

Director's Report to the National Advisory Dental and Craniofacial Research Council May 2022

HHS/NIH UPDATE

[NIH HEAL Initiative Releases 2022 Annual Report](#). From understanding the biological and socioeconomic factors underlying pain and opioid use disorder to implementing safe and effective therapies for the conditions, the Helping to End Addiction Long-term (HEAL) initiative details its research progress in its recently released 2022 annual report. NIDCR participates in this initiative, which also highlights novel technologies for interventions, the need to address health inequities, and connecting with individuals and communities affected by pain and opioid misuse.

[NIH's All of Us Research Program Releases Nearly 100,000 Whole Genome Sequences](#). Nearly 100,000 highly diverse whole genome sequences, each providing information about almost all of an individual's genetic makeup, are now available to researchers through NIH's *All of Us* Research Program. About 50% of the data is from participants who identify with racial or ethnic groups that have historically been underrepresented in research. The data could enable researchers to address questions about health and disease and advance discoveries to reduce health disparities.

[NIH Experts Pen Commentary on COVID-19 Herd Immunity](#). In a recent perspective published in *The Journal of Infectious Diseases*, leaders from the National Institute of Allergy and Infectious Diseases write that achieving classical herd immunity against SARS-CoV-2 may not be attainable. However, controlling COVID-19 without major disruptions to society is now achievable because of immunity via prior infection or vaccination, drugs and therapies for COVID-19, and diagnostic tests. Research to develop a pan-coronavirus vaccine remains crucial.

[National Cancer Institute Director Steps Down](#). Norman Sharpless, MD, stepped down in April as the director of the National Cancer Institute (NCI), a position he held since 2017. During his leadership, Sharpless championed health equity by developing the Childhood Cancer Data Initiative and advocating for policies to support diversity in the cancer research workforce. NCI principal deputy director Douglas Lowy, MD, is serving as acting director until a permanent director is appointed by President Biden.

NIDCR UPDATE

Institute News

[D'Souza & NIH, HHS Leaders Call for Action on Oral Health Inequities](#). Drawing on findings and recommendations from [Oral Health in America: Advances and Challenges](#), NIDCR Director Rena D'Souza, DDS, PhD; Science Advisor to the President and former NIH Director Francis S. Collins, MD, PhD; and US Surgeon General Vivek H. Murthy, MD, MBA, write in a recent *New England Journal of Medicine* Perspective that addressing oral health disparities will require changes that include a better understanding of the intersection of oral, overall, and mental health, as well as efforts to make oral health care accessible and affordable for all Americans.

[2022 AADOCR/CADR Annual Meeting & Exhibition](#). NIDCR leadership, program staff, investigators, and trainees attended the 2022 annual meeting of the American Association for Dental, Oral, and

Craniofacial Research (AADOOCR) and the Canadian Association for Dental Research. NIDCR Director Dr. D'Souza and Deputy Director Jennifer Webster-Cyriaque, DDS, PhD, were among the presenters, discussing their career trajectories and highlighting why diversity matters in dental, oral, and craniofacial research.

[**NIDCR Director Joins HEAL Director in Q&A**](#). Dr. D'Souza and Rebecca Baker, PhD, the director of the NIH HEAL initiative, discussed NIDCR's HEAL-related efforts to find new, non-addictive treatments for orofacial pain. Dr. D'Souza also discussed the role dentists can play in helping to combat opioid addiction, as well as the oral health consequences of overuse of opioids and other substances.

[**NIDCR Joins EDI to Kick off AANHPI Heritage Month**](#). NIDCR joined NIH's Office of Equity, Diversity, and Inclusion in kicking off 2022 Asian American, Native Hawaiian, and Pacific Islander (AANHPI) Heritage Month in May with a virtual conversation with Asian American actor Utkarsh Ambudkar. Along with his mother, NIDCR researcher Indu Ambudkar, PhD, MSc, he discussed his experience growing up in a STEM-focused family and diversity in Hollywood. NIDCR Director Dr. D'Souza provided opening remarks for the event.

[**NIDCR Director Reflects on Career**](#). Dr. D'Souza reflected on her career and inaugural year as NIDCR director in a recent interview published by NIH's chapter of the Federal Asian Pacific American Council. She highlighted the importance of being proactive and setting goals in one's career. As a leader, Dr. D'Souza works to unite people towards a shared vision through transparent communication and valuing individuals.

NIDCR-Supported Science Advances

[**Facial Pain Comes to Light**](#). Using imaging techniques to visualize pain signals in facial nerves, NIDCR researchers Ashok Kulkarni, PhD, and Kenneth Yamada, MD, PhD, identified a protein called Cdk5 that enhances neurons' responses to painful stimuli. Blocking the protein in mice blunted pain signaling, suggesting the results could inform the development of safer, more effective, non-opioid pain therapies.

[**The Gut's Role in Oral Bone Health**](#). Certain gut bacteria trigger an immune response that prompts loss of tooth-supporting bone in mice, akin to the type of bone loss that can result from periodontal disease, according to a recent NIDCR-funded study. The findings challenge previous notions that bone loss in the mouth is regulated solely by oral microbes and point to a role for gut microbes in oral health, suggesting treatments that modulate gut bacteria may support oral bone health.

[**Equalizing Access to Dental Care**](#). Recent NIDCR-funded research found that expanding public coverage of dental care was linked to reduced racial and ethnic disparities in the use of dental services. However, despite lessened disparities, overall use of dental care remained low across racial and ethnic groups, indicating that insurance coverage is one of multiple factors that could improve access to care.

[**Your Mouth on a Chip**](#). From a tooth-on-a-chip to a salivary gland chip and more, scientists are developing microchips that mimic parts of our mouths to better treat oral diseases. These NIDCR-supported studies are testing dental materials, repurposing drugs for salivary gland dysfunction in head and neck cancer patients, peering into the inner workings of the oral cavity, and opening doors to personalized medicine.

[**Itching for Answers**](#). Recent studies led by NIDCR immunologist Wanjun Chen, MD, and neurologist Mark Hoon, PhD, indicate that not all itch is created equal. The researchers identified key immune

molecules that drive wound-induced itching and chronic itch. The findings show that distinct combinations of molecules appear to underlie different types of itch, and tailored treatments may be better than a one-size-fits-all approach.

[Tooth Protein Prevents Bone Loss in Mice](#). NIDCR researcher Ashok Kulkarni, PhD, and colleagues found that a tooth-hardening protein can help promote bone formation and prevent bone loss in mice. The protein plays a role in bone turnover, where worn-out bone is continuously replaced by healthy new tissue to keep the bones strong. The study may inform new interventions for conditions marked by bone loss, such as severe periodontal diseases and osteoporosis.

[Restoring the Flow of Precious Saliva](#). Genetic conditions, radiation therapy for cancer, and certain autoimmune diseases can damage salivary glands or impede saliva flow, leading to chronic dry mouth that may increase the risk for oral diseases. In a story published in the NIH Intramural Research Program's *I Am Intramural* blog, NIDCR investigator Matthew Hoffman, PhD, discusses his lab's work to restore function to radiation-damaged salivary glands by regenerating salivary gland tissues with gene therapy and stem cells.

[Vaping Alters Mouth Microbes](#). A recent study, funded in part by NIDCR, found that people who used electronic cigarettes—also called vaping—had unique oral microbial communities that more closely resembled those of smokers than of nonsmokers. These findings may signal an increased risk of gum disease for e-cigarettes users.

Personnel Update

Anissa Brown, PhD, joins NIDCR as chief of the Research Training and Career Development Branch in the Division of Extramural Activities. She received her doctorate from the University of Delaware. Brown comes to NIDCR from the National Institute of General Medical Sciences (NIGMS), where she was a program director in the divisions of Training, Workforce Development, and Diversity and Genetics Molecular Cellular Development Biology. She initially joined NIH as a competitively selected intern for the Emerging Leaders program and held positions in the Office of AIDS Research as a program analyst and a program officer.

Tanya Hoodbhoy, PhD, joins the Division of Extramural Research as director of the Tissue Engineering and Regenerative Medicine Program. She received her doctorate from the University of California, Riverside, and completed her postdoctoral research at the National Institute of Diabetes and Digestive and Kidney Diseases. Hoodbhoy comes to NIDCR from the NIGMS, where she served as the program director for the Developmental Biology Program and Individual Postdoctoral National Research Service Awards. Prior to joining NIGMS, Hoodbhoy served as a program officer in the Office of Strategic Coordination, where she managed several NIH Common Fund programs. She is currently an invited member of the trans-NIH Human Embryo Steering Committee, run by the NIH Office of Science Policy.