

# Director's Report to the National Advisory Dental and Craniofacial Research Council January 2024

## NIH/HHS Update

[NIH Revises Grant Review Process](#). To improve focus on scientific merit and reduce reputational bias, NIH is revising its grant review process. The changes include simplifying the process to assess the scientific merit of research grant applications and mitigating elements that can potentially introduce bias into review. The simplified review framework will be implemented for grant applications received on or after January 25, 2025.

[People with Disabilities Designated as a Population with Health Disparities](#). NIH formally designated people with disabilities as a population with health disparities to ensure their representation in NIH research. Designated populations experience significant disparities in rates of illness, morbidity, mortality, and survival. The designation was coupled with the release of a notice of funding opportunity inviting applications to address the combined effects of disability, race and ethnicity, and socioeconomic status on health and access to care.

[Previous Genetic Association Studies Involving People with European Ancestry May Be Inaccurate](#). NIH researchers found that previous studies analyzing the genomes of people with European ancestry may have reported inaccurate results due to not fully accounting for population structure. By considering mixed genetic lineages, known as admixture, the new study showed that previously inferred links between a genomic variant that helps digest lactose and traits such as a person's height and cholesterol level may not be valid. When data from studies with people of European ancestry are evaluated, researchers should account for admixture to uncover true links between genomic variants and traits.

[Scientists Unveil Detailed Cell Maps of The Human Brain](#). A group of international scientists mapped the genetic, cellular, and structural makeup of the human brain and the nonhuman primate brain. This understanding of brain structure allows for a deeper knowledge of the cellular basis of brain function and dysfunction, helping pave the way for a new generation of treatments for people with disorders of the brain. The research was funded by NIH's Brain Research Through Advancing Innovative Neurotechnologies® Initiative.

## NIDCR Update

### Institute News

[NIDCR Awards \\$14 Million to Tackle Unsolved Clinical Challenges](#). NIDCR has issued 26 awards, totaling \$14.1 million, through three bold new initiatives to drive scientific advances in dental, oral, and craniofacial research:

- Advancing Head and Neck Cancer Early Detection Research (AHEAD)
- TMD Collaborative for IMproving Patient-Centered Translational Research (TMD IMPACT)
- Practice-Based Research and Multidisciplinary Experiences in Dental Schools (PRIMED).

The initiatives aim to foster collaborative, multidisciplinary approaches to fill research- and training-related gaps in the fields of head and neck cancer, temporomandibular disorders, and practice-based research.

**[A Call for More Research on Oral Health Screening in Primary Care](#)**. NIDCR Director Rena D’Souza, D.D.S., Ph.D., and Deputy Director Jennifer Webster-Cyriaque, D.D.S., Ph.D., co-authored an editorial in the Journal of the American Medical Association calling for more research to better understand the health outcomes of oral health screening and prevention by primary care clinicians. They noted that the existing lack of data should not deter clinicians from considering oral health during routine medical checkups.

**[NIDCR Funded Winner of 2023 Nobel Prize in Physiology or Medicine](#)**. Former NIDCR grantee Drew Weissman, M.D., Ph.D., is a co-recipient of the 2023 Nobel Prize in Physiology or Medicine. Dr. Weissman and his longtime collaborator Katalin Karikó, Ph.D., both from the University of Pennsylvania, jointly received the award for their foundational research that enabled the development of mRNA vaccines against COVID-19. Dr. Weissman’s NIDCR-funded research to develop an oral mRNA vaccine for HIV contributed to the Nobel-winning work.

**[NIDCR Director Featured on Healthy Moments Radio Broadcast](#)**. Dr. D’Souza joined National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) Director Griffin Rodgers, M.D., to offer oral health tips on Healthy Moments, a weekly radio broadcast sponsored by NIDDK. In a series of episodes, Drs. D’Souza and Rodgers discussed the importance of oral health across the lifespan, the connection between diabetes and oral health, and how a disturbed microbiome can leave us vulnerable to oral infection and bone loss around the teeth.

**[NIDCR Deputy Director Receives Shils Award](#)**. Dr. Webster-Cyriaque received the Excellence in Research Award from the Shils Entrepreneurial Fund. The award honors Dr. Webster-Cyriaque’s track record of outstanding research on oral health in the context of HIV infection and the microbiome and cancer-causing viruses in oral HIV. She was also recognized for her leadership roles in the Oral HIV/AIDS Research Alliance. The Shils Fund also honored NIDCR with the Special Recognition Award for its 75-year effort in leading research to improve oral health for all.

**[NIDCR Scientists Win Bioart Contest](#)**. A scientific image taken by Kelly Ten Hagen, Ph.D., and NIDCR staff scientist Liping Zhang, Ph.D., was selected as a winner of the 2023 Molecular Motifs bioart competition held by the American Society for Biochemistry and Molecular Biology. The image depicts the fluorescently stained reproductive system of a female fruit fly.

**[NIH Research Festival Spotlights NIDCR Investigators](#)**. At the 2023 NIH Research Festival, NIDCR scientists Shaun Abrams, D.D.S., Ph.D., and Blake Warner, D.D.S., Ph.D., M.P.H., shared their research during the NIH Early Career Investigator Lectures. Dr. Abrams, an NIH Independent Research Scholar, presented his work on understanding how centrioles, tiny cylindrical organelles in cells, coordinate facial development. Dr. Warner, an Assistant Clinical Investigator, shared his work on using a myriad of biological data to identify effective treatments for salivary gland dysfunction in an autoimmune disorder called Sjögren’s disease.

## **NIDCR Supported Science Advances**

**Turning the Tap Back On.** Saliva might just be the unsung hero of our everyday life, keeping the mouth healthy. So, when saliva dwindles, it can spell trouble. NIDCR-supported researchers have spent decades investigating the underlying causes of salivary gland dysfunction and exploring emerging technologies for new interventions. From gene therapy to salivary gland regeneration, they aim to restore saliva flow for people with diseased or damaged glands, as often occurs with the autoimmune disorder Sjögren's disease and radiation treatment for head and neck cancer.

**Earlier May Be Better for Isolated Cleft Palate Surgery.** A recent NIDCR-supported clinical trial offers new data on the timing of surgery for infants with isolated cleft palate, a birth condition that causes a split in the roof of the mouth. The researchers found that children who were healthy enough to have their cleft palates surgically repaired at six months had better speech outcomes at age five than those who had surgery at one year. Earlier surgery also benefited hearing sensitivity and middle-ear function.

**A 25-Year Scientific Quest Offers Hope for Patients with Rare Disorder.** Patients and scientists celebrated the 25-year legacy of NIDCR research on fibrous dysplasia/McCune-Albright Syndrome (FD/MAS) at a symposium in September. Patients and their families shared their experience living with FD/MAS, a rare disease of the skeleton, skin, and endocrine system. Scientists illustrated the discovery and cause of the rare condition, highlighted advancements in disease diagnoses and treatments, and discussed the testing of new therapies that aim to prevent bone lesions from forming in the first place.

**Looking Forward to Greater Impact on Temporomandibular Disorders.** As a tribute to NIDCR's 75th anniversary, a new article on the institute's website traces six decades of NIDCR-supported research on pain and temporomandibular disorders (TMDs), a set of conditions that can cause pain and dysfunction in the jaw joint and muscles. NIDCR-supported scientists have made significant strides to define the neural underpinnings of orofacial pain and to tease apart the biological, psychological, and environmental factors that underlie TMDs. This foundational work is informing new efforts, via the TMD IMPACT initiative, to establish a coordinated, interdisciplinary, patient-centered scientific approach to improve prevention, diagnosis, and treatment of TMDs.

**Investigational Drug Restores Parathyroid Function in Rare Disease.** An investigational drug, encaleret, showed promise for treating autosomal dominant hypocalcemia type 1 (ADH1) in an NIDCR-led clinical trial. ADH1 is a rare genetic disorder marked by an imbalance of calcium in the body, causing symptoms such as muscle cramps and life-threatening seizures. The treatment restored blood calcium and the calcium-regulating parathyroid hormone to normal levels.

**Three Germ Layers and a Paradigm Shift.** A team led by NIDCR investigator Laura Kerosuo, Ph.D., uncovered clues about a group of stem cells that are key to the development of vertebrates. These cells, called neural crest cells, appear early in the embryo and eventually give rise to the facial skeleton and parts of the teeth and salivary glands. Genomic analyses of single cells demonstrated how neural crest cells hold on to their ability to turn into different cell types longer than any other stem cells in the embryo — a question that has long puzzled scientists. The results could help shed light on how neural crest development goes awry to cause birth anomalies.

## Personnel Update

**Aubrey Callwood, M.S.**, joins NIDCR as the chief information officer. He received both his bachelor's and master's degree from the University of Maryland. Callwood came to NIDCR from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, where he was selected as a lead network administrator in 1998 and was then promoted as the institute system security officer in 2002. He originally joined NIH in 1996 as a computer specialist at the National Institute of Arthritis and Musculoskeletal and Skin after serving the Navy as a fire control technician.

**William (Bill) Elwood, Ph.D.**, joins NIDCR as the acting chief of the Behavioral and Social Sciences Research Branch within the Division of Extramural Research. Dr. Elwood received his doctorate from Purdue University. He comes to NIDCR on a detail from the NIH Office of Behavioral and Social Sciences Research, where he is a health scientist administrator. At NIH, Dr. Elwood previously served as a scientific review officer at the Center for Scientific Review's Community-Level Health Promotion study section. Prior to joining NIH, he conducted research on health care delivery, mental health, substance abuse, family health and well-being, public housing-based initiatives, and STI/HIV prevention.

**Kelly Ten Hagen, Ph.D.**, NIDCR's associate scientific director, was Honored with the Rosalind Kornfeld Award for Lifetime Achievement in Glycobiology from the Society for Glycobiology. The award honors scientists who have made a significant impact on the field of glycobiology — the scientific study of sugar molecules called glycans and their role in biology. Dr. Ten Hagen is recognized for her contributions to the understanding of a group of glycans called mucin-type O-glycans and their importance to key cellular processes during development.

**Rachel Scheinert, Ph.D.**, has been named the director of NIDCR's Office of Science Policy and Analysis (OSPA). She joins NIDCR from the National Institute of Mental Health (NIMH) where she was the lead health science policy analyst in the Science Policy and Evaluation Branch. She also recently completed a science policy detail in the Immediate Office of the NIH Director, helping manage critical NIH research programs during the pandemic. Prior to her role as a health policy analyst, she worked as a AAAS Science & Technology Policy Fellow and completed her postdoctoral fellowship at NIMH. Dr. Scheinert received her doctorate from the University of Florida, Gainesville.

**Scott Verbridge, Ph.D.**, joins NIDCR's Division of Extramural Research as program director of the of the Tissue Engineering and Regenerative Medicine Program in the Integrative Biology and Infectious Diseases Branch. He received his doctorate from Cornell University. Dr. Verbridge comes to NIDCR from Virginia Tech, where he worked as an associate professor in the Department of Biomedical Engineering and Mechanics and a faculty member of the Virginia Tech – Wake Forest School of Biomedical Engineering and Sciences. His laboratory leveraged tissue engineering approaches to explore novel concepts in targeting of the tumor microenvironment, as well as to model the role of host-microbe interactions in the acquisition of the hallmarks of cancer.