0	0	$0	0	$0	0	$0
Comparative Medicine	0	$0	0	$0	0	$0	0	$0
Research Centers in Minority Institutions	0	$0	0	$0	0	$0	0	$0
Research Centers	**28**	**$57,199**	**33**	**$68,106**	**31**	**$63,722**	**3**	**$6,523**
Other Research:								
Research Careers	50	$8,392	55	$9,311	58	$10,123	8	$1,730
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	$0	0	$0	0	$0	0	$0
Minority Biomedical Research Support	0	$385	0	$379	0	$380	0	-$5
Other	73	$39,120	71	$38,251	69	$36,895	-4	-$2,225
Other Research	**123**	**$47,897**	**126**	**$47,941**	**127**	**$47,398**	**4**	**-$499**
Total Research Grants	755	$427,197	750	$418,812	772	$420,218	17	-$6,980
Ruth L Kirschstein Training Awards:	FTTPs		FTTPs		FTTPs		FTTPs	
Individual Awards	58	$2,722	59	$2,760	58	$2,760	0	$38
Institutional Awards	379	$20,690	384	$20,980	379	$20,980	0	$290
Total Research Training	**437**	**$23,412**	**443**	**$23,739**	**437**	**$23,739**	**0**	**$328**
Research & Develop. Contracts	44	$167,394	43	$168,910	42	$169,307	-2	$1,913
SBIR/STTR (non-add)	*(0)*	*($269)*	*(0)*	*($276)*	*(0)*	*($282)*	*(0)*	*($13)*
Intramural Research	496	$256,751	524	$261,806	524	$262,702	28	$5,952
Res. Management & Support	138	$39,054	161	$40,712	161	$40,825	23	$1,771
SBIR Admin. (non-add)		*($223)*		*($255)*		*($262)*		*($39)*
Construction		$0		$0		$0		$0
Buildings and Facilities		$0		$0		$0		$0
Total, NIEHS	**634**	**$913,807**	**685**	**$913,979**	**685**	**$916,791**	**51**	**$2,984**

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

NATIONAL INSTITUTES OF HEALTH

NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES

For carrying out section 301 and title IV of the PHS Act with respect to environmental health sciences, $916,791,000.

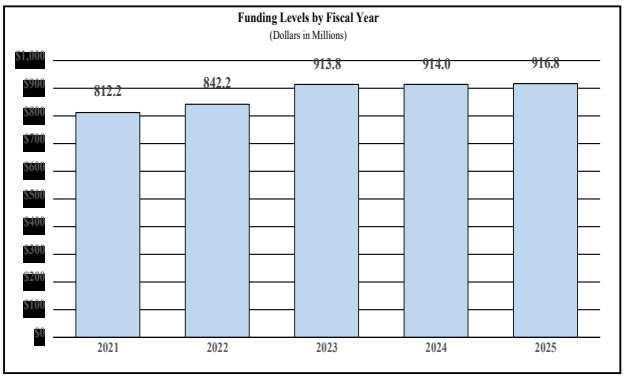
NATIONAL INSTITUTES OF HEALTH
National Institute of Environmental Health Sciences

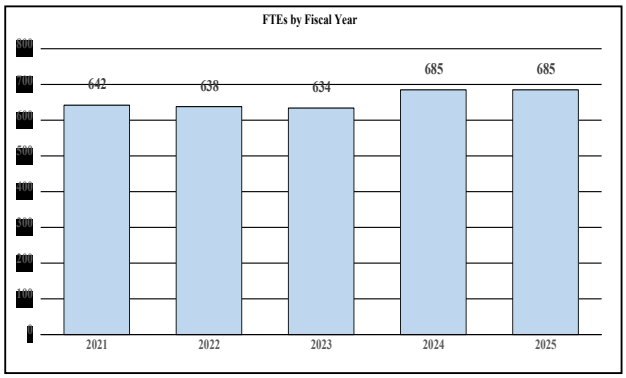
Summary of Changes
(Dollars in Thousands)

CHANGES	FY 2023 Final FTEs	FY 2023 Final Budget Authority	FY 2025 President's Budget FTEs	FY 2025 President's Budget Budget Authority	Built-In Change from FY 2023 Final FTEs	Built-In Change from FY 2023 Final Budget Authority
1. Intramural Research:						
A. Built-in cost changes:						
a. FY 2024 effect of FY 2023 pay & benefits increase		$103,390		$112,272		$1,221
b. FY 2024 effect of FY 2024 pay & benefits increase		$103,390		$112,272		$4,023
c. FY 2024 paid days adjustment		$103,390		$112,272		$398
d. Differences attributable to FY 2024 change in FTE		$103,390		$112,272		$0
e. FY 2025 effect of FY 2024 pay & benefits increase		$103,390		$112,272		$1,362
f. FY 2025 effect of FY 2025 pay & benefits increase		$103,390		$112,272		$1,858
g. FY 2025 paid days adjustment		$103,390		$112,272		$0
h. Differences attributable to FY 2025 change in FTE		$103,390		$112,272		$0
i. Payment for centrally furnished services		$29,896		$32,056		$2,160
j. Cost of laboratory supplies, materials, other expenses, and non-recurring costs		$123,299		$118,374		$8,644
Subtotal, IR built-in cost changes						$19,666
2. Research Management and Support:						
A. Built-in cost changes:						
a. FY 2024 effect of FY 2023 pay & benefits increase		$21,127		$22,941		$250
b. FY 2024 effect of FY 2024 pay & benefits increase		$21,127		$22,941		$822
c. FY 2024 paid days adjustment		$21,127		$22,941		$81
d. Differences attributable to FY 2024 change in FTE		$21,127		$22,941		$0
e. FY 2025 effect of FY 2024 pay & benefits increase		$21,127		$22,941		$277
f. FY 2025 effect of FY 2025 pay & benefits increase		$21,127		$22,941		$379
g. FY 2025 paid days adjustment		$21,127		$22,941		$0
h. Differences attributable to FY 2025 change in FTE		$21,127		$22,941		$0
i. Payment for centrally furnished services		$2,516		$2,698		$182
j. Cost of laboratory supplies, materials, other expenses, and non-recurring costs		$15,357		$15,186		$1,031
Subtotal, RMS built-in cost changes						$3,023

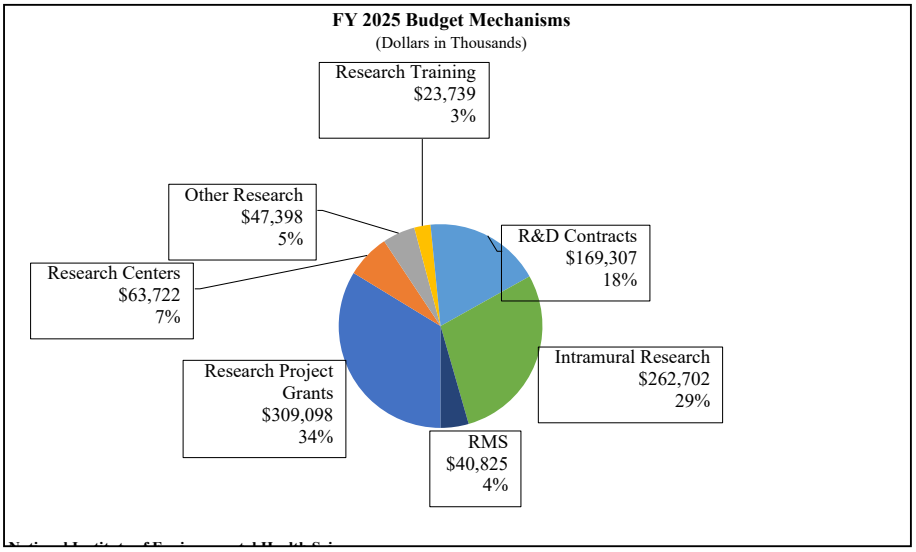
CHANGES	FY 2023 Final No.	FY 2023 Final Amount	FY 2025 President's Budget No.	FY 2025 President's Budget Amount	Program Change from FY 2023 Final No.	Program Change from FY 2023 Final Amount
B. Program:						
1. Research Project Grants:						
a. Noncompeting	433	$227,709	392	$206,154	-41	-$21,556
b. Competing	134	$71,816	182	$78,621	48	$6,805
c. SBIR/STTR	37	$22,577	40	$24,324	3	$1,747
Subtotal, RPGs	604	$322,102	614	$309,098	10	-$13,003
2. Research Centers	28	$57,199	31	$63,722	3	$6,523
3. Other Research	123	$47,897	127	$47,398	4	-$499
4. Research Training	437	$23,412	437	$23,739	0	$328
5. Research and development contracts	44	$167,394	42	$169,307	-2	$1,913
Subtotal, Extramural		$618,003		$613,264		-$4,739
6. Intramural Research	496	$256,751	524	$262,702	28	-$13,715
7. Research Management and Support	138	$39,054	161	$40,825	23	-$1,251
8. Construction		$0		$0		$0
9. Buildings and Facilities		$0		$0		$0
Subtotal, program changes						-$19,705
Total built-in and program changes	634	$913,807	685	$916,791	51	$2,984

History of Budget Authority and FTEs:

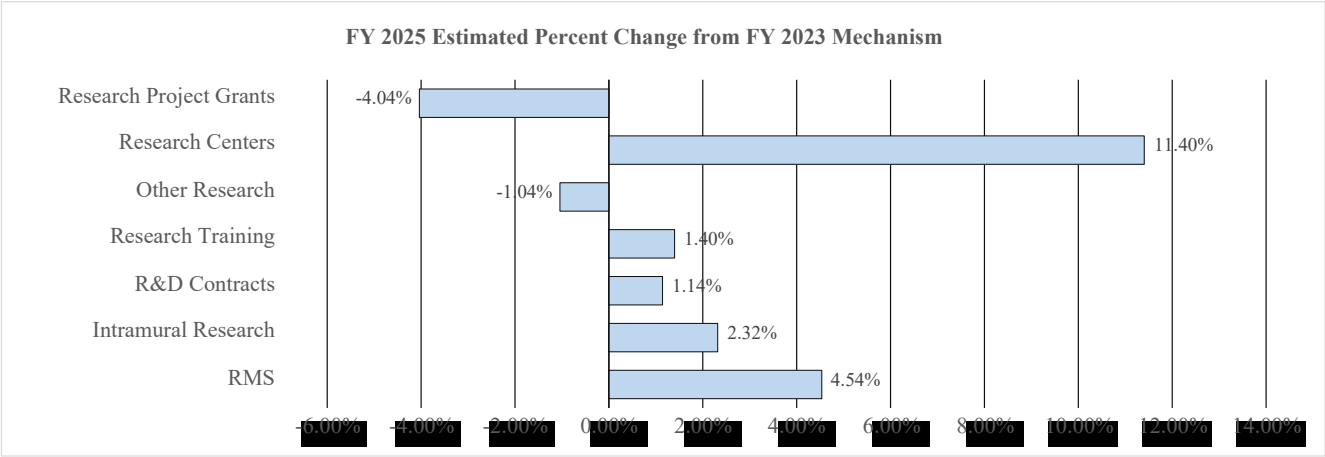


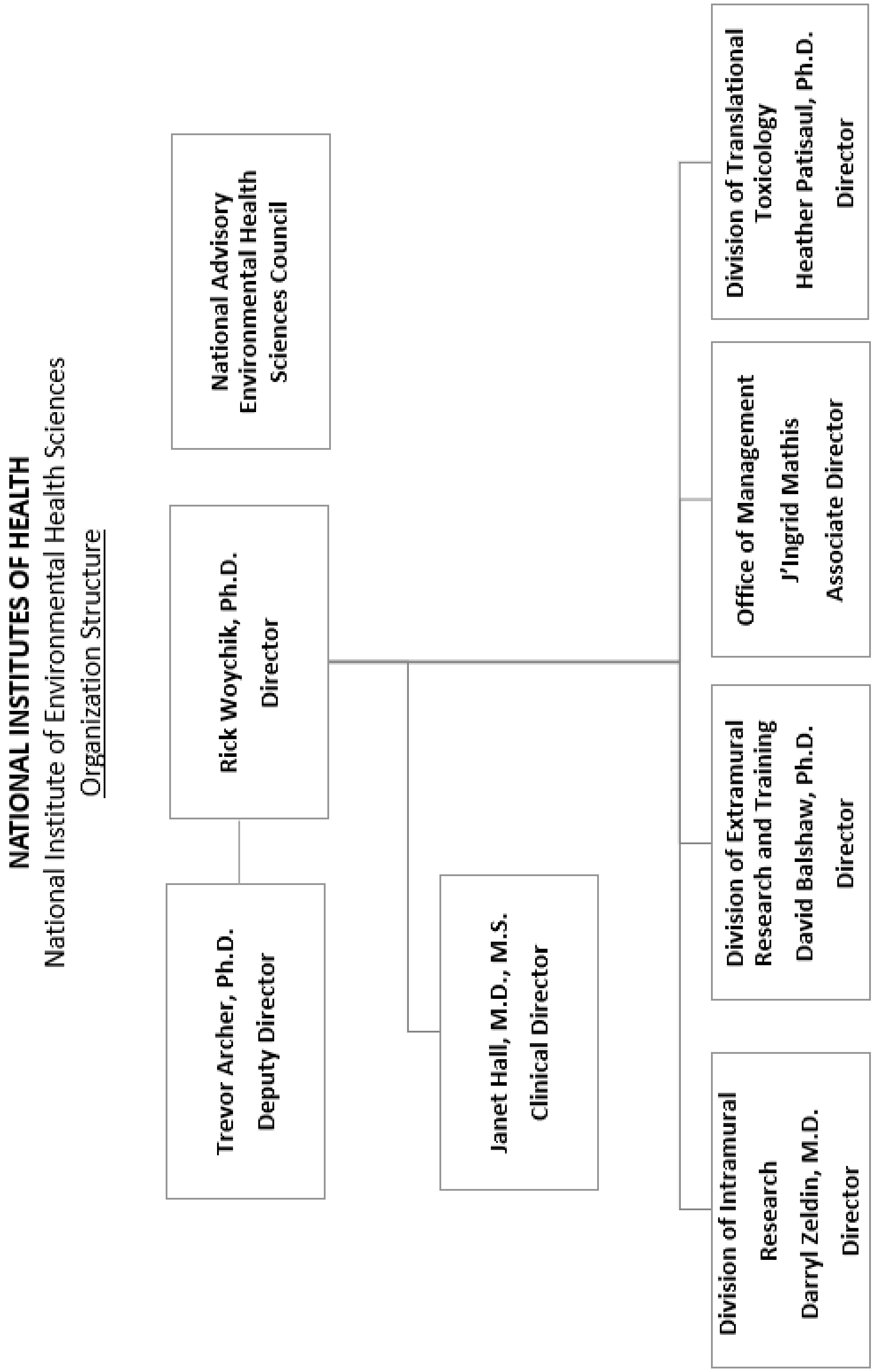


Distribution by Mechanism:



Change by Selected Mechanisms:




NATIONAL INSTITUTES OF HEALTH
National Institute of Environmental Health Sciences
Organization Structure
National Advisory Environmental Health Sciences Council
Rick Woychik, Ph.D.
Director
Trevor Archer, Ph.D.
Deputy Director
Janet Hall, M.D., M.S.
Clinical Director
Division of Intramural Research
Darryl Zeldin, M.D.
Director
Division of Extramural Research and Training
David Balshaw, Ph.D.
Director
Office of Management
J'Ingrid Mathis
Associate Director
Division of Translational Toxicology
Heather Patisaul, Ph.D.
Director

NATIONAL INSTITUTES OF HEALTH
National Institute of Environmental Health Sciences

Budget Authority by Activity *
(Dollars in Thousands)

	FY 2023 Final		FY 2024 CR		FY 2025 President's Budget		FY 2025 +/- FY 2023 Final	
Extramural Research	**FTE**	**Amount**	**FTE**	**Amount**	**FTE**	**Amount**	**FTE**	**Amount**
Detail								
Fundamental Research		$230,147		$212,304		$215,857		-$14,290
Exposure Research		$143,103		$143,619		$141,708		-$1,395
Translational Research and Special Populations		$114,476		$115,864		$114,684		$209
Predictive Toxicology		$88,127		$95,109		$96,445		$8,318
Training and Education		$42,150		$44,566		$44,569		$2,419
Subtotal, Extramural		**$618,003**		**$611,461**		**$613,264**		**-$4,739**
Intramural Research	**496**	**$256,751**	**524**	**$261,806**	**524**	**$262,702**	**28**	**$5,952**
Research Management & Support	**138**	**$39,054**	**161**	**$40,712**	**161**	**$40,825**	**23**	**$1,771**
TOTAL	**634**	**$913,807**	**685**	**$913,979**	**685**	**$916,791**	**51**	**$2,984**

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

National Institute of Environmental Health Sciences

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

Budget Authority (BA):

	FY 2023 Final	FY 2024 CR Level	FY 2025 President's Budget	FY 2025 +/- FY 2023
BA	$913,807,000	$913,979,000	$916,791,000	+$2,984,000
FTE	634	685	685	+51

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

Overall Budget Policy: The FY 2025 President's Budget level for the National Institute of Environmental Health Sciences (NIEHS) is $916.8 million, reflecting a 0.3 percent increase from the FY 2023 Final level. NIEHS will steward its annual funding to generate knowledge and understanding of how factors in the environment impact human health, and to disseminate and translate such knowledge into preventing harm and improving the health of all people.

Program Descriptions

Fundamental Research

Fundamental research is a primary scientific emphasis of NIEHS. Investments in this area are aimed at tackling the undiscovered by identifying and understanding basic shared mechanisms or common biological pathways that underlie diseases and disorders, such as inflammation, epigenetic changes, oxidative stress, and mutagenesis. Knowledge of these fundamental processes enables the development of precision environmental health—targeted prevention and treatment strategies at the individual level.

The NIEHS Revolutionizing Innovative, Visionary Environmental health Research (RIVER) program supports outstanding investigators to pursue their research in novel directions to achieve greater impacts. One RIVER grantee is working to unravel gene-environment interactions in Systemic Lupus Erythematosus, an autoimmune disease which affects 1 million people in the United States and for which there is no cure. Research in mice transplanted with bone marrow containing a gene mutation associated with lupus, called POLB-Y265C, developed high levels of antinuclear antibodies and renal disease. [2] The study confirmed that lupus can develop in the hematopoietic compartment, the space in bone marrow where blood cells are generated, presenting a target for intervention.

Investigation of telomeres, regions of DNA sequences at the ends of a chromosome that get shorter every time a cell divides, is the focus of the Telomere Research Network, a partnership of NIEHS and the National Institute on Aging. Telomere length is an indicator of psychosocial stress and predictor of disease. NIEHS scientists are working to develop technologies to observe telomere length and assess how well they measure biological aging in populations including pediatric and mid-life.

NIEHS supported a study that combined fundamental science with community-based research that informed new clinical guidelines by the National Academic of Science, Engineering, and Medicine on biomonitoring of perfluoroalkyl substances (PFAS) in Alaskan communities.[3] The collaborative study by academic researchers and the Alaska Community Action on Toxicants on the exposure of the Yupik people to legacy contaminants and their health effects provided support for the guidelines, including advice for physicians in talking to patients about determining and avoiding PFAS exposures, as well as recommendations for pairing biomonitoring with exposure assessments from water, dust, and food sources.

[2] ncbi.nlm.nih.gov/pmc/articles/PMC9053796/
[3] doi.org/10.17226/26156

Budget Policy: The FY 2025 President's Budget request for NIEHS Fundamental Research is $215.9 million, a decrease of -$14.3 million or -6.2 percent compared to the FY 2023 Final level.

RNomics: The Emerging Science of RNA

Ribonucleic acid (RNA), like deoxyribonucleic acid (DNA), is a macromolecule essential for most biological functions. RNA catalyzes biological reactions and directs the synthesis of proteins. Research demonstrates that certain environmental exposures can impact human health by modifying the expression and transcription (copying) of different species of RNA as well as chemical modifications that are associated with them. Sequencing and characterizing these types of RNA modifications and their resulting biological significance is the focus of the emerging field of RNomics. More than 170 such modifications have been identified so far. NIEHS investigators are working to learn more about modified RNAs and epitranscriptomic processes related to adverse health outcomes including cancers, metabolic disorders, and neurodevelopmental effects. In May of 2022, NIEHS and the National Human Genome Research Institute co-sponsored a workshop of the National Academies of Science, Engineering, and Medicine (NASEM) to identify technologies needed to comprehensively sequence and characterize RNA and consider how to facilitate their rapid adoption; determine infrastructure, bioinformatics, and other needs; and determine how best to incorporate public outreach and workforce development in RNomics. A NASEM consensus report on the future of sequencing RNA will follow. NIEHS is supporting development of technologies to assign RNA sequences as targets of environmental chemicals more accurately. High-throughput, single-cell, and subcellular methods for detecting, locating, and analyzing interactions between RNAs, DNA, and other molecules will advance understanding of the role of RNA in human health and exposure induced disease.

Exposure Research

Research in this field focuses on identifying and studying the exposome—the totality of exposures experienced over an individual's lifespan—and how those exposures affect health, both independently and in combination with genetic and other factors. Exposure to mixtures of chemical and non-chemical stressors, including environmental pollution, diet, climate change events, and social determinants of health, impact the biological systems within the body. Exposure research is aimed at improving methods of detecting and measuring exposures in humans and other model organisms and systems. To do this, researchers work with study subjects to use state-of-the-art data collection technologies, such as personal exposure sensors and geoscience tools, and apply advanced statistical, informatics, and analytical approaches to mining such data for insights that can inform prevention and improve health.

Fetal and infant exposure to toxic metals and deficiencies of nutritional elements have been linked with increased likelihood of autism spectrum disorder (ASD),[4] which affects an estimated 1 in 44 children in the United States. Until now, diagnosis of ASD has been dependent on behavioral indicators, with the average age of diagnosis in the United States at more than four years. NIEHS-supported scientists have developed a test that can measure metal exposure in a single strand of hair to accurately predict ASD risk as early as 1 month of age.[5] Hair strands grow similarly to the rings of a tree, collecting signatures of metal metabolism in their layers. Using a combination of mass spectrometry and AI, researchers were able to identify these signatures and compare them across populations of children from Japan, Sweden, and the United States to develop a predictive algorithm with high levels of sensitivity, specificity, and accuracy. The test, which has received Breakthrough Device designation from the Food and Drug Administration (FDA), will enable far earlier intervention that can change the trajectory of the lives of children with ASD.

NIEHS-funded researchers demonstrated that a test using novel alternative methods (NAMs), which avoids the use of any animal components by measuring damage to a macromolecular matrix in test tubes, can accurately predict whether substances in consumer products cause eye irritation and damage for a broader set of chemicals.[6] The researchers tested the updated method, which adjusted for new data on the effects of antioxidants in tears on test accuracy, on an expanded set of chemicals including ocular corrosives and foaming agents (surfactants). The method, called OptiSafe, was found to be more accurate than both the earlier approach and other common eye irritation tests, such as the Draize rabbit eye test, for a new total of 147 chemicals. Specifically, the updated method predicted "no damage" substances with nearly 93 percent accuracy. Predictions for "extreme damage" were about 79 percent accurate. The new method can help researchers avoid using animals in eye safety tests.

[4] ncbi.nlm.nih.gov/pmc/articles/PMC9740182/
[5] pubmed.ncbi.nlm.nih.gov/36498727/
[6] ncbi.nlm.nih.gov/pmc/articles/PMC9802687/

Budget Policy: The FY 2025 President's Budget request for Exposure Research is $141.7 million, a decrease of -$1.4 million or -1.0 percent compared to the FY 2023 Final level.

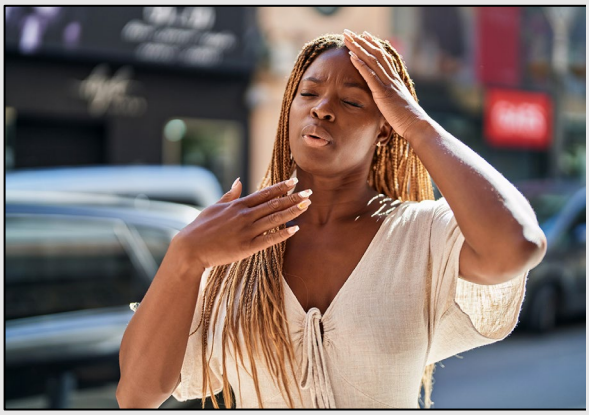
Translational Research and Special Populations

NIEHS efforts in this area include a wide range of research activities that encourage the translation of clinical, population, and community-based science into targeted solutions that promote public and clinical health outcomes and increase health and social equity. These activities include research investments focused on understanding environmental exposures to health disparate and other especially at-risk populations, across life stages, in real-world settings, and in combination with social determinants of health.

NIEHS-supported studies provide examples of research that helps to understand, and may help to prevent, adverse impacts of environmental exposures in populations at opposite ends of the human life span. Studies have shown that air pollution exposures during pregnancy are associated with an increased risk of ASD in children. A study of data on nearly 300,000 mother-child pairs in California found evidence of when during pregnancy such risk is highest and for which pollutants. Results showed that exposure to fine particulate matter (PM2.5) in the first two trimesters was associated with increased ASD risk in children, particularly for boys. Exposure to ozone (O_3) during the third trimester was associated with increased risk only for boys, although a slight decrease in risk overall was seen during weeks 20-28 of gestation, suggesting that more exploration is needed of ASD risk from

Leading the Race to Understand Climate Change Impacts

As the reality of a changing climate unfolds across the globe in record-breaking heat, extreme storms and wildfires, drought and flood events, and spreading vectorborne diseases, the need to understand the effects on human health is increasingly urgent. NIEHS continues to lead NIH efforts to respond to this critical need through the NIH Climate Change and Health Initiative. In FY 2023, the Initiative funded a Research Coordination Center, as well as planned grants for centers that will focus on health effects research, health equity, intervention research, and training and capacity building. NIEHS will fund centers at Emory, Tufts, and the University of Arizona. NIEHS intramural researchers funded from the newly launched Intramural Targeted Climate Change & Health (ITCCH) program will explore the effect of heat exposure on DNA methylation in blood, which can impact how a gene functions. Other projects continue to discover a range of effects from climate change exposures. One study found associations between elevated ambient heat and acute mental health emergency department visits among children, adolescents, and young adults. Another study characterized power outages across nearly 2,500 U.S. counties and found multiple regions that experience both outages and high social vulnerability, including use of durable medical equipment that relies on electricity. Researchers are also using satellite observations to map marine algal blooms to improve health risk assessments.



ozone.[7] Other investigators who looked at health effects of exposure to PM2.5 among nearly 28,000 adults found that higher residential PM2.5 levels, especially from agriculture and wildfires, were associated with higher rates of new cases of dementia.[8] NIEHS research also contributed to a groundbreaking paper that provides new insights into the genetic causes of Alzheimer's disease and other dementias.[9] Together, these studies provide further evidence to support reduction of air pollution exposures to promote healthy development and cognitive aging.

NIEHS research helps to build the evidence base to inform and support health protective policy interventions and to improve public health, health equity, and innovation in disease prevention. Research by one NIEHS-supported scientist, who has spent decades establishing evidence of the impacts to children's health of environmental exposures, provided support for the EPA's interim drinking water health advisory on perfluorooctanoic acid (PFOA), one of a group of contaminants known as PFAS. This research demonstrated that children exposed pre- and postnatally to PFOA experienced a decreased immune response to tetanus vaccinations.[10] Other research has helped to spur a new law that will phase out the use of a harmful type of heating oil in New York City buildings by October 2027, three years earlier than expected. The assessment demonstrated the success of a program to phase out fuel oil grade #4, known to contribute to asthma and other health effects. Significantly, the study showed that the policy was effective in both low- and high-income neighborhoods, which could help to eliminate environmental health disparities.[11]

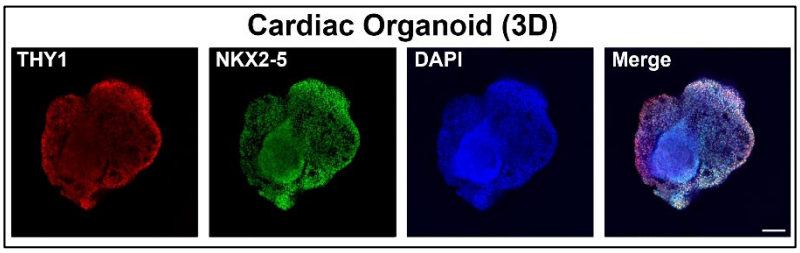
Budget Policy: The FY 2025 President's Budget request for Translational Research and Special Populations is $114.7 million, an increase of $0.2 million or 0.2 percent compared to the FY 2023 Final level.

Predictive Toxicology

NIEHS works to develop and apply improved test methods and models of toxicity that can be used to predict risk of cancer and other adverse health outcomes resulting from environmental exposures. Predictive toxicology efforts include assessing the hazards of real-world mixtures of chemicals, modeling non-chemical stressors that create health disparities in underserved communities, determining how to evaluate broad classes of chemicals efficiently, and identifying early biomarkers of health effects. This research is supported by innovative approaches to literature-based and integrative informatics, high throughput and computational modeling, building of scientific and regulatory confidence in complex *in vitro* systems, improved physiological monitoring of animals, and modeling the effects of environmental exposures on pre-existing diseases. The Division of Translational Toxicology (DTT) conducts predictive toxicology in support of the National Toxicology Program (NTP), which works to protect people's health by developing more efficient, cost-effective, and translational ways to predict hazards from environmental exposures.

[7] pubmed.ncbi.nlm.nih.gov/35040691/
[8] pubmed.ncbi.nlm.nih.gov/37578757/
[9] ncbi.nlm.nih.gov/pmc/articles/PMC9005347/
[10] INTERIM Drinking Water Health Advisory: Perfluorooctanoic Acid (PFOA) CASRN 335-67-1
[11] pubmed.ncbi.nlm.nih.gov/34878319/

Congenital heart disease is the most common type of birth defect in the United States, affecting nearly 40,000 newborns each year. Cadmium is a metal found in air, soil, and water that is released through mining and industrial processes. Cadmium can also enter the food chain when plants absorb it from soil. Previous studies suggested that maternal exposure to cadmium might be a significant risk factor for congenital heart disease. NIEHS scientists designed a 3-D organoid model that mimics how the heart develops to investigate the impact of environmental factors. Using the model, they discovered how exposure to low levels of cadmium can inhibit formation of cardiomyocytes, the major type of cells that form the heart.[12] The model builds on decades of toxicology work and will be useful for the study of effects of exposure to many environmental substances.



Different cell types in the organoid model express specific markers indicating cadmium suppression of cardiac cell differentiation. Reproduced from *Environmental Health Perspectives* with permission from the authors.

Research in the NIEHS Division of Translational Toxicology (DTT) has provided data to help address more than 30 years of concern over the safety of exposure to glyphosate, the most commonly used herbicide in the world. Few prior studies had directly compared glyphosate to glyphosate-based formulations (GBFs), and to other herbicides found in GBFs. DTT scientists tested how human cells are affected by exposure to glyphosate, a glyphosate metabolite called AMPA, various GBFs, and other herbicides. Neither glyphosate nor AMPA appeared to be toxic, even at high concentrations. By contrast, all GBFs and herbicides other than glyphosate injured the cells, with some causing DNA damage. This research suggests that glyphosate is of low toxicological concern for humans, a finding that tracks with previous animal research on glyphosate conducted by the NTP.[13]

Budget Policy: The FY 2025 President's Budget request for Predictive Toxicology is $96.4 million, an increase of $8.3 million or 9.4 percent compared to the FY 2023 Final level.

[12] pubmed.ncbi.nlm.nih.gov/36321828/
[13] pubmed.ncbi.nlm.nih.gov/36880770/

Effects of the Environment on Sleep and Health

In 2023, international experts issued a global call to action to promote sleep health in public health agendas. NIEHS-supported scientists are exploring the risk of illness when environmental factors impact sleep health or combine with other social determinants of health to affect people's sleep. Cardiometabolic disorders have been shown to arise from disruption of circadian rhythms/sleep. A recent study using wrist sensors found that children who got one or more hours of sleep less than the recommended amount and those who went to bed latest (sleep midpoint past 4:33 a.m.) were more than two and a half times as likely to develop insulin resistance in adolescence. An NIEHS-led literature review described evidence of inequities among minority racial/ethnic groups in prevalence and severity of obstructive sleep apnea, an emerging risk factor for hypertension, type 2 diabetes, and other illnesses. Other environmental exposures may also interact with sleep to give rise to disease. A new project will assess potential impacts of prenatal exposure to 12 perfluoroalkyl substances (PFAS) on sleep problems at ages 2, 3, and 4. Another study is the first to look at whether early childhood fluoride exposure predicts changes in childhood sleep patterns, daytime fatigue, or melatonin rhythms. The American Academy of Pediatrics estimates that half of all U.S. children experience significant sleep issues, and projects such as these can help to identify targets for early intervention.

Training and Education

NIEHS seeks to attract the best students and to inspire the next generation of environmental health scientists and help them achieve impactful careers in cutting-edge fields required for NIEHS to meet its research priorities in solving complex, real-world environmental health problems. Efforts in this program include opportunities for laboratory-based training at the undergraduate levels, institutional training grants and individual fellowships at the graduate level, and support for early career investigators at the postgraduate level. Recognizing the critical need to bring scientists with a range of lived experiences, backgrounds, and perspectives to environmental health sciences, NIEHS works to increase DEIA across its scientific and management of science workforce. NIEHS is implementing a range of initiatives to fulfill the goals of its Racial, Ethnic, and Equity Plan in building and maintaining a culture where everyone is treated with dignity and respect.

NIEHS trainees are helping to generate discoveries, including interactions of environment and genetics, that result in human disease. One such trainee was part of a group of scientists that worked to gather existing knowledge of the genes involved in the fatal neurodegenerative disease ALS, along with factors in the exposome and the pathophysiological pathways they act on, to develop a compendium of insights into the mechanisms of this tragic disease and potential targets for intervention.[14]

[14] ncbi.nlm.nih.gov/pmc/articles/PMC9513754/

Other NIEHS-supported trainees are investigating potential health risks arising due to a societal change: the legalization of cannabis-containing products for recreational use in states and cities in the United States. Legalization of marijuana in 2018 has created one of the fasted growing job markets in the country, employing more than 400,000. Yet, because of its past illegal status, little is known about the health effects of occupational or secondhand exposure to cannabis. One study of occupational exposures in cannabis growing and manufacturing facilities points to a need for concern over respiratory exposures to allergen-containing bioaerosols, pesticides, volatile organic compounds, and other contaminants in recreational cannabis products.[15] In a separate study, researchers used a novel *in vitro* vaping product exposure system (VaPES) to study the mechanism by which cannabidiol (CBD) adversely affects respiratory cell function. They found that CBD quinone, an oxidation product of CBD, alters lung bronchial epithelial proteins and activates stress response pathway genes in lung cells.[16] CBD products are currently unregulated in the United States and more study is needed to ensure their safe manufacture and use.

Budget Policy: The FY 2025 President's Budget request for Training and Education is $44.6 million, an increase of $2.4 million or 5.7 percent compared to the FY 2023 Final level.

Intramural Research

The NIEHS intramural research program provides an arena for high-caliber science with potential for high-impact breakthroughs. Studies span the exposome, explore genetic and mechanistic causes of disease, and develop new scientific approaches to tackling the undiscovered. Many intramural research studies are conducted over long periods of time and among large cohorts of participants to yield results most likely to promote public health. These studies include epidemiological research on environmentally associated diseases and targeted prevention and intervention studies to reduce the effects of exposures to environmental hazards.

With the expanding knowledge of metabolomics, NIEHS scientists are discovering ways in which environmental exposures, including diet, can affect the microbiome, and thereby mediate a host of physiological functions. Dietary restriction of methionine (MR), an amino acid, is effective at decreasing tumor growth and promoting antitumor immunity in people with certain cancers. However, a study of intestinal cancer in a mouse model demonstrated that MR has the opposite

[15] pubmed.ncbi.nlm.nih.gov/37015286/
[16] pubmed.ncbi.nlm.nih.gov/36999736/

effect in those with healthy immune systems. This difference results from varying effects of MR on gut microbiota involved in systemic immunity. These results have implications for the treatment of colon cancer patients using dietary interventions to influence their microbiomes.[17]

Another recent study found that potassium bromate, a chemical commonly used in breadmaking to strengthen dough, induces mutations in a yeast model leading to cell dysfunction.[18] Similar changes have been seen in certain human cancers, and this research added to the evidence that led to banning the use of potassium bromate in Europe, Canada, and Asia.

For infants, breast milk and formula provide the only source of nutrition during a critical period of development. An NIEHS-led study compared global PFAS measurements in breast milk and infant formula to current U.S. health-based screening values for children. The work showed that levels of four PFAS in breast milk often exceeded screening levels for children in both the general population and highly impacted communities in the United States and Canada, and that use of infant formula does not necessarily lower exposures, as formulas may be reconstituted with drinking water containing PFAS.[19] The authors called for an international monitoring effort and access to affordable testing for PFAS in breast milk and infant formula. These studies help to support the goals of the Strategic Plan for NIH Nutrition Research.

Two ongoing, long-term NIEHS research studies are continuing to yield important discoveries to inform precision environmental health. The Personalized Environment and Genes Study (PEGS) found evidence that air pollutant mixtures are associated with an increased prevalence of the autoimmune diseases psoriasis and eczema, indicating that the skin is not an effective barrier to these exposures.[20] Researchers in the Natural History of Asthma with Longitudinal Environmental Sampling, or NHALES study, are partnering with industry to translate findings on hyaluron, a sugar polymer made in the body, into creation of an inhalable hyaluron powder to treat emphysema and viral pneumonia or use as a nasal spray to prevent colds in people with asthma.

Budget Policy: The FY 2025 President's Budget request for Intramural Research is $262.7 million, an increase of $6.0 million or 2.3 percent compared to the FY 2023 Final level.

Research Management and Support

Efforts under Research Management and Support (RMS) include administrative, budgetary, logistical, and scientific support in the review, award, and monitoring of research grants and training awards. Other RMS functions include strategic planning, coordination, and evaluation of NIEHS programs; facilities administration and maintenance; regulatory and ethics training and compliance; and liaising with other Federal agencies, Congress, community and other interested groups, and the public.

In August 2022, NIEHS began the process of developing its next strategic plan to guide the Institute's research priorities from FY 2024 to FY 2028. Input was solicited publicly online

[17] pubmed.ncbi.nlm.nih.gov/37537369/
[18] ncbi.nlm.nih.gov/pmc/articles/PMC10250236/
[19] pubmed.ncbi.nlm.nih.gov/36529330/
[20] pubmed.ncbi.nlm.nih.gov/36460922/

through discussions with the National Advisory Environmental Health Sciences Council and other NIEHS advisory boards and councils, and through a Community Stakeholder Virtual Workshop, held in April 2023. Input was curated into major themes and concepts using the NIH RFI tool and following the NIH strategic plan template. A draft strategic plan is in development by senior staff with the NIEHS senior leadership committee and is anticipated to be released for public comment in early 2024.

Budget Policy: The FY 2025 President's Budget request for Research Management & Support is $40.8 million, an increase of $1.8 million or 4.5 percent compared to the FY 2023 Final level.

NATIONAL INSTITUTES OF HEALTH
National Institute of Environmental Health Sciences

Appropriations History

Fiscal Year	Budget Estimate to Congress	House Allowance	Senate Allowance	Appropriation
2016	$681,782,000	$675,783,000	$695,900,000	$693,702,000
Rescission				$0
2017 [1]	$693,533,000	$710,387,000	$722,301,000	$714,261,000
Rescission				$0
2018	$533,537,000	$725,387,000	$737,727,000	$751,143,000
Rescission				$0
2019	$693,199,000	$760,113,000	$775,115,000	$774,707,000
Rescission				$0
2020	$666,854,000	$812,570,000	$815,729,000	$802,598,000
Rescission				$0
2021	$730,147,000	$809,501,000	$828,733,000	$814,675,000
Rescission				$0
2022	$937,107,000	$941,799,000	$936,271,000	$842,169,000
Rescission				$0
2023	$932,056,000	$878,750,000	$918,276,000	$913,979,000
Rescission				$0
2024	$938,807,000	$913,979,000	$913,979,000	$913,979,000
Rescission				$0
2025	$916,791,000			

[1] Budget Estimate to Congress includes mandatory financing.

NATIONAL INSTITUTES OF HEALTH
National Institute of Environmental Health Sciences

Authorizing Legislation

	PHS Act/ Other Citation	U.S. Code Citation	2024 Amount Authorized	FY 2024 CR	2025 Amount Authorized	FY 2025 President's Budget
Research and Investigation	Section 301	42§241	Indefinite	$913,979,000	Indefinite	$916,791,000
National Institute of Environmental Health Sciences	Section 401(a)	42§281	Indefinite		Indefinite	
Total, Budget Authority				$913,979,000		$916,791,000

NATIONAL INSTITUTES OF HEALTH

National Institute of Environmental Health Sciences

Amounts Available for Obligation [1]

(Dollars in Thousands)

Source of Funding	FY 2023 Final	FY 2024 CR	FY 2025 President's Budget
Appropriation	$913,979	$913,979	$916,791
Mandatory Appropriation: (non-add)			
Type 1 Diabetes	*($0)*	*($0)*	*($0)*
Other Mandatory financing	*($0)*	*($0)*	*($0)*
Subtotal, adjusted appropriation	$913,979	$913,979	$916,791
OAR HIV/AIDS Transfers	-$172	$0	$0
Subtotal, adjusted budget authority	$913,807	$913,979	$916,791
Unobligated balance, start of year	$0	$0	$0
Unobligated balance, end of year (carryover)	$0	$0	$0
Subtotal, adjusted budget authority	**$913,807**	**$913,979**	**$916,791**
Unobligated balance lapsing	-$232	$0	$0
Total obligations	$913,575	$913,979	$916,791

[1] Excludes the following amounts (in thousands) for reimbursable activities carried out by this account: FY 2023 - $9,454 FY 2024 - $12,000 FY 2025 - $12,000

NATIONAL INSTITUTES OF HEALTH
National Institute of Environmental Health Sciences

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

		FY 2024 CR	FY 2025 President's Budget
Total compensable workyears:			
	Full-time equivalent	685	685
	Full-time equivalent of overtime and holiday hours	1	1
	Average ES salary	$193	$198
	Average GM/GS grade	12.0	12.0
	Average GM/GS salary	$118	$121
	Average salary, Commissioned Corps (42 U.S.C. 207)	$115	$121
	Average salary of ungraded positions	$176	$181
	OBJECT CLASSES	**FY 2024 CR**	**FY 2025 President's Budget**
	Personnel Compensation		
11.1	Full-Time Permanent	$55,975	$57,542
11.3	Other Than Full-Time Permanent	$27,454	$28,223
11.5	Other Personnel Compensation	$2,517	$2,587
11.7	Military Personnel	$911	$954
11.8	Special Personnel Services Payments	$11,392	$11,711
11.9	**Subtotal Personnel Compensation**	**$98,249**	**$101,017**
12.1	Civilian Personnel Benefits	$33,004	$34,109
12.2	Military Personnel Benefits	$83	$87
13.0	Benefits to Former Personnel	$0	$0
	Subtotal Pay Costs	**$131,336**	**$135,213**
21.0	Travel & Transportation of Persons	$1,397	$1,304
22.0	Transportation of Things	$737	$688
23.1	Rental Payments to GSA	$0	$0
23.2	Rental Payments to Others	$46	$47
23.3	Communications, Utilities & Misc. Charges	$787	$805
24.0	Printing & Reproduction	$0	$0
25.1	Consulting Services	$42,814	$43,190
25.2	Other Services	$48,426	$44,930
25.3	Purchase of Goods and Services from Government Accounts	$92,285	$92,841
25.4	Operation & Maintenance of Facilities	$5,722	$5,722
25.5	R&D Contracts	$117,514	$120,099
25.6	Medical Care	$823	$856
25.7	Operation & Maintenance of Equipment	$11,667	$10,888
25.8	Subsistence & Support of Persons	$0	$0
25.0	**Subtotal Other Contractual Services**	**$319,251**	**$318,525**
26.0	Supplies & Materials	$11,270	$10,507
31.0	Equipment	$4,994	$4,660
32.0	Land and Structures	$7,320	$6,832
33.0	Investments & Loans	$0	$0
41.0	Grants, Subsidies & Contributions	$436,803	$438,175
42.0	Insurance Claims & Indemnities	$0	$0
43.0	Interest & Dividends	$36	$36
44.0	Refunds	$0	$0
	Subtotal Non-Pay Costs	**$782,643**	**$781,578**
	Total Budget Authority by Object Class	**$913,979**	**$916,791**

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

NATIONAL INSTITUTES OF HEALTH
National Institute of Environmental Health Sciences

Salaries and Expenses
(Dollars in Thousands)

Object Classes	FY 2024 CR	FY 2025 President's Budget
Personnel Compensation		
Full-Time Permanent (11.1)	$55,975	$57,542
Other Than Full-Time Permanent (11.3)	$27,454	$28,223
Other Personnel Compensation (11.5)	$2,517	$2,587
Military Personnel (11.7)	$911	$954
Special Personnel Services Payments (11.8)	$11,392	$11,711
Subtotal, Personnel Compensation (11.9)	**$98,249**	**$101,017**
Civilian Personnel Benefits (12.1)	$33,004	$34,109
Military Personnel Benefits (12.2)	$83	$87
Benefits to Former Personnel (13.0)	$0	$0
Subtotal Pay Costs	**$131,336**	**$135,213**
Travel & Transportation of Persons (21.0)	$1,397	$1,304
Transportation of Things (22.0)	$737	$688
Rental Payments to Others (23.2)	$46	$47
Communications, Utilities & Misc. Charges (23.3)	$787	$805
Printing & Reproduction (24.0)	$0	$0
Other Contractual Services		
Consultant Services (25.1)	$38,254	$39,056
Other Services (25.2)	$48,426	$44,930
Purchase of Goods and Services from Government Accounts (25.3)	$57,276	$58,898
Operation & Maintenance of Facilities (25.4)	$5,722	$5,722
Operation & Maintenance of Equipment (25.7)	$11,667	$10,888
Subsistence & Support of Persons (25.8)	$0	$0
Subtotal Other Contractual Services	**$161,345**	**$159,493**
Supplies & Materials (26.0)	$11,270	$10,507
Subtotal Non-Pay Costs	**$175,583**	**$172,843**
Total Administrative Costs	**$306,919**	**$308,056**

NATIONAL INSTITUTES OF HEALTH
National Institute of Environmental Health Sciences

Detail of Full-Time Equivalent Employment (FTE)

Office	FY 2023 Final			FY 2024 CR			FY 2025 President's Budget		
	Civilian	Military	Total	Civilian	Military	Total	Civilian	Military	Total
Division of Intramural Research									
Direct:	304	2	306	307	2	309	307	2	309
Reimbursable:	5	-	5	5	-	5	5	-	5
Total:	309	2	311	312	2	314	312	2	314
Office of the Director									
Direct:	64	-	64	76	-	76	76	-	76
Reimbursable:	-	-	-	-	-	-	-	-	-
Total:	64	-	64	76	-	76	76	-	76
Division of National Toxicology Program									
Direct:	99	2	101	112	2	114	112	2	114
Reimbursable:	-	-	-	-	-	-	-	-	-
Total:	99	2	101	112	2	114	112	2	114
Division of Extramural Research									
Direct:	70	-	70	89	-	89	89	-	89
Reimbursable:	4	-	4	4	-	4	4	-	4
Total:	74	-	74	93	-	93	93	-	93
Office of Management									
Direct:	82	2	84	86	2	88	86	2	88
Reimbursable:	-	-	-	-	-	-	-	-	-
Total:	82	2	84	86	2	88	86	2	88
Total	628	6	634	679	6	685	679	6	685
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
2021	12.0
2022	12.0
2023	12.0
2024	12.0
2025	12.0

NATIONAL INSTITUTES OF HEALTH
National Institute of Environmental Health Sciences

Detail of Positions [1]

GRADE	FY 2023 Final	FY 2024 CR	FY 2025 President's Budget
Total, ES Positions	1	1	1
Total, ES Salary	$183,313	$192,570	$197,962
General Schedule			
GM/GS-15	35	40	40
GM/GS-14	64	71	71
GM/GS-13	128	132	132
GS-12	130	131	131
GS-11	65	77	77
GS-10	0	0	0
GS-9	34	40	40
GS-8	6	6	6
GS-7	10	14	14
GS-6	0	1	1
GS-5	0	1	1
GS-4	0	0	0
GS-3	0	0	0
GS-2	0	0	0
GS-1	0	0	0
Subtotal	472	513	513
Commissioned Corps (42 U.S.C. 207)			
Assistant Surgeon General	0	0	0
Director Grade	1	1	1
Senior Grade	3	3	3
Full Grade	1	1	1
Senior Assistant Grade	0	0	0
Assistant Grade	1	1	1
Junior Assistant	0	0	0
Subtotal	6	6	6
Ungraded	192	190	190
Total permanent positions	478	519	519
Total positions, end of year	671	710	710
Total full-time equivalent (FTE) employment, end of year	634	685	685
Average ES salary	$183,313	$192,570	$197,962
Average GM/GS grade	12.0	12.0	12.0
Average GM/GS salary	$112,130	$117,792	$121,090

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