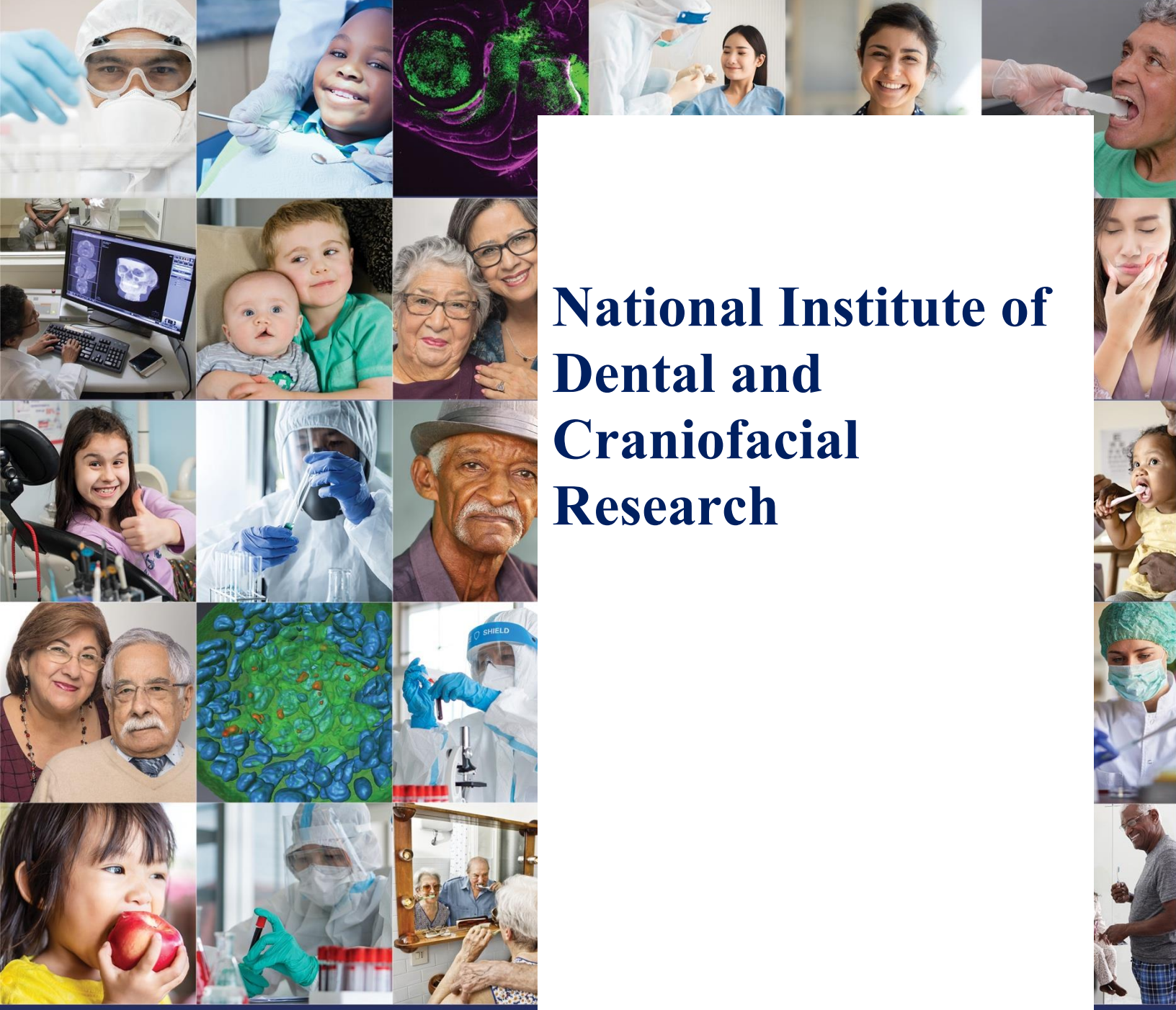

National Institute of Dental and Craniofacial Research

NIDCR 75 YEARS LOOKING FORWARD

CONGRESSIONAL JUSTIFICATION
FY 2025

Department of Health and Human Services
National Institutes of Health

NIH National Institute of Dental and Craniofacial Research

Established 1948

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DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

National Institute of Dental and Craniofacial Research (NIDCR)

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

NIDCR Director
Rena D'Souza,
D.D.S., M.S., Ph.D.

The mouth is both a window and a portal to the rest of the body. Along with teeth, the tongue, saliva, and soft tissues in the mouth are critical to communication, nourishment, hydration, and the ability to convey emotion. Diseases of the oral cavity and supporting structures are also linked to serious systemic diseases, increased hospital visits, chronic pain, financial burdens, social isolation, and shortened lifespan. Each of these can diminish a person's quality of life in multiple ways, including the economic impact of hindering academic and workplace performance and the ability to secure employment.[1,2,3] For these reasons, oral health is central to overall physical, mental, social, and economic well-being.

The mission of the National Institute of Dental and Craniofacial Research (NIDCR) is to advance fundamental knowledge about dental, oral, and craniofacial health and disease and translate these findings into prevention, early detection, and treatment strategies that improve overall health for all individuals and communities across the lifespan.

Celebrating the past: 75 years of advancing dental and craniofacial science

During the Second World War, rampant tooth decay disqualified nearly 20 percent of military recruits from service. At the time, tooth decay in children was nearly universal,[4] and half of Americans had lost all their natural teeth by age 65.[5] To help address these health challenges, President Truman signed legislation on June 24, 1948, to create what would eventually become the National Institute of Dental and Craniofacial Research.

Over the past 75 years, NIDCR's strategic investments in all areas of dental, oral, and craniofacial research have led to dramatic improvements in oral health—now, even as some disparities remain, 80 percent of children 6-11 years of age are free from dental decay, and 90 percent of Americans retain some or all of their natural teeth by age 65.[6]

NIDCR investments have led to scientific advances that include:

- Novel dental and biomaterials for use in dentures, implants, and other applications.
- Insights into the biology of pain and temporomandibular dysfunction (TMD).
- An extensive understanding of the genetics underlying birth defects such as cleft lip and palate.

[1] ncbi.nlm.nih.gov/pmc/articles/PMC3482021/
[2] sciencedirect.com/science/article/abs/pii/S0165176512005599
[3] pubmed.ncbi.nlm.nih.gov/23093019/
[4] pubmed.ncbi.nlm.nih.gov/14938489/
[5] ncbi.nlm.nih.gov/pmc/articles/PMC4212322/
[6] nidcr.nih.gov/sites/default/files/2021-12/Oral-Health-in-America-Advances-and-Challenges.pdf

- Strategies to regenerate tissues of the human mouth, face, and skull that have been lost to injury or illness.

NIDCR is developing a novel Translation Browser, in collaboration with the NIH Office of Portfolio Analysis, that tracks research investments and resulting health care advances. As part of our 75th anniversary celebrations,[7] NIDCR is recognizing past accomplishments that have launched new areas of scientific inquiry in broad fields of medicine such as the human microbiome and stem cell-based regenerative medicine. We also celebrate 60 years of identifying the factors that drive craniofacial development (Program Portrait: *Deciphering the code to the human face*); 25 years of research on a complex disease that affects the skin, bones, and endocrine system (Program Portrait: *New hope for a rare disorder*); and contributions to the battle against COVID-19.

Facing forward: Primed to accelerate new discoveries

The current state of oral health was examined in detail in the 2021 report, *Oral Health in America: Advances and Challenges.* The report was the culmination of two years of research and writing by over 400 contributors. It revealed that, while great strides have been made, a number of challenges remain.

Through a slate of new initiatives rooted in strategic partnerships with other NIH components, NIDCR is ensuring we are *PRIMED* to move *AHEAD* with *IMPACT*. The first round of awards in these three initiatives were funded in September 2023.

***PRIMED*: Practice-Based Research Integrating Multidisciplinary Experiences in Dental Schools**

Practice-based research studies take place at the site of care to help improve the efficiency and effectiveness of patient care. NIDCR established PRIMED to provide patient-oriented clinical research experiences to dental school students and faculty, with a focus on dental schools with limited resources. The nationwide program fosters clinical research that is relevant to practitioners and patients in dental clinics and helps train the next generation of oral health researchers.[8]

***AHEAD:* Advancing Head and Neck Cancer EArly Detection Research**

Head and neck cancers are the sixth leading type of cancer by incidence worldwide. In the United States, more than 65,000 people are diagnosed each year.[9,10] Although programs such as smoking cessation have helped decrease the incidence of head and neck cancers overall, oropharyngeal (mouth and throat) cancers associated with human papillomavirus (HPV) have

[7] nidcr.nih.gov/about-us/75years
[8] nidcr.nih.gov/grants-funding/research-funded-by-nidcr-extramural/primed
[9] nidcr.nih.gov/grants-funding/funding-priorities/future-research-initiatives/ahead-advancement-head-neck-cancer-early-detection-research
[10] ncbi.nlm.nih.gov/pmc/articles/PMC10304137/

increased sharply in recent years. These cancers are now more prevalent than HPV-associated cervical cancer, with five times more men affected than women.[11,12] NIDCR partnered with the National Cancer Institute to identify major challenges in head and neck cancer research, pinpointing the critical need for predictive biomarkers for early detection and diagnosis.[13] In response, NIDCR established the AHEAD initiative, which supports the development of high-resolution imaging, synthetic biosensors, and multiplex biomarkers.[14]

***TMD IMPACT:* A Collaborative for IMproving PAtient-Centered Translational Research**
Temporomandibular joint disorders (TMDs) are a set of complex, diverse, and painful conditions of the temporomandibular (jaw) joint and its surrounding tissues. TMDs affect 5-10 percent of the U.S. population, are twice as common in women than men,[15] and are poorly understood. The TMD IMPACT collaborative aims to improve clinical care for people with TMDs through coordinated, holistic, interdisciplinary approaches.[16]

Moving ahead: Strengthening the future oral health workforce
NIDCR is partnering with non-governmental agencies and professional societies to strengthen the academic pathway for clinician scientists and build a robust and well-trained workforce that reflects America's demographics. Efforts include:

Mentoring an Inclusive Network for a Diverse Workforce of the Future (*MIND the Future*)
By supporting a diverse group of early-stage scientists during a critical time in their career development, the program aims to cultivate a workforce that includes diversity of thought, perspectives, and skills necessary to solve complex scientific problems. *MIND the Future* offers mentoring, educational activities, and interactive opportunities.[17,18]

Constructing the K-12 Pathway
To foster an interest in science and oral health disparities among students in grades K-12, NIDCR is working with private and professional organizations, including the American Dental Association; the American Dental Education Association; the American Association for Dental, Oral, and Craniofacial Research; the Hispanic Dental Association; the National Dental Association; and the Society of American Indian Dentists. NIDCR also created free, online resources to interest high school students in careers in dentistry and dental research.[19]

[11] pubmed.ncbi.nlm.nih.gov/35213102/
[12] ncbi.nlm.nih.gov/pmc/articles/PMC5520228/
[13] nidcr.nih.gov/grants-funding/grant-programs/nidcr-head-neck-cancer-think-tank
[14] nidcr.nih.gov/grants-funding/research-funded-by-nidcr-extramural/ahead
[15] nidcr.nih.gov/health-info/tmd
[16] nidcr.nih.gov/grants-funding/research-funded-by-nidcr-extramural/tmd-impact
[17] aadocr.org/awards/mind-the-future
[18] grants.nih.gov/grants/guide/rfa-files/RFA-DE-19-007.html
[19] futurumcareers.com/Issue-22.pdf#page=14 (p.14-21)

The *NIDCR Strategic Plan (2021-2026)* outlines the Institute's research and training priorities. The plan also lays out strategies to reduce oral health inequities and disparities, leverage partnerships across sectors, and build a diverse and highly skilled workforce.

Building Belonging
Within our own institute, NIDCR cultivates an environment in which all employees feel respected, valued, and supported. As part of this effort, NIDCR has implemented a Building Belonging initiative designed to ensure diversity, equity, inclusion, and belonging across the entire institute. The effort includes regular, institute-wide Town Hall meetings in which NIDCR staff learn about the work of their colleagues; monthly commemorative celebrations based on Special Emphasis Portfolios of NIH's Office of Equity, Diversity, and Inclusion; diversity and inclusion training and activities; and a Racial and Ethnic Equity Plan (REEP).

Into the future: Harnessing technology and advancing discovery

As we move forward guided by our strategic plan,[20] NIDCR has planned a set of new initiatives designed to help improve oral and overall health for all.

Accelerating Product Excellence in Innovation and for Clinical Adoption (APEx) will build on the momentum of the Dental, Oral, and Craniofacial Tissue Regeneration Consortium (DOCTRC) to accelerate preclinical product development through innovation, commercialization, and clinical adoption of diagnostics and therapeutics for tissue regeneration and a variety of other healthcare applications.[21]

Bacteriophage Therapy: Tipping the Balance to Oral Health will encourage foundational research on the potential therapeutic uses of bacteriophages (natural viruses that attack bacteria) to prevent or treat oral diseases such as dental caries or periodontal disease.[22]

Community-Based Participatory Research Consortium: Advancing DAta and Practice Transformation (ADAPT) for Caries Equity will support collaborative, community-based interventions and a data ecosystem to accelerate progress towards reducing dental caries disparities and inequities.[23]

Determining the Tri-directional Relationship Between Oral Health, Nutrition, and Comprehensive Health will enhance research to better understand the connections between

[20] nidcr.nih.gov/about-us/strategic-plan
[21] nidcr.nih.gov/grants-funding/funding-priorities/future-research-initiatives-concept-clearances/accelerating-product-excellence-innovation-clinical-adoption-apex
[22] nidcr.nih.gov/grants-funding/funding-priorities/future-research-initiatives-concept-clearances/bacteriophage-therapy-tipping-balance-oral-health
[23] nidcr.nih.gov/grants-funding/funding-priorities/future-research-initiatives-concept-clearances/communitybased-participatory-research-consortium-advancing-data-practice

nutrition, systemic health, and dental, oral, and craniofacial health, and to develop nutritional interventions at sites of dental care.[24]

Organs-on-a-Chip in Dental, Oral, and Craniofacial Research will use a multidisciplinary approach to develop tissue chips that mimic the dynamic mechanical and functional processes of dental, oral, and craniofacial tissues for preclinical studies.[25]

NIDCR will also engage federal partners to develop sustainable medical-dental integration interventions that promote cross-sector collaborations, evidence-based prevention strategies, and consider social determinants of health. As we look further ahead to our 100th anniversary, NIDCR remains committed to supporting cutting-edge research that improves whole-person health for everyone, with oral health at the center.

[24] nidcr.nih.gov/grants-funding/funding-priorities/future-research-initiatives-concept-clearances/determining-tridirectional-relationship-between-oral-health-nutrition-comprehensive

[25] nidcr.nih.gov/grants-funding/funding-priorities/future-research-initiatives-concept-clearances/organs-chip-dental-oral-craniofacial-research-doc-oocs

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NIH National Institute of Dental and Craniofacial Research

NIDCR 75 YEARS LOOKING FORWARD

About

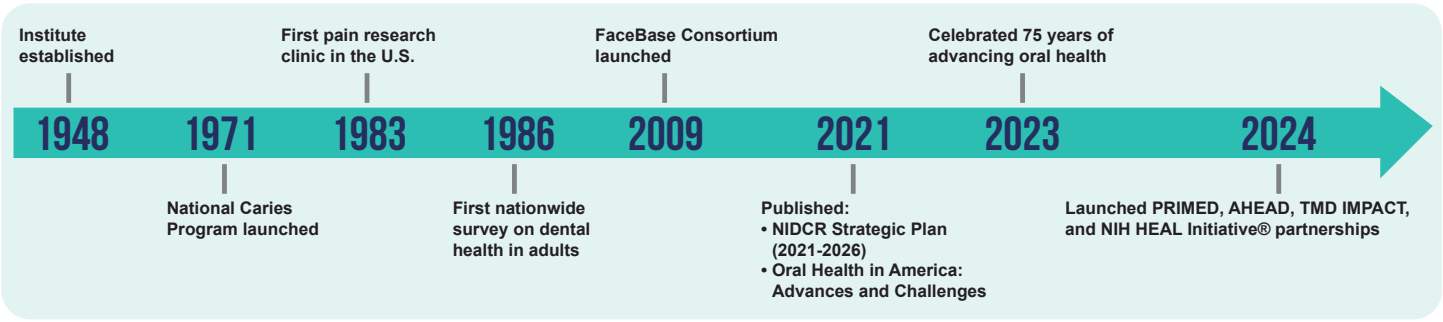
The National Institute of Dental and Craniofacial Research (NIDCR) aims to improve dental, oral, and craniofacial health. It also addresses public health challenges such as pandemics, dental and orofacial pain, temporomandibular disorders, substance use disorders, mental health, oral cancers, craniofacial defects, salivary dysfunctions, caries, periodontal disease, and health disparities within its mission.

NIDCR Director
Rena D'Souza, D.D.S., M.S., Ph.D.

History

- The Institute was established on June 24, 1948, to address a troubling issue that prevailed during World War II—oral health in America was so poor that nearly 20 percent of military recruits were rejected because they failed to meet the minimum dental requirements.
- In 2023-2024, NIDCR celebrates its 75 years of advancements while planning for integrative research that will dramatically improve the nation's oral and overall health.

Timeline



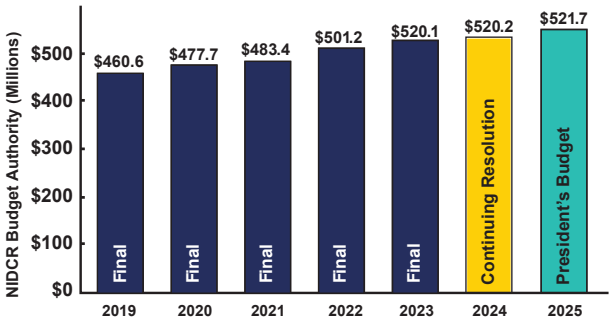
Research Highlights

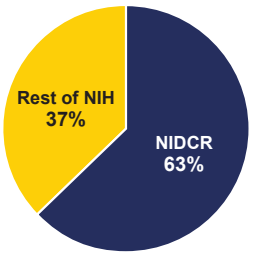
- Uncovered the importance of biglycan protein for building strong and healthy bones, providing new insights into fracture healing and diseases marked by bone loss, such as osteoporosis.
- In saliva of young children with severe tooth decay, discovered cavity-causing bacteria that piggyback on fungi, allowing them to spread faster and better resist medications designed to kill them.
- Showed a medication, denosumab, significantly reduced abnormal bone structure in patients with a rare bone disorder called Fibrous Dysplasia or McCune-Albright Syndrome.
- Corrected abnormal calcium levels in 13 patients with a rare genetic condition called autosomal dominant hypocalcemia type 1.

Facts and Funding

- Largest funder of oral health research in the world.
- Funds research that informs the practices of more than **200,000** dental healthcare providers in the United States.
- Provides **63 percent** of NIH funding to U.S. dental schools.
- Trains dentist-scientists and clinicians; supports **82 percent** of NIH awardees who have dental or oral health-related degrees.
- Awards about **44 percent** of its extramural budget to dental schools.

Funding History





Funding to U.S. Dental Schools

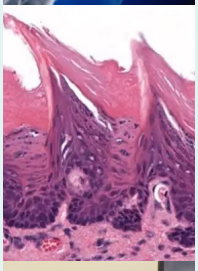
National Institute of Dental and Craniofacial Research

NIDCR 75 YEARS LOOKING FORWARD

Recent Accomplishments

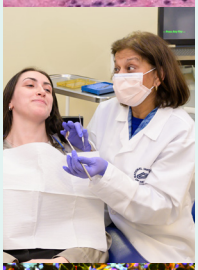
- Began a partnership with the Helping to End Addiction Long-term® Initiative, or NIH HEAL Initiative®, to address **oral complications arising from pharmacotherapies used to treat opioid use disorders.**
- Launched **Sjögren's Team for Accelerating Medicines Partnership (STAMP)** through the Accelerating Medicines Partnership® Autoimmune and Immune-Mediated Diseases (AMP® AIM) Program – includes NIDCR intramural researchers and is supported by five NIH components as well as industry and foundations.
- Released over **1,000 data sets** through **FaceBase** – a community-driven hub for data-intensive research on face and skull development.

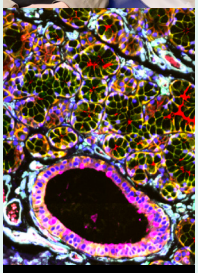
Current Activities



- The **Practice-based Research Integrating Multidisciplinary Experiences in Dental Schools (PRIMED)** program is providing transformative clinical research experiences, skills development, and mentoring within a national network of dental schools.
- To enhance early detection of head and neck cancers, NIDCR is supporting studies to identify and validate biomarkers through the **Advancing Head and Neck Cancer EArly Detection Research (AHEAD) program.**
- Through the **Restoring Joint Health and Function to Reduce Pain (RE-JOIN) Consortium**, the NIH HEAL Initiative® is supporting interdisciplinary studies of nerves in the temporomandibular (jaw) joint and seeking new approaches to pain relief.
- To improve clinical care for temporomandibular disorders (TMD), NIDCR launched the planning phase for a national, NIH-wide program called the **TMD Collaborative for IMproving PAtient-Centered Translational Research (TMD IMPACT).**

New and Future Initiatives





- **Accelerating Product Excellence in Innovation and for Clinical Adoption (APEx)** will build on the momentum of the Dental, Oral, and Craniofacial Tissue Regeneration Consortium (DOCTRC), accelerating preclinical product development through innovation, commercialization, and clinical adoption of diagnostics and therapeutics for a variety of healthcare applications.
- **Bacteriophage Therapy: Tipping the Balance to Oral Health** will encourage foundational research on the potential therapeutic uses of bacteriophages (viruses that attack bacteria) to prevent or treat oral diseases such as dental caries (tooth decay) or periodontal (gum) disease.
- **Community-based participatory research consortium: Advancing DAta and Practice Transformation (ADAPT) for Caries Equity** will support collaborative community-based interventions and a data ecosystem to accelerate progress towards reducing dental caries disparities and inequities.
- **Determining the Tri-directional Relationship Between Oral Health, Nutrition, and Comprehensive Health** will enhance research to better understand the connections between nutrition, systemic health, and dental, oral, and craniofacial health, and to develop nutritional interventions at sites of dental care.
- **Organs-on-a-Chip in Dental, Oral, and Craniofacial Research** will use a multidisciplinary approach to develop tissue chips that mimic the dynamic mechanical and functional processes of dental, oral, and craniofacial tissues for preclinical studies.
- Leveraging **whole person health** to **decrease oral health disparities** through federal partnerships.

Major Changes in the Budget Request

Major changes by budget mechanism and/or budget detail are briefly described below. The FY 2025 President's Budget for the National Institute of Dental and Craniofacial Research (NIDCR) is $521.7 million, an increase of $1.6 million or 0.3 percent over the FY 2023 Final level. NIDCR will maximize efforts to enhance the diversity of the biomedical research workforce by identifying key barriers to success and fostering pathways to increase the participation of underrepresented groups in dental, oral, and craniofacial research.

Research Project Grants (-$0.9 million; total $324.2 million):
NIDCR will support a total of 599 Research Project Grant (RPG) awards in FY 2025. Although noncompeting RPGs will decrease by 16 awards, the total funding level for noncompeting RPGs will increase by $18.6 million relative to the FY 2023 Final level. Competing RPGs will decrease by 44 awards and decrease by $19.5 million compared to the FY 2023 Final level.

Research Centers (-$3.0 million; total $3.7 million):
NIDCR will decrease funding by 55 percent for Research Centers relative to the FY 2023 Final level. NIDCR's FY 2023 levels were increased due to a one-time contribution to co-fund Blueprint MedTech efforts.

Research Training (+$0.2 million; total $13.9 million):
NIDCR will increase funding by $0.2 million for Research Training relative to the FY 2023 Final level, supporting 244 full-time training positions (FTTPs).

NATIONAL INSTITUTES OF HEALTH

National Institute of Dental and Craniofacial Research

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	468	$238,391	482	$247,874	452	$256,983	-16	$18,592
Administrative Supplements	*(30)*	$2,662	*(30)*	$2,662	*(30)*	$2,662	*(0)*	$0
Competing:								
Renewal	22	$11,597	15	$10,054	13	$8,732	-9	-$2,865
New	169	$72,480	153	$64,253	134	$55,807	-35	-$16,673
Supplements	0	$0	0	$0	0	$0	0	$0
Subtotal, Competing	**191**	**$84,077**	**168**	**$74,307**	**147**	**$64,539**	**-44**	**-$19,539**
Subtotal, RPGs	659	$325,130	650	$324,843	599	$324,184	-60	-$946
SBIR/STTR	20	$14,754	20	$14,541	20	$14,516	0	-$238
Research Project Grants	679	$339,884	670	$339,384	619	$338,700	-60	-$1,185
Research Centers								
Specialized/Comprehensive	1	$6,687	1	$3,665	1	$3,665	0	-$3,022
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	**1**	**$6,687**	**1**	**$3,665**	**1**	**$3,665**	**0**	**-$3,022**
Other Research:								
Research Careers	75	$11,366	76	$11,366	76	$11,366	1	$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	$0	0	$0	0	$0	0	$0
Minority Biomedical Research Support	0	$109	0	$104	0	$104	0	-$5
Other	30	$16,338	39	$16,338	39	$16,338	9	$0
Other Research	**105**	**$27,813**	**115**	**$27,808**	**115**	**$27,808**	**10**	**-$5**
Total Research Grants	785	$374,385	786	$370,858	735	$370,173	-50	-$4,212
Ruth L Kirschstein Training Awards:	FTTPs		FTTPs		FTTPs		FTTPs	
Individual Awards	114	$5,606	112	$5,684	112	$5,684	-2	$78
Institutional Awards	132	$8,163	132	$8,277	132	$8,277	0	$114
Total Research Training	**246**	**$13,768**	**244**	**$13,961**	**244**	**$13,961**	**-2**	**$193**
Research & Develop. Contracts	18	$24,142	18	$24,799	19	$24,799	1	$657
SBIR/STTR (non-add)	*(1)*	*($160)*	*(0)*	*($290)*	*(0)*	*($290)*	*-(1)*	*($130)*
Intramural Research	141	$75,643	154	$77,523	154	$79,073	13	$3,430
Res. Management & Support	85	$32,201	98	$33,023	98	$33,689	13	$1,489
SBIR Admin. (non-add)		*($3)*		*($6)*		*($6)*		*($3)*
Construction		$0		$0		$0		$0
Buildings and Facilities		$0		$0		$0		$0
Total, NIDCR	**226**	**$520,138**	**252**	**$520,163**	**252**	**$521,695**	**26**	**$1,557**

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

NATIONAL INSTITUTES OF HEALTH

NATIONAL INSTITUTE OF DENTAL AND CRANIOFACIAL RESEARCH

For carrying out section 301 and title IV of the PHS Act with respect to dental and craniofacial diseases, $521,695,000.

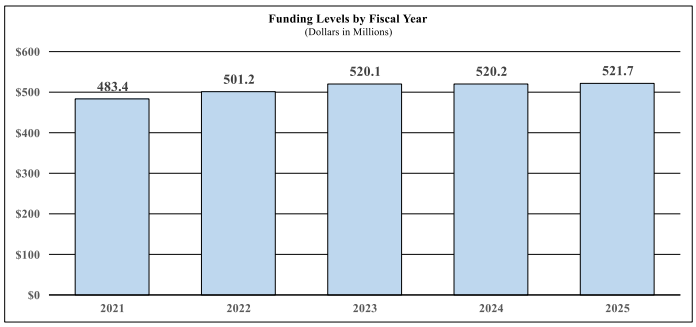
NATIONAL INSTITUTES OF HEALTH
National Institute of Dental and Craniofacial Research

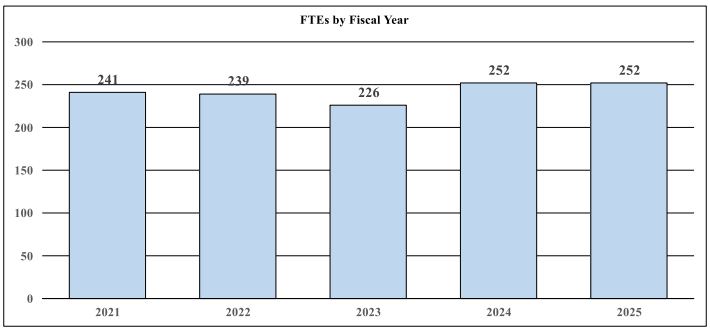
Summary of Changes
(Dollars in Thousands)

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		$29,571		$32,111		$349
b. FY 2024 effect of FY 2024 pay & benefits increase		$29,571		$32,111		$1,151
c. FY 2024 paid days adjustment		$29,571		$32,111		$114
d. Differences attributable to FY 2024 change in FTE		$29,571		$32,111		$0
e. FY 2025 effect of FY 2024 pay & benefits increase		$29,571		$32,111		$389
f. FY 2025 effect of FY 2025 pay & benefits increase		$29,571		$32,111		$531
g. FY 2025 paid days adjustment		$29,571		$32,111		$0
h. Differences attributable to FY 2025 change in FTE		$29,571		$32,111		$0
i. Payment for centrally furnished services		$11,999		$12,866		$867
j. Cost of laboratory supplies, materials, other expenses, and non-recurring costs		$34,073		$34,096		$2,537
Subtotal, IR built-in cost changes						$5,938
2. Research Management and Support:						
A. Built-in cost changes:						
a. FY 2024 effect of FY 2023 pay & benefits increase		$16,573		$17,997		$196
b. FY 2024 effect of FY 2024 pay & benefits increase		$16,573		$17,997		$645
c. FY 2024 paid days adjustment		$16,573		$17,997		$64
d. Differences attributable to FY 2024 change in FTE		$16,573		$17,997		$0
e. FY 2025 effect of FY 2024 pay & benefits increase		$16,573		$17,997		$218
f. FY 2025 effect of FY 2025 pay & benefits increase		$16,573		$17,997		$299
g. FY 2025 paid days adjustment		$16,573		$17,997		$0
h. Differences attributable to FY 2025 change in FTE		$16,573		$17,997		$0
i. Payment for centrally furnished services		$2,050		$2,198		$148
j. Cost of laboratory supplies, materials, other expenses, and non-recurring costs		$13,532		$13,494		$809
Subtotal, RMS built-in cost changes						$2,378

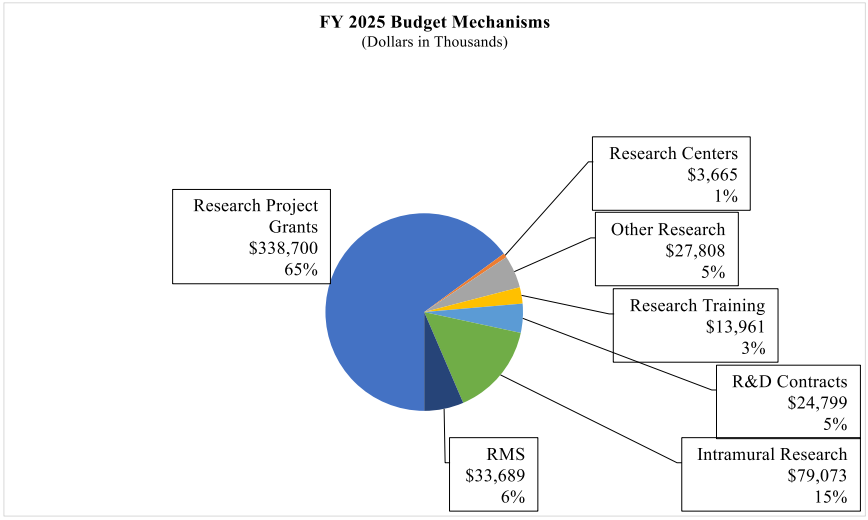
CHANGES	FY 2023 Final No.	FY 2023 Final Amount	FY 2025 President's Budget No.	FY 2025 President's Budget Amount	Program Change from FY 2023 Final No.	Program Change from FY 2023 Final Amount
B. Program:						
1. Research Project Grants:						
a. Noncompeting	468	$241,053	452	$259,645	-16	$18,592
b. Competing	191	$84,077	147	$64,539	-44	-$19,539
c. SBIR/STTR	20	$14,754	20	$14,516	0	-$238
Subtotal, RPGs	679	$339,884	619	$338,700	-60	-$1,185
2. Research Centers	1	$6,687	1	$3,665	0	-$3,022
3. Other Research	105	$27,813	115	$27,808	10	-$5
4. Research Training	246	$13,768	244	$13,961	-2	$193
5. Research and development contracts	18	$24,142	19	$24,799	1	$657
Subtotal, Extramural		$412,295		$408,933		-$3,362
6. Intramural Research	141	$75,643	154	$79,073	13	-$2,508
7. Research Management and Support	85	$32,201	98	$33,689	13	-$889
8. Construction		$0		$0		$0
9. Buildings and Facilities		$0		$0		$0
Subtotal, program changes						-$6,759
Total built-in and program changes	226	$520,138	252	$521,695	26	$1,557

History of Budget Authority and FTEs:

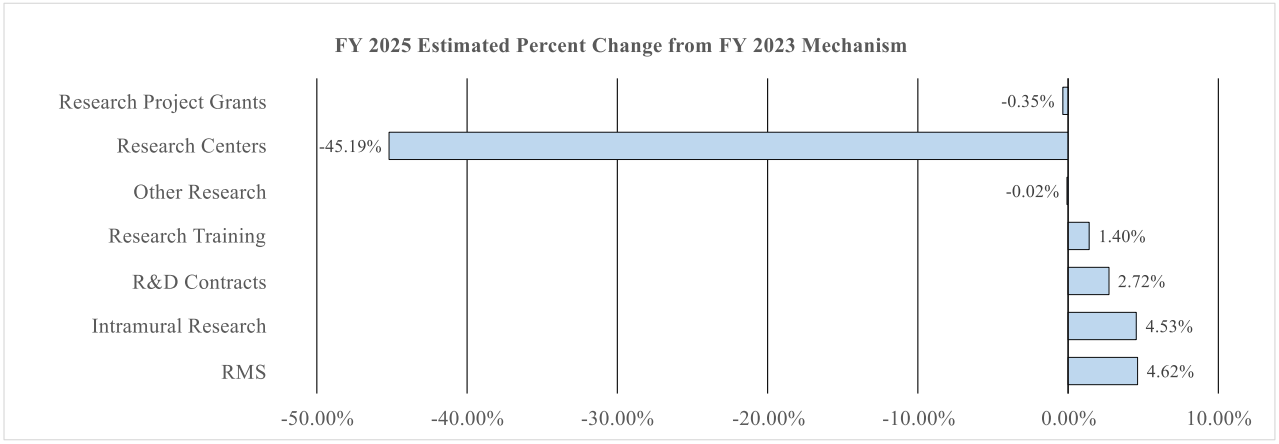




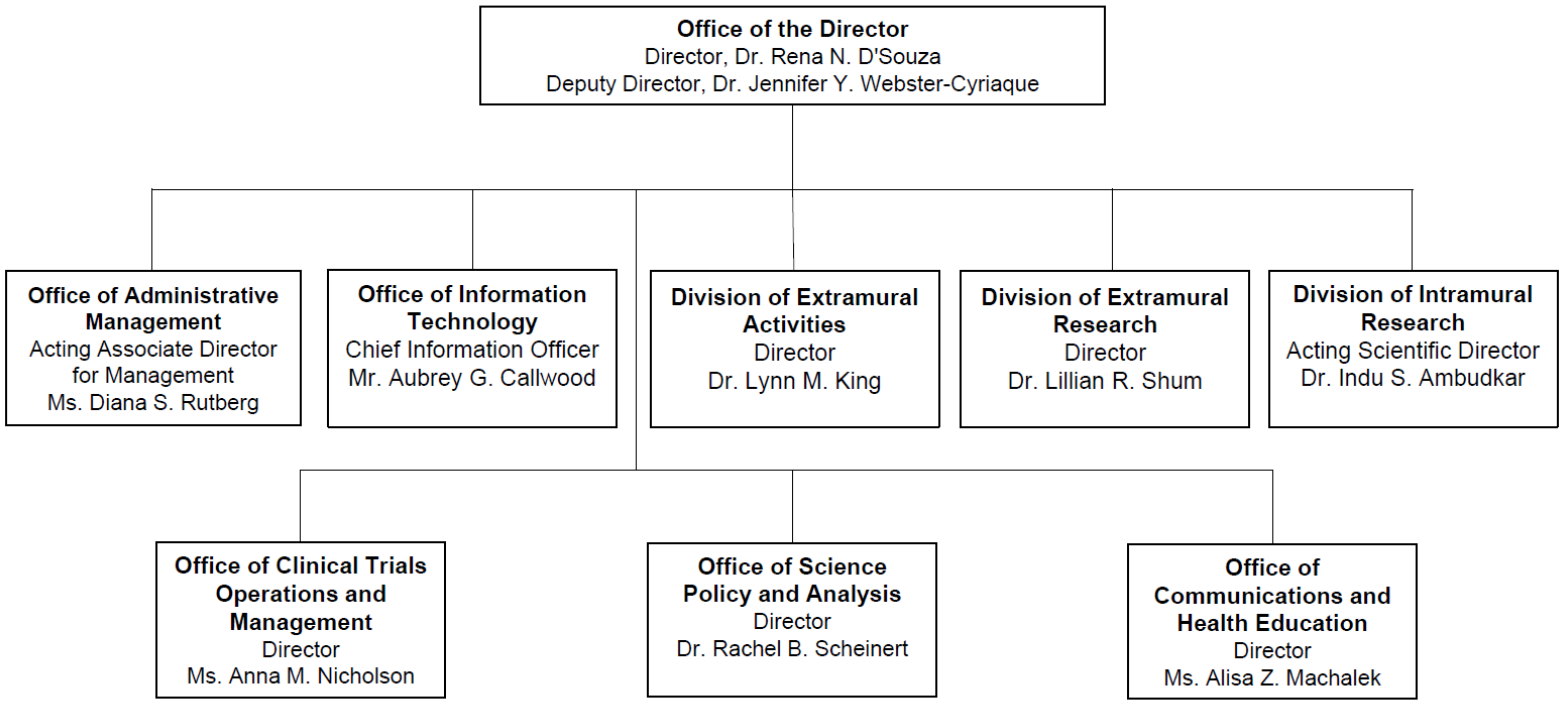
Distribution by Mechanism:



Change by Selected Mechanisms:



National Institute of Dental and Craniofacial Research



NATIONAL INSTITUTES OF HEALTH
National Institute of Dental and Craniofacial Research

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								
Building the foundation of knowledge for improving oral health		$184,041		$182,846		$182,540		-$1,501
Translating research discoveries into diagnostics, therapies, and cures		$41,188		$40,921		$40,853		-$336
Advancing clinical research to enhance health and reduce illness		$159,749		$158,712		$158,447		-$1,303
Preparing the next generation of oral health researchers		$27,316		$27,138		$27,093		-$223
Subtotal, Extramural		**$412,295**		**$409,617**		**$408,933**		**-$3,362**
Intramural Research	**141**	**$75,643**	**154**	**$77,523**	**154**	**$79,073**	**13**	**$3,430**
Research Management & Support	**85**	**$32,201**	**98**	**$33,023**	**98**	**$33,689**	**13**	**$1,489**
TOTAL	**226**	**$520,138**	**252**	**$520,163**	**252**	**$521,695**	**26**	**$1,557**

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

National Institute of Dental and Craniofacial Research

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

Budget Authority (BA):

	FY 2023 Final	FY 2024 Continuing Resolution	FY 2025 President's Budget	FY 2025 +/- FY 2023
BA	$520,138,000	$520,163,000	$521,695,000	+$1,557,000
FTE	226	252	252	26

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 request for the National Institute of Dental and Craniofacial Research (NIDCR) is $521.7 million, an increase of $1.6 million or 0.3 percent from the FY 2023 Final level. NIDCR will maximize efforts to enhance the diversity of the biomedical research workforce by identifying key barriers to success and fostering pathways to increase the participation of underrepresented groups in dental, oral, and craniofacial research.

Program Descriptions and Accomplishments

NIDCR advances the prevention, detection, diagnosis, and treatment of oral conditions, diseases, and disorders through a comprehensive dental, oral, and craniofacial research and training portfolio. The narratives that follow highlight the impact of some of the Institute's work.

Building the foundation of knowledge for improving oral health

NIDCR supports basic research that fosters a better understanding of the biology underlying dental, oral, and craniofacial diseases. This work reveals connections between oral health and overall health as well as associated health disparities.

New imaging techniques shine light on oral health

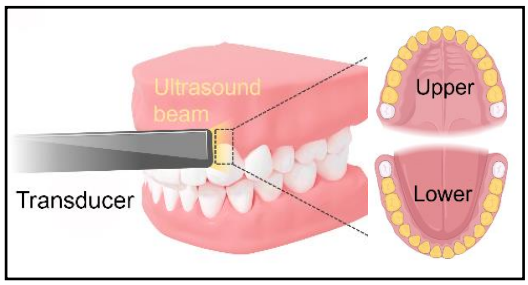


Illustration of an ultrasound transducer for monitoring full-mouth oral health; accessible teeth are indicated in yellow. Credit: Baiyan Qi (UC San Diego) using Biorender

Technologies to visualize and study internal tissues are at the cutting-edge of disease detection and treatment. Current methods for diagnosing gum disease include X-rays and periodontal probing. Both are limited to partial-mouth images and subjective observation. NIDCR-funded scientists developed a whole-mouth scanner by customizing a miniaturized ultrasound transducer. The device evaluated the thickness of periodontal tissues and enabled digital scans that capture twice the number of teeth as conventional methods.[26] Other NIDCR-supported scientists are developing imaging approaches that detect light reflected off a tooth's surface to diagnose and monitor tooth decay. These tools, called cross polarization optical coherence tomography and short wavelength infrared reflectance imaging, provide a way to quickly and safely monitor changes in size and shape of regions of tooth decay over time.[27]

Dental implant technologies for more effective, longer-lasting results

Tooth extractions and dental implants are common procedures used for treatment of oral disease or injury in the United States, especially in the aging population. After a tooth is lost or removed and replaced with a dental implant, the implant must successfully integrate with the underlying bone and tissue to function properly. One way to help this process is to coat the surface of the implant with bioactive molecules that promote healing. Unfortunately, traditional coating methods require extremely high temperature, which reduces the strength and integrity of the coating-implant interface. NIDCR-supported researchers have developed a way to coat dental implants at a lower temperature to promote adhesion and enhance integration with underlying bone. The technique provides a promising new approach for creating more effective and longer-lasting dental implants.[28]

Taste cells may play a role in the oral mucosal immune system

The lining of the mouth includes a host of immune cells that are a critical first line of defense against harmful agents or pathogens. NIDCR-supported studies are investigating the body's immune response to oral pathogens to better understand the process and find ways to leverage it for new treatments. A unique feature found throughout the mouth is specialized taste cells that sample the chemical makeup of foods and beverages for palatability and potential toxicity. One recent NIDCR-supported study found that taste cells also play an important role in oral mucosal immunity. Using a mouse model, they discovered similarities between taste cells and Microfold cells, which are part of the immune surveillance system in the digestive tract.[29] Their findings suggest that taste cells are potentially involved in immune surveillance and may tune their taste responses to microbial signaling and infection, and disruptions in this process could contribute to the taste loss that occurs after some infections.

[26] pubmed.ncbi.nlm.nih.gov/36075610/
[27] pubmed.ncbi.nlm.nih.gov/37172310/
[28] ncbi.nlm.nih.gov/pmc/articles/PMC8741176/
[29] ncbi.nlm.nih.gov/pmc/articles/PMC9836272/

Budget Policy: The FY 2025 President's Budget estimate for this program is $182.5 million, a decrease of $1.5 million or -0.8 percent compared to the FY 2023 Final level.

Translating research discoveries into diagnostics, therapies, and cures

NIDCR's translational research portfolio builds on an extensive foundation of basic research to translate new knowledge into diagnostics, therapies, and cures for dental, oral, and craniofacial diseases and conditions.

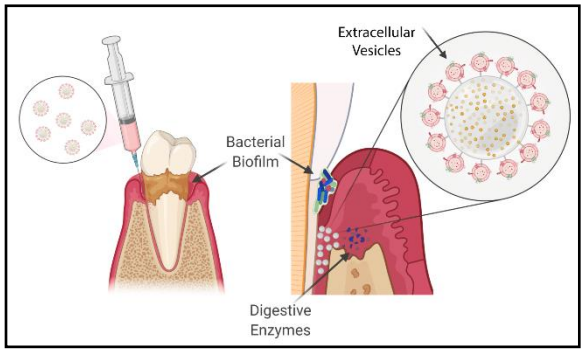


Illustration of how small extracellular vesicles are delivered to the tooth and gums to inhibit bacterial biofilms. Credit: Li Lab (UC Los Angeles)

Using tissue engineering to repair periodontal structures

NIDCR is supporting translational research that uses engineering approaches to repair and regenerate damaged periodontal tissues that support the teeth. These tissues are complex and include bone, cartilage, connective tissue, blood vessels, and nerves. Periodontal disease begins as an inflammatory response to bacterial biofilm that has built up on the teeth and gums. Over time, inflammation can lead to tissue damage and destruction. To help repair this tissue damage, NIDCR-funded researchers are utilizing a natural process that involves small extracellular vesicles (sEVs), which are normally used for cell-to-cell communication. The researchers discovered that sEVs from a specific type of cell (gingival mesenchymal stem cells) can be used to reduce inflammation in early periodontal disease. A single dose of these sEVs delivered directly to the tooth and gum reduced the immune response, resulting in significant improvement in the regeneration of damaged periodontal tissue in a rat model.[30]

Other NIDCR-supported researchers are designing tissue scaffolds to help rebuild damaged periodontal tissues. One group managed to mimic the natural periodontal structure by fostering the growth and differentiation of several types of periodontal tissues in vitro. To do so, they manufactured 3D-printed scaffolds featuring different compartments for each tissue type.[31]

[30] ncbi.nlm.nih.gov/pmc/articles/PMC9233004/
[31] pubmed.ncbi.nlm.nih.gov/35689382/

Another research team used scaffolds enriched with a small molecule called PFI-2 to enhance bone formation and encourage cell growth.[32]

Improving detection, treatment, and prognosis for head and neck cancers

Head and neck cancers (HNC) include cancers of the oral cavity and throat. They have a 5-year survival rate around 50 percent, which has remained unchanged over the past decade.[33] Another major challenge is that HNCs often resist radiotherapy, which is one of the primary treatments. NIDCR-supported researchers recently identified mutations in the NFE2L2 gene that might signal radiotherapy resistance and help guide treatment decisions. In addition, the researchers identified the protein encoded by NFE2L2 (a protein called Nrf2) as a potential therapeutic target.[34]

The diversity of patients and cancer types seen in HNC cases also makes it difficult for scientists to identify molecular changes that could be used for diagnostics or treatment targets. NIDCR-supported researchers developed a novel framework for identifying key genes in HNC that might provide important clues about disease progression and outcomes across a variety of patients and HNC cancer types.[35]

To help address disparities in HNC outcomes—Black patients are more commonly diagnosed with HNC at younger ages, and their prognoses are poorer—NIDCR-supported researchers are working to characterize the molecular signatures of HNC unique to Black patients.[36]

[32] pubmed.ncbi.nlm.nih.gov/36209579/
[33] nidcr.nih.gov/grants-funding/grant-programs/nidcr-head-neck-cancer-think-tank#
[34] ncbi.nlm.nih.gov/pmc/articles/PMC10023320/
[35] ncbi.nlm.nih.gov/pmc/articles/PMC9845797/
[36] ncbi.nlm.nih.gov/pmc/articles/PMC9991972/

Patient-Centered Research to Prevent and Treat Temporomandibular Disorders (TMD)

Temporomandibular disorders (TMDs) comprise over 30 conditions that cause pain and dysfunction in the jaw joint and muscles. An estimated 11-12 million U.S. adults have jaw joint-related pain, which can be disabling and diminish quality of life. NIDCR has supported decades of research to tease apart the complex causes of TMDs.

NIDCR recently issued planning grants for the TMD Collaborative for IMproving PAtient-Centered Translational Research (TMD IMPACT), which is intended to be a national, interdisciplinary, patient-centered collaborative to advance basic and clinical research to improve diagnosis, prevention, and treatment of TMDs. This collaborative is part of NIDCR's broader investment in TMD research. A recent study demonstrated that jaw dysfunction, psychological unease, and the presence of other chronic painful conditions (e.g., migraine, fibromyalgia) increase the likelihood that people with TMDs will develop disabling jaw pain. The findings could inform strategies to manage pain-related disability and highlight the importance of treating co-occurring pain conditions, which are thought to share an underlying hypersensitivity in the central nervous system.

Recently, scientists examined the mechanisms underlying this sensitivity in animals. They found that two spinal protein receptors may help sensitize the central nervous system to pain. The receptors facilitate signaling among certain neurons and the glial cells that support them, suggesting possible treatment targets. Another team found that in mice with TMD and migraine-like pain, brainstem sensory neurons increased production of a natural opioid called dynorphin in females, but not males. Blocking dynorphin reduced pain hypersensitivity only in females. This lead could inform pain management in women with TMDs.

NIDCR also contributes to an NIH-supported initiative to map the sensory nerves that connect to the jaw joints. Called the Restoring Joint Health and Function to Reduce Pain (RE-JOIN) Consortium, the program aims to shed light on potential treatment targets for TMD.

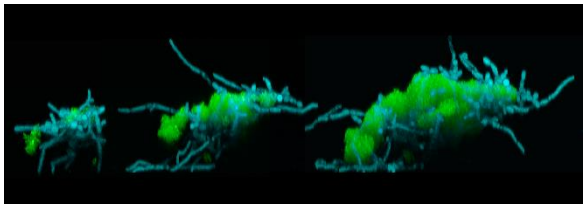
Budget Policy: The FY 2025 President's Budget estimate for this program is $40.9 million, a decrease of $0.3 million or -0.8 percent compared to the FY 2023 Final level.

Advancing clinical research to enhance health and reduce illness

To complement investments in basic and translational research, NIDCR is committed to an extensive range of clinical research activities, including clinical trials, population studies, and practice- and community-based research, including studies on oral health disparities.

Cracking the code: identifying early indicators of tooth decay in childhood

Tooth decay, which affects nearly half of American children by the age of 19, remains the most common chronic childhood disease.[37] While a bacteria called *Streptococcus mutans* (*S. mutans)* was previously considered the primary cause of tooth decay, recent evidence suggests that an imbalance in the types of microbes (such as bacteria, yeast, and fungi) within the mouth may also be a critical factor. One NIDCR-funded study tested this possibility by examining 189 young children from Appalachia, collecting saliva samples from 2 months to 5 years of age. The researchers found that over time, an imbalance in the types of oral microbes occurred before *S. mutans* was detected in the saliva, and the presence of specific combinations of bacteria in the first year of life increased susceptibility to early childhood caries.[38]



C. albicans fungi (blue) and cavity-causing S. mutans bacteria (green) form assemblages that "walk" and "lunge" across tooth-like surfaces. Credit: Zhi Ren (UPenn)

Another team of NIDCR-funded scientists is using real-time imaging to study interactions between bacteria (*S. mutans*) and fungi (*Candida albicans*) in the saliva of toddlers affected by severe tooth decay. The researchers discovered that even though the organisms from these two kingdoms of microorganisms could not move by themselves, together, they "walked" and "lunged" on tooth-like surfaces in a pattern typically seen in higher organisms such as insects and vertebrates. The interacting microbes also spread quickly and built biofilms (dental plaque) that can lead to tooth decay.[39] Together, these NIDCR-supported discoveries improve our ability to understand and predict the risk of childhood tooth decay and can guide the development of strategies to prevent caries in patients of all ages.

Dental decay in children with HIV demonstrates broad and novel spectra of bacteria

Worldwide, an estimated 1.5 million children under 15 years of age are living with the human immunodeficiency virus (HIV), which causes acquired immunodeficiency syndrome (AIDS).[40] Children with HIV are at high risk for tooth decay because HIV/AIDS weakens the immune system and makes it harder to fight cavity-causing bacteria. A team of NIDCR-supported researchers is among the first to study the effects of HIV on the oral microbiome and to highlight the complexity and severity of tooth decay in children with HIV. The team used a new genetic

[37] cdc.gov/nchs/data/databriefs/db307.pdf
[38] ncbi.nlm.nih.gov/pmc/articles/PMC9791751/
[39] ncbi.nlm.nih.gov/pmc/articles/PMC9565521/
[40] hiv.gov/hiv-basics/overview/data-and-trends/global-statistics/

method to study microbes in dental plaque samples from 484 Nigerian children between 3 and 10 years of age. They found that children living with HIV had a wider variety of bacteria in their mouths than did uninfected children. These differences were more noticeable in decayed teeth than healthy teeth and were greater in older children than younger ones. The findings suggest that HIV's effects grow more severe as tooth decay progresses.[41]

Breaking new ground in cleft lip and palate research—improving quality of life

Cleft lip and cleft palate are common birth defects affecting 1 in 1,000–1,500 births worldwide, with rates varying by region and country.[42] These defects occur due to an incomplete fusion of the tissues that form the face during embryonic development. NIDCR-supported research is helping to determine the optimal timing for repair of isolated cleft palate. In a multinational clinical trial, a team of NIDCR-funded researchers studied surgery at 6 months of age versus the usual standard of care, which includes surgery at 12 months or later. They found that infants who had their cleft palate repaired at 6 months were less likely to have poor speech quality at 5 years of age compared to those who had surgery at 12 months. This new evidence supports shifting the timing of cleft palate repair surgeries to a younger age.[43]

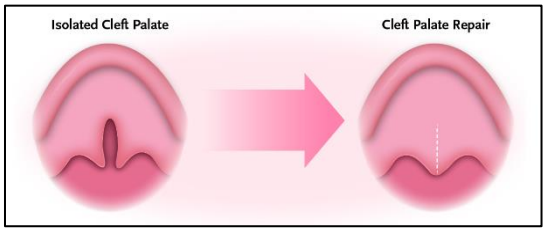


Illustration of isolated cleft palate before and after surgical repair. Credit: TOPS Study Group

Perceived racism linked to dental fear, anxiety, and poor oral health among Black women

About 10-20 percent of people—and more women than men—postpone or avoid dental care due to anxiety and fear.[44] NIDCR-supported researchers examined whether perceived racism exacerbates the effect among racial and ethnic minority populations, which bear a larger burden of poor oral health outcomes. The NIDCR-funded study included almost 500 women who were part of a larger effort to uncover why Black women are at higher risk than others for illnesses such as breast cancer, diabetes, and stroke. Those who reported daily and life-long experiences of racism were more likely to report higher levels of dental anxiety and fear, as well as poor oral health. Almost 18 percent of Black women reported high dental anxiety.[45] By revealing connections between societal racism, dental fear and anxiety, and oral health, this work could inform interventions designed to help alleviate oral heath disparities.

Budget Policy: The FY 2025 President's Budget estimate for this program is $158.4 million, a decrease of $1.3 million or -0.8 percent compared to the FY 2023 Final level.

Preparing the next generation of oral health researchers

NIDCR is dedicated to building a highly skilled and diverse scientific workforce equipped to meet the challenges of the future. The Institute supports individual and institutional research training and career development programs that target a wide range of scientific fields and career

[41] ncbi.nlm.nih.gov/pmc/articles/PMC10434123/
[42] who.int/news-room/fact-sheets/detail/oral-health
[43] pubmed.ncbi.nlm.nih.gov/37646677/
[44] pubmed.ncbi.nlm.nih.gov/33711405/
[45] pubmed.ncbi.nlm.nih.gov/35964228/

Deciphering the Code to the Human Face

Each year in the United States, 1 in 33 infants are born with birth defects, about half of which involve the face and skull, or craniofacial complex. These conditions, ranging from cleft lip with or without cleft palate to premature fusion of skull plates, can impair eating, hearing, speaking, breathing, and brain development.

NIDCR-supported researchers are studying the genetic and environmental factors that drive craniofacial development to understand how anomalies arise and to identify potential therapies.

One way to decipher the coding of the craniofacial complex is by tapping into resources such as FaceBase, an NIDCR-supported database that houses a wealth of human and animal biological data on the head and face. A recent study that contributed to FaceBase revealed that activity of genes that control face shape is highly influenced by levels of a protein called SOX9 in human stem cells. Lower levels of SOX9 were linked to more severe craniofacial anomalies in humans. The findings offer insight into the processes underlying human facial development, as well as syndromes that affect the face and other organ systems.

Cell and animal studies are enabling scientists to trace development of the neural crest. These cells form during early development and eventually give rise to the craniofacial skeleton, parts of the salivary glands, teeth, and more. Roughly 10-20 percent of human birth anomalies are linked to the neural crest. A recent study mapped the timing and migration patterns of tooth-forming neural crest cells during mouse development and found that loss of a gene, Foxp4, led to defects in tooth root development.

Ongoing studies are also optimizing surgical techniques, employing artificial intelligence, and exploring stem cell therapy to improve surgical outcomes and provide less invasive treatments. Unveiling the secrets behind our faces will drive tailored prevention, diagnosis, and treatment for craniofacial disorders.

stages; incorporates interdisciplinary training and promotion of dentist-scientist career paths; and supports training within the NIDCR intramural program.

***Pathway to Independence* awardees uncover molecular insights into dental defects**

The NIDCR Pathway to Independence award supports well-trained postdoctoral researchers as they transition from mentored training to independent, tenure-track faculty positions. One NIDCR awardee is studying how the body produces hard tissues such as enamel and dentin in teeth. One molecule required for tooth formation is called dentin sialophosphoprotein (DSPP). A change in a specific amino acid in DSPP results in a disorder, known as dentinogenesis imperfecta (DGI), characterized by discolored and weakened teeth prone to breakage and decay. The NIDCR awardee was part of a research group that examined a mouse model of DGI and discovered the defective DSPP accumulated within the cells instead of forming dentin on the tooth surface.[46] This research is helping uncover the causes of anomalies in tooth formation, shedding light on dental defects and disease mechanisms.

***Institutional Training for a Dental, Oral, and Craniofacial Research Workforce*: Using digital microbiology to predict poor systemic outcomes**

NIDCR also supports Institutional Research Training Programs to provide research training for graduate students and postdoctoral scientists in dental, oral, and craniofacial research. One NIDCR-supported pre-doctoral researcher is using machine learning (ML) techniques to study *Staphylococcus aureus* (*S. aureus*) bacteria that can reside in the mouth and have been linked to hospital-acquired pneumonia and sepsis—a life-threatening medical emergency triggered by infection in the bloodstream. The trainee helped develop new approaches for

[46] ncbi.nlm.nih.gov/pmc/articles/PMC6616118/

analyzing bacterial growth images and blood platelet count data to predict patient outcomes after *S. aureus* infection. The ML technique performed well for predicting thrombocytopenia (low blood platelet count) on day four of an infection, and moderately well for predicting mortality.[47] This research demonstrates the power of digital technologies to analyze large and complex datasets to predict and improve patient outcomes through more personalized treatment plans.

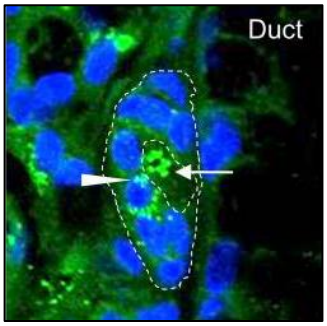
Budget Policy: The FY 2025 President's Budget estimate for this program is $27.1 million, a decrease of $0.2 million or 0.8 percent compared to the FY 2023 Final level.

Intramural program: Interdisciplinary research synergy, from the bench to the bedside and back again

Scientists in NIDCR's Division of Intramural Research conduct cutting-edge basic, translational, and clinical research on the biology of pain, itch, and taste; oral and craniofacial genetics and development; immunology of the mucosal system; salivary gland development and function; and stem cell biology and tissue regeneration.

Uncovering cellular mechanisms underlying Sjögren's disease

Sjögren's disease is an autoimmune disorder that affects up to four million people in the United States.[48] It causes immune cells to mistakenly attack and destroy healthy cells in the glands that produce tears and saliva, causing painful dry eyes and dry mouth. A dry mouth can affect taste, make chewing and swallowing more difficult, and increase the risk for cavities, tooth loss, and oral infections. NIDCR intramural researchers are investigating the role of a protein called Lysosome-associated membrane protein 3 (LAMP3) in Sjögren's disease. The researchers found that an overabundance of LAMP3 caused problems with a subcellular structure called the lysosome, which is responsible for breaking down substances within cells, and was linked to an increase in cell death in the salivary gland epithelium.[49] Exploring this further, the researchers showed that LAMP3 can increase cell death through cell-to-cell communication via tiny extracellular particles carrying LAMP3 proteins.[50] These findings are helping to define the role of LAMP3 in the development and progression of Sjögren's disease.



LAMP3 protein (green) accumulates in the minor salivary glands of patients with Sjögren's disease. Credit: Chiorini Lab (NIDCR)

Translating discovery to a groundbreaking cure: Treatment for a rare systemic disease

Our bodies need calcium for proper functioning of many organs and tissues, including the heart, muscles, nerves, bones, and teeth. Maintaining the right level of calcium in the bloodstream is the job of the calcium-sensing receptor (CASR) protein. In rare cases, a genetic condition called autosomal dominant hypocalcemia type 1 (ADH1) alters the function of the CASR protein, resulting in abnormally low levels of calcium in blood and high levels of calcium in urine.[51]

[47] ncbi.nlm.nih.gov/pmc/articles/PMC10467129/
[48] nidcr.nih.gov/health-info/sjogrens-disease
[49] pubmed.ncbi.nlm.nih.gov/37096570/
[50] ncbi.nlm.nih.gov/pmc/articles/PMC9929273/
[51] ncbi.nlm.nih.gov/pmc/articles/PMC9805030/

New Hope for a Rare Disorder: Fibrous Dysplasia and McCune-Albright Syndrome

Fragile bones, dark patches on the skin, and early puberty are indications of fibrous dysplasia or McCune-Albright syndrome (FD/MAS), a rare disorder of the skeleton, skin, and endocrine system. The disorder can be painful and disabling, and it can impair quality of life. In the 1990s, NIDCR basic researchers demonstrated that the condition's bone abnormalities arise from a mutation that prevents skeletal stem cells from developing into mature bone cells.

That work led to the establishment of a clinical study to document the nature and course of the disease. The study, which NIDCR has led for the past 25 years, has enrolled more than 300 patients ages 1 to 102. The patient data have spurred cell and animal studies to tease apart the underlying causes, as well as to test potential therapies and diagnostics.

A recent NIDCR clinical trial showed that a medication, denosumab, reduced excessive bone turnover in adults with FD/MAS. Bone turnover, a process where old bone is continually replaced with new bone, is unusually accelerated in FD/MAS and contributes to bone abnormalities. The findings indicate that the treatment improved the quality and strength of participants' bones.

Because the mutation that causes FD/MAS arises early in embryonic development, mutation-harboring cells spread unevenly throughout the embryo. This patchy pattern of growth makes the severity and extent of disease unique to each patient and poses a challenge for genetic diagnosis, which may involve invasive biopsies.

NIDCR researchers showed that they can sample DNA in the blood for less invasive diagnosis. By measuring the amount of DNA carrying the FD/MAS mutation in the blood, the team could detect up to 68.2 percent of FD/MAS cases. This worked particularly well in patients under 30 or those who had more severe disease. The findings may lead to diagnostics that are less invasive and better predictive of FD/MAS severity.

Symptoms of ADH1 can range from tingling limbs, muscle cramps, and brain fog, to life-threatening seizures. Current therapies simply treat the symptoms via supplemental vitamin D and calcium, which increases the risk of kidney problems due to processing excess calcium. To find better treatments for ADH1, NIDCR intramural scientists explored the therapeutic effectiveness and safety of a molecule called encaleret that blocks the defective CASR protein. In a clinical trial among 13 ADH1 patients at the NIH Clinical Center, the NIDCR researchers discovered that encaleret corrected calcium levels in blood and urine—and had no serious side-effects.[52] This groundbreaking NIDCR study is the first to show the clinical effectiveness of encaleret and opens new pathways for safer and more effective ADH1 treatments.

Budget Policy: The FY 2025 President's Budget estimate for this program is $79.1 million, an increase of $3.4 million or 4.5 percent compared to the FY 2023 Final level.

Research Management and Support
NIDCR research management and support (RMS) personnel efficiently lead and direct the world's largest oral health research enterprise and enable the success of all NIDCR-funded programs. RMS personnel also serve as liaisons with grantees, provide stewardship for research training and career development programs, analyze and advance science policy, coordinate program planning and evaluation, and lead outreach and communications. NIDCR's new office of Data Driven Solutions (DDS) will provide strategic recommendations, leadership, and coordination of strategy implementation activities, programs, and policies in data science to support intra- and extramural research.

[52] pubmed.ncbi.nlm.nih.gov/37754292/

Budget Policy: The FY 2025 President's Budget estimate for this program is $33.7 million, an increase of $1.5 million or 4.6 percent compared to the FY 2023 Final level.

NATIONAL INSTITUTES OF HEALTH
National Institute of Dental and Craniofacial Research

Appropriations History

Fiscal Year	Budget Estimate to Congress	House Allowance	Senate Allowance	Appropriation
2016	$406,746,000	$404,847,000	$415,169,000	$415,582,000
Rescission				$0
2017[1]	$413,396,000	$425,578,000	$430,544,000	$425,751,000
Rescission				$0
2018	$320,749,000	$432,363,000	$439,738,000	$447,735,000
Rescission				$0
2019	$413,196,000	$453,082,000	$462,024,000	$461,781,000
Rescission				$0
2020	$397,493,000	$484,350,000	$486,756,000	$477,429,000
Rescission				$0
2021	$434,559,000	$481,535,000	$493,234,000	$484,867,000
Rescission				$0
2022	$516,197,000	$519,010,000	$515,720,000	$501,231,000
Rescission				$0
2023	$513,191,000	$526,051,000	$526,769,000	$520,163,000
Rescission				$0
2024	$520,138,000	$520,163,000	$520,163,000	$520,163,000
Rescission				$0
2025	$521,695,000			

[1] Budget Estimate to Congress includes mandatory financing.

NATIONAL INSTITUTES OF HEALTH
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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	$520,163,000	Indefinite	$521,695,000
National Institute of Dental and Craniofacial Research	Section 401(a)	42§281	Indefinite		Indefinite	
Total, Budget Authority				$520,163,000		$521,695,000

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Amounts Available for Obligation[1]

(Dollars in Thousands)

Source of Funding	FY 2023 Final	FY 2024 CR	FY 2025 President's Budget
Appropriation	$520,163	$520,163	$521,695
Mandatory Appropriation: (non-add)			
Type 1 Diabetes	*($0)*	*($0)*	*($0)*
Other Mandatory financing	*($0)*	*($0)*	*($0)*
Subtotal, adjusted appropriation	$520,163	$520,163	$521,695
OAR HIV/AIDS Transfers	-$25	$0	$0
Subtotal, adjusted budget authority	$520,138	$520,163	$521,695
Unobligated balance, start of year	$0	$0	$0
Unobligated balance, end of year (carryover)	$0	$0	$0
Subtotal, adjusted budget authority	**$520,138**	**$520,163**	**$521,695**
Unobligated balance lapsing	-$46	$0	$0
Total obligations	$520,092	$520,163	$521,695

[1] Excludes the following amounts (in thousands) for reimbursable activities carried out by this account: FY 2023 - $2,364 FY 2024 - $2,461 FY 2025 - $2,516

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

		FY 2024 CR	FY 2025 President's Budget
Total compensable workyears:			
	Full-time equivalent	252	252
	Full-time equivalent of overtime and holiday hours	0	0
	Average ES salary	$222	$226
	Average GM/GS grade	12.2	12.2
	Average GM/GS salary	$130	$133
	Average salary, Commissioned Corps (42 U.S.C. 207)	$0	$0
	Average salary of ungraded positions	$0	$0
	OBJECT CLASSES	**FY 2024 CR**	**FY 2025 President's Budget**
	Personnel Compensation		
11.1	Full-Time Permanent	$17,479	$17,968
11.3	Other Than Full-Time Permanent	$12,307	$12,652
11.5	Other Personnel Compensation	$1,223	$1,257
11.7	Military Personnel	$294	$307
11.8	Special Personnel Services Payments	$4,894	$5,031
11.9	**Subtotal Personnel Compensation**	**$36,196**	**$37,215**
12.1	Civilian Personnel Benefits	$12,425	$12,841
12.2	Military Personnel Benefits	$50	$52
13.0	Benefits to Former Personnel	$0	$0
	Subtotal Pay Costs	**$48,671**	**$50,109**
21.0	Travel & Transportation of Persons	$500	$500
22.0	Transportation of Things	$58	$55
23.1	Rental Payments to GSA	$0	$0
23.2	Rental Payments to Others	$0	$0
23.3	Communications, Utilities & Misc. Charges	$63	$65
24.0	Printing & Reproduction	$17	$17
25.1	Consulting Services	$15,660	$15,929
25.2	Other Services	$11,677	$11,906
25.3	Purchase of Goods and Services from Government Accounts	$47,331	$47,964
25.4	Operation & Maintenance of Facilities	$10	$10
25.5	R&D Contracts	$5,427	$5,406
25.6	Medical Care	$174	$181
25.7	Operation & Maintenance of Equipment	$1,252	$1,246
25.8	Subsistence & Support of Persons	$0	$0
25.0	**Subtotal Other Contractual Services**	**$81,531**	**$82,642**
26.0	Supplies & Materials	$3,278	$2,934
31.0	Equipment	$527	$525
32.0	Land and Structures	$699	$715
33.0	Investments & Loans	$0	$0
41.0	Grants, Subsidies & Contributions	$384,819	$384,134
42.0	Insurance Claims & Indemnities	$0	$0
43.0	Interest & Dividends	$0	$0
44.0	Refunds	$0	$0
	Subtotal Non-Pay Costs	**$471,492**	**$471,586**
	Total Budget Authority by Object Class	**$520,163**	**$521,695**

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

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Salaries and Expenses

(Dollars in Thousands)

Object Classes	FY 2024 CR	FY 2025 President's Budget
Personnel Compensation		
Full-Time Permanent (11.1)	$17,479	$17,968
Other Than Full-Time Permanent (11.3)	$12,307	$12,652
Other Personnel Compensation (11.5)	$1,223	$1,257
Military Personnel (11.7)	$294	$307
Special Personnel Services Payments (11.8)	$4,894	$5,031
Subtotal, Personnel Compensation (11.9)	**$36,196**	**$37,215**
Civilian Personnel Benefits (12.1)	$12,425	$12,841
Military Personnel Benefits (12.2)	$50	$52
Benefits to Former Personnel (13.0)	$0	$0
Subtotal Pay Costs	**$48,671**	**$50,109**
Travel & Transportation of Persons (21.0)	$500	$500
Transportation of Things (22.0)	$58	$55
Rental Payments to Others (23.2)	$0	$0
Communications, Utilities & Misc. Charges (23.3)	$63	$65
Printing & Reproduction (24.0)	$17	$17
Other Contractual Services		
Consultant Services (25.1)	$15,660	$15,929
Other Services (25.2)	$11,677	$11,906
Purchase of Goods and Services from Government Accounts (25.3)	$34,327	$34,961
Operation & Maintenance of Facilities (25.4)	$10	$10
Operation & Maintenance of Equipment (25.7)	$1,252	$1,246
Subsistence & Support of Persons (25.8)	$0	$0
Subtotal Other Contractual Services	**$62,926**	**$64,051**
Supplies & Materials (26.0)	$3,278	$2,934
Subtotal Non-Pay Costs	**$66,842**	**$67,622**
Total Administrative Costs	**$115,513**	**$117,730**

NATIONAL INSTITUTES OF HEALTH
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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 Extramural Activities									
Direct:	25	-	25	26	-	26	26	-	26
Reimbursable:	1	-	1	1	-	1	1	-	1
Total:	26	-	26	27	-	27	27	-	27
Division of Intramural Research									
Direct:	130	1	131	143	1	144	143	1	144
Reimbursable:	10	-	10	10	-	10	10	-	10
Total:	140	1	141	153	1	154	153	1	154
Office of the Director									
Direct:	6	1	7	8	1	9	8	1	9
Total:	6	1	7	8	1	9	8	1	9
Office of Administrative Management									
Direct:	12	-	12	14	-	14	14	-	14
Total:	12	-	12	14	-	14	14	-	14
Office of Information Technology									
Direct:	7	-	7	8	-	8	8	-	8
Total:	7	-	7	8	-	8	8	-	8
Office of Science Policy and Analysis									
Direct:	5	-	5	8	-	8	8	-	8
Total:	5	-	5	8	-	8	8	-	8
Office of Communication and Health Education									
Direct:	7	-	7	8	-	8	8	-	8
Total:	7	-	7	8	-	8	8	-	8
Office of Clinical Trial Operations and Management									
Direct:	3	-	3	5	-	5	5	-	5
Total:	3	-	3	5	-	5	5	-	5
Division of Extramural Research									
Direct:	18	-	18	19	-	19	19	-	19
Total:	18	-	18	19	-	19	19	-	19
Total	224	2	226	250	2	252	250	2	252
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	12.1
2022	12.2
2023	12.2
2024	12.2
2025	12.2

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Detail of Positions[1]

GRADE	FY 2023 Final	FY 2024 CR	FY 2025 President's Budget
Total, ES Positions	0	1	1
Total, ES Salary	$0	$221,900	$226,338
General Schedule			
GM/GS-15	14	15	15
GM/GS-14	31	33	33
GM/GS-13	44	49	49
GS-12	28	32	32
GS-11	9	11	11
GS-10	0	0	0
GS-9	11	13	13
GS-8	5	5	5
GS-7	5	6	6
GS-6	0	0	0
GS-5	1	1	1
GS-4	1	1	1
GS-3	1	1	1
GS-2	1	1	1
GS-1	0	0	0
Subtotal	151	168	168
Commissioned Corps (42 U.S.C. 207)			
Assistant Surgeon General	0	0	0
Director Grade	1	1	1
Senior Grade	0	0	0
Full Grade	0	0	0
Senior Assistant Grade	0	0	0
Assistant Grade	0	0	0
Junior Assistant	0	0	0
Subtotal	1	1	1
Ungraded	87	95	95
Total permanent positions	145	163	163
Total positions, end of year	239	265	265
Total full-time equivalent (FTE) employment, end of year	226	252	252
Average ES salary	$0	$221,900	$226,338
Average GM/GS grade	12.2	12.2	12.2
Average GM/GS salary	$123,781	$130,096	$132,961

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