National Institute of Dental and Craniofacial Research

75th Anniversary Trainee Symposium
Celebrating NIDCR Trainees: Past, Present, and Future
October 10-11, 2023

The National Institute of Dental and Craniofacial Research (NIDCR) is celebrating 75 years of research accomplishments and charting the future of dental, oral, and craniofacial (DOC) research, which includes growing and diversifying the DOC biomedical research workforce! As we celebrate NIDCR's 75 years as an NIH institute, this milestone presents an opportunity to reflect on past accomplishments and provides a sneak peek into a promising future. NIDCR is exceptionally proud of its trainees' accomplishments and values their contributions. That's why we'll celebrate with the NIDCR 75th Anniversary Trainee Symposium: Celebrating NIDCR Trainees: Past, Present, and Future.

Keynote:
May the Force be with you! Piezo channels in sensory physiology and disease
October 11th | 11:30AM ET

Ardem Patapoutian, PhD
Professor
Investigator, Howard Hughes Medical Institute
Department of Neuroscience
Scripps Research

Ardem Patapoutian is a molecular biologist and physiologist. His laboratory identified the molecules that sense temperature and pressure involved in touch, pain, and regulating blood pressure. Patapoutian was born in Lebanon in 1967 and immigrated to the USA in 1986. He graduated from UCLA in 1990 with a B.S. and received his Ph.D. from Caltech in 1996. He joined the faculty of Scripps Research in 2000, where he is currently the Presidential Endowed Chair in Neurobiology and an Investigator of the Howard Hughes Medical Institute. He is a member of the National Academy of Sciences (2017) and a member of American Academy of Arts and Sciences (2020). He is a co-recipient of the 2020 Kavli Prize in Neuroscience, the 2021 BBVA Foundation Frontiers of Knowledge Award, and the 2021 Nobel Prize in Physiology or Medicine (all shared with David Julius).

Plenary Session 1:
The Past, Present, and Future of NIDCR supported Research Training and Career Development
October 10th | 10:45AM ET

Jennifer Webster-Cyriaque, DDS, PhD
Deputy Director, NIDCR

Dr. Jennifer Webster-Cyriaque is the deputy director of National Institute of Dental and Craniofacial Research, National Institutes of Health. An accomplished clinician, researcher, and leader, Dr. Webster-Cyriaque had previously served as a faculty member at the University of North Carolina (UNC) schools of dentistry and medicine for more than two decades.

As a tenured full professor at UNC, Dr. Webster-Cyriaque also served as the attending on clinical service at the UNC Hospital's dental clinic. While there, she led research into a potential etiologic agent for salivary gland disease in patients living with HIV, assessed the

oral microbiome and its implications for cancer-causing viruses, and studied the impact of the oral microbiome and oral health on HIV outcomes.
In addition to her research, Dr. Webster-Cyriaque has held leadership roles as the chair/vice chair of the Oral HIV/AIDS Research Alliance, as research director at the National Dental Association Foundation, as director of postdoctoral CTSA training, along with multiple roles within the American Association for Dental, Oral, and Craniofacial Research and the International Association for Dental Research. Since 2004, she has led the UNC Malawi project and provided assistance in founding Malawi's first dental school in 2019.

Dr. Webster-Cyriaque earned her PhD in microbiology/immunology from the University of North Carolina-Chapel Hill in 1998, her DDS from SUNY Buffalo in 1992, and her BA in biology and interdisciplinary social science from SUNY Buffalo in 1988.

James A. Lipton, DDS, PhD
Adjunct Professor, Division of Preventive and Restorative Sciences, University of Pennsylvania School of Dental Medicine

Regional Director, National Health Service Corps, Dept of Health and Huiman Services, 1978-1984
Director, Office of Planning and Evaluation, NIDCR, 1984-1988
Deputy Director, Epidemiology and Oral Disease Prevention Program, NIDCR, 1988-1990
Director, Research Training and Career Development, NIDCR, 1990-2002
Senior Advisor to Chief Dental Officer, U.S. Public Health Service, 2002-2006
Adjunct Professor, Division of Preventive and Restorative Sciences, University of Pennsylvania School of Dental Medicine, 2006-2023
Board of Advisors, Columbia University College of Dental Medicine, 2010-2023

Lynn King, PhD
Director, NIDCR Division of Extramural Activities

Dr. Lynn Mertens King is the director of NIDCR's Division of Extramural Activities, where she oversees the Scientific Review Branch, the Grants Management Branch, and the Research Training and Career Development Branch. She also serves as the executive secretary of the National Advisory Dental and Craniofacial Research Council for the extramural program, and as the executive secretary for the Board of Scientific Counselors for the intramural program.

Before becoming division director, Dr. King was chief of the Research Training and Career Development Branch within DEA, where she served as the principal advisor to the NIDCR Director on the administrative and fiscal management of the extramural research training portfolio. Prior to that role, Dr. King was chief of DEA's Scientific Review Branch, a role she held after serving for five years as a scientific review officer. While with DEA, she developed an NIDCR dental specialty and PhD program funding opportunity announcement (FOA) to support career development of dentist-scientists, along with a new mentoring network program to enhance research career advancement of underrepresented postdoctoral and early-career faculty investigators.

A former assistant professor at the University of Miami, Coral Gables, Dr. King earned her Ph.D. in population biology from Washington University in St. Louis. She completed a postdoctoral fellowship at Harvard University in population genetics and molecular evolution. She has won numerous awards for her contributions to NIDCR and led efforts to enhance the research careers of dentist scientists and promoted diversity in dental, oral, and craniofacial research.

Rena N. D'Souza, DDS, MS, PhD
Director, NIDCR

Dr. Rena D'Souza is the Director of the National Institute of Dental and Craniofacial Research, National Institutes of Health. She is deeply committed to the organization's mission — 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.

As the director of NIDCR, Dr. D'Souza oversees the institute's annual budget of over $520 million, supporting basic, translational, and clinical research in areas of oral cancer, orofacial pain, tooth decay, periodontal disease, salivary gland dysfunction, and the craniofacial development and the oral complications of systemic diseases.

Prior to becoming NIDCR's director, Dr. D'Souza served at the University of Utah as Assistant Vice President for Academic Affairs and Education for the Health Sciences. She held the Ole and Marty Jensen endowed chair in the School of Dentistry that she led as inaugural dean. As a clinician-scientist, D'Souza has been strongly committed to discovery and mentoring throughout her academic career. She is past president of the American Association for Dental and Oral Craniofacial Research (AADOCR) and the International Association for Dental Research (IADR).

Dr. D'Souza is an internationally recognized researcher and has authored over 150 publications and book chapters in the areas of craniofacial development, matrix biology and tissue regeneration for over 30 years. She is a Fellow of AAAS and also of AADOCR. She was inducted into the German National Academy of Sciences in 2012 and the Columbia University College of Dental Medicine's awarded Dr. D'Souza the Birnberg Research Medal in 2016. She received the Irwin D. Mandel Distinguished National Mentoring Award in 2017, the Shils Fund Innovation Award in 2022 and was the inaugural recipient of the Alumni Lifetime Achievement Award from UTHealth Houston School of Dentistry in 2022.

Dr. D'Souza is active on several trans-NIH committees and maintains an active research laboratory in the National Institute of Child Health and Human Development (NICHD), NIH.

Overview of NIDCR Intramural and Extramural Funding Opportunities and Research Priorities

October 10th | 11:30AM ET

Rachel Saré, PhD
Program Officer, Research Training & Career Development (RTCDB), NIDCR

Rachel Saré, Ph.D. is a Program Officer within the Research Training & Career Development Branch where she manages fellowship awards.

Dr. Saré received her Ph.D. in Human and Molecular Genetics with a specialization in Neuroscience from the University of Texas Health Science Center in Houston. Her thesis focused on the characterization and treatment of a novel mouse model of Tuberous Sclerosis Complex-Associated Autism in which she characterized an underappreciated role of neurodegeneration in this disorder. Dr. Saré has published numerous papers on the topics of Autism, Fragile X Syndrome, Tuberous Sclerosis Complex, sleep, and Alzheimer's Disease.

Dr. Rachel Saré comes to NIDCR from the National Institute on Aging (NIA) as a health specialist with experience in research training and career development. Prior to NIA she served as a contract scientist in the NIMH Intramural Research Program.

Belinda Hauser, PhD
Intramural Training Director, NIDCR Office of Training and Education (NOTE)

Dr. Belinda Hauser is the Intramural Training Director at the NIDCR Office of Training and Education (NOTE), National Institute of Dental and Craniofacial Research, National Institutes of Health (NIH). She has been very instrumental in helping students navigate the various training programs available at NIH training program and is very interested in NIDCR initiatives. The office of Education serves as an access point, advocate, and resource for intramural trainees and candidates, providing valuable assistance in understanding the many educational and training opportunities available at NIDCR and NIH. Dr. Hauser plays a key role in helping trainees and candidates connect to the resources and support they need to achieve their goals which is essential in supporting the education and training of the next generation of researchers at NIH.

Lillian R. Shum, PhD
Director, NIDCR Division of Extramural Research

Dr. Shum is Director of the Division of Extramural Research at the National Institute of Dental and Craniofacial Research (NIDCR), National Institutes of Health (NIH). She provides leadership and guidance for the planning, development, implementation, and evaluation of NIDCR extramural research portfolio encompassing broad areas in dental, oral, and craniofacial sciences. The goal is to support research to capture the most promising discoveries and emerging technologies for rapid translation to clinical applications for improving the health of all people across their lifespan. Through supporting research, we also strive to nurture and strengthen a diverse research workforce.

Dr. Shum has been with NIH for 28 years and represents NIDCR on trans-NIH and interagency working groups, such as the NIH Common Fund's High Risk-High Rewards Program, 21st Century Cures Regenerative Medicine Innovation Project, All of Us Research Program, Coordinating Committee on Research on Women's Health, and ARPA-H liaisons. Dr. Shum earned her PhD degree from the University of North Carolina Chapel Hill, completed postdoctoral training at the Center for Craniofacial Molecular Biology at the University of Southern California and at the University of California San Francisco School of Dentistry, and conducted research in the NIH intramural program on craniofacial skeletal development, before she joined that extramural program in 2003. She has led the Division of Extramural Research since 2014.

Breakout Sessions A & B
October 10th

Alternate Careers in Science

Christopher H. Fox, DMD, DMSc
Chief Executive Officer
International Association for Dental Research (IADR)

Christopher H. Fox, DMD, DMSc, is the Chief Executive Officer of the International Association for Dental Research (IADR) and the American Association for Dental Research (AADR). Dr. Fox completed his dental, post graduate and clinical studies at Harvard University, receiving a DMD, a Master of Science in Epidemiology, a Doctorate of Medical Sciences in Oral Biology and Oral Epidemiology, and completed residencies in Periodontology and Dental Public Health. Dr. Fox was previously employed by the Colgate Palmolive Company and held various positions based in the United States, England, and France, before joining IADR/AADR in 2003. He is passionate about public policy being adequately informed by the latest available evidence, to identify research gaps where they exist, and to advocate for research funding to address those gaps. Working with the IADR Board of Directors and other key stakeholders, he has brought attention to the need for research to inform the global oral health policy agenda and to address global oral health inequalities. He is a Fellow of the American Association for Dental Research and the American Academy for the Advancement of Science and has received the Harvard School of Dental Medicine Distinguished Alumnus Award.

Natalia I. Chalmers, DDS, MHSc, PhD
Chief Dental Officer, Office of the Administrator
Centers for Medicare & Medicaid Services (CMS)

Dr. Chalmers is a board-certified pediatric dentist, oral health policy expert, and public health advocate who brings more than 20 years of clinical, research, industry, and regulatory experience to CMS in her role as Chief Dental Officer in the Office of the Administrator. Previously, Dr. Chalmers served as a Dental Officer at the US Food and Drug Administration.

Dr. Chalmers has devoted her career to transforming scientific and health care data and information into actionable insights to address equity, improve care, and better inform policy and funding. Dr. Chalmers completed her Doctor of Dental Surgery degree at the Faculty of Dental Medicine of the Medical University of Sofia, a residency in pediatric dentistry at the University of Maryland School of Dentistry, and a Ph.D. in oral microbiology from the Graduate Partnerships Program of the University of Maryland School of Dentistry and the National Institute for Dental and Craniofacial Research at the National Institutes of Health, Post-doctoral Fellowship at the Forsyth Institute, and Clinical Research Fellowship at the National Institute for Dental and Craniofacial Research, National Institutes of Health.

Dr. Chalmers holds a Master's degree in Clinical Research from Duke Medical University and a Certificate in Drug Development and Regulatory Science from the University of California San Francisco School of Pharmacy. Her research has translated into action, improving oral care and advocating for the role health policy can play across the lifespan—particularly when it embraces dental well-being as a facet of care for the whole person.

Alejandro (Alex) Chibly, PhD
Principal Scientist
Bioinformatics
Genentech

Bioinformatics Scientist in Reverse Translation (Oncology signaling) and Oncology Bioinformatics at Genentech. My main areas of focus include hormone receptor-positive breast and prostate cancer biology, as well as mechanisms of response and resistance to endocrine therapy, CDK4/6i and PI3Ki. I specialize in the analysis of transcriptomic and genomic data from patient-derived tumors using regression and machine learning tools to identify actionable targets for potential use in combination therapies, and to understand mechanisms of inherent and acquired resistance to cancer therapies. I got a PhD in Cancer Biology from the University of Arizona in the laboratory of Dr. Kirsten Limesand, and did a post-doc training at the National Institute of Dental and Craniofacial Research (NIDCR/NIH) with Dr. Matt Hoffman. My previous research focused on investigating molecular mechanisms associated with salivary gland dysfunction that occurs as a consequence of cancer radiotherapy, where I led the generation of a single-cell RNAseq atlas of salivary gland development, and the transcriptional profiling of human irradiated salivary glands to identify clinically relevant targets to develop curative strategies for loss of saliva.

Catherine Evans, PhD
Chief, Science Communication and Digital Outreach Branch
National Institute of Dental and Craniofacial Research (NIDCR)

Dr. Catherine Evans is chief of the Science Communication and Digital Outreach Branch in NIDCR's Office of Communications and Health Education (OCHE). In this role, she leads NIDCR's web, social media, and media relations efforts to communicate NIDCR science to the public. Prior to her appointment as branch chief, she held the position of science writer in OCHE from 2017 to 2023, where she translated NIDCR research for the lay public.

Prior to joining NIDCR, she worked as a science writer with a strategic communications firm serving NIH clients. Before that, she was a National Cancer Institute Health Communications Fellow for The Cancer Genome Atlas program, and she served as a postbac studying pain genetics in the lab of Dr. Mitchell Max at NIDCR. She holds a Ph.D. in neuroscience from the University of Michigan, an M.A in science writing from Johns Hopkins University, and a B.A. in psychology from the University of Virginia.

Choosing a Research Mentor and Navigating the Relationship

David Drake, MS, PhD
Professor of Endodontics
Iowa Institute for Oral Health

I am a professor of microbiology & infectious diseases in the Iowa Institute for Oral Health Research. My doctoral training was in medical microbiology and pathogenic bacteriology. My primary area of research is on the development of the oral microbiome in children. I also collaborate with colleagues on looking at crosstalk between the oral and gut microbiomes and the impact on systemic immunity, autoimmune diseases, and many aspects of systemic health.

I am currently co-PI of an R56 grant recently funded as a bridge for our revised, competitive R01 renewal soon to be reviewed. I am also co-PI of the AADOCR Mind the Future Program funded as a collaborative agreement with NIDCR. I mentor junior faculty in this program

and other programs (NRMN-Utah, NRMN-SETH, as well as many mentees at several different universities. I have been a professor for 35 years and at this stage of my career, I am dedicating my time to mentor postdocs and junior faculty across the country so that they will thrive in academia.

Navigating and Pursuing a Specialty and PhD

Omar Glover, PhD
University of Buffalo

Dr. Omar Glover completed his BS in the Department of Biology at The University of North Carolina at Charlotte where students are provided the strong foundation in biological and physical sciences necessary for a career in research. As a student, he has made a consistent effort to develop and progress as a scientist. Throughout his education, he has challenged himself to expand his scientific acumen through various research opportunities. In 2019, he was selected to participate in the Medical Research Scholars Program at the National Institute of Health, as one of the only two dental students selected in the nation for this prestigious honor. He conducted research in the laboratory of Dr. Martha Somerman, where he investigated the effects of pan fibroblast growth factor receptor inhibitor on dentoalveolar and craniofacial development. He continued his work with Dr. Somerman beyond his one-year commitment, all while completing his dental education. Following the completion of his dental degree, Omar committed himself to a career in research. Omar is currently pursuing his passion for science as he completes his PhD in Oral Biology and Periodontics Residency at the University of Buffalo. He is committed to continuing to have research be the cornerstone of his career in dentistry. His interest for the future is to utilize research in order to develop innovative strategies to establish how obesity contributes to human periodontal disease.

Malika Mailk, DDS
University of Michigan School of Dentistry

Dr. Malika A. Malik is a third-year graduate student in Oral Health Sciences/Pediatric Dentistry dual degree program at the University of Michigan School of Dentistry (UMSOD). Malika holds a bachelor's in Environmental Science and a Doctor of Dental Surgery (DDS) from the University of Michigan. Her current research focuses on the characterization of dental pulp stem cells for regenerative endodontics in adolescents. As a translational scientist her work aims to develop clinical acceptable protocols for stem cell-based therapy. Support for Malika's research comes from NIH K12 Clinical Scientist Institutional Career Development Program Award. Outside of the lab, Malika enjoys Formula 1, working out, and trying new eateries around Ann Arbor with her dog, Rufus.

Dam Soh, DDS, MS
University of Buffalo

Dr. Soh is a K12 scholar who is in the combined program of Periodontology residency and Oral Biology PhD at the University at Buffalo. She earned her Doctorate of Dental Surgery from University at Buffalo School of Dental Medicine and her MS in Microbiology/Immunology at the Seoul National University, South Korea. Dr. Soh's research focuses on the ecology of oral microbiome communities and how the ecological factors can affect dysbiotic shifts in the oral microbiome. She is currently in her third year of the combined program and interested in building careers as a research clinician.

Vidhya Venkateswaran, PhD
NIH Fellow

Dr. Vidhya Venkateswaran is an oral radiologist and clinician-scientist. Her research focuses on the application of novel bioinformatics methods to large-scale clinical and genetic data to evaluate craniofacial diseases, with the goal of equitably advancing precision medicine efforts.

Navigating a DDS/DMD PhD Program

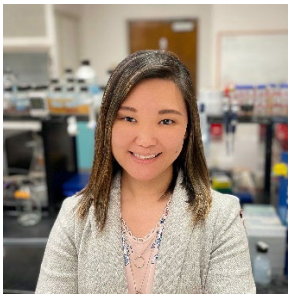
Shaun R. Abrams, DDS, PhD
Dental Clinical Research Fellow
National Institute for Dental and Craniofacial Research (NIDCR)

Dr. Shaun Abrams hails from Brooklyn, NY and graduated valedictorian from the City University of New York (CUNY) Medgar Evers College in 2006 where he majored in Biology. Following his undergraduate studies, he worked as a Postbac IRTA in the lab of Dr. Matthew Hoffman at NIDCR studying salivary gland stem cell maintenance and expansion during organogenesis to develop regenerative therapeutic strategies. Shaun completed the DDS/PhD program at University of California, San Francisco (UCSF) in 2020 graduating with honors and inducted into the Omicron Kappa Upsilon National Dental Honor Society. Shaun completed his PhD work in the lab of Dr. Jeremy Reiter where he uncovered how primary cilia regulate development of the facial midline. Dr. Abrams is currently an Independent Research Scholar (IRS) awardee and Dental Clinical Research Fellow at NIDCR working jointly in the Werner and Kerosuo labs to identify novel ubiquitination pathway components involved in craniofacial bone & cartilage formation from neural crest cells. Dr. Abrams is also chief of the Craniofacial Development Unit (CDU) at NIDCR where his group is studying how centrioles regulate craniofacial morphogenesis. In his free time, Shaun enjoys singing in choral groups, taking dance classes, and finding new hiking trails to explore.

Tanner Godfrey, DMD, PhD
University of Alabama at Birmingham

Dr. Tanner Godfrey completed his undergraduate studies in his hometown at Utah State University majoring in biochemistry. He completed the DMD PhD program at the University of Alabama at Birmingham, with a PhD in biochemistry and molecular biology in 2022. After completion of his program, he stayed in Birmingham and is currently a second-year resident in orthodontics.

Tanner is a proud father of 3 (soon to be 4) children and loves spending time with his family. He enjoys wood working, snowboarding, wake surfing and being in the outdoors.



Nini Chaichanasakul Tran, DDS, PhD
Assistant Professor
Section of Pediatric Dentistry, Division of Preventive and Restorative Sciences at the UCLA School of Dentistry

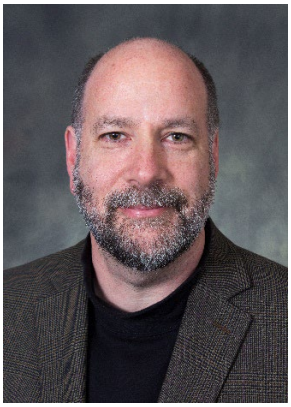
Nini Chaichanasakul Tran, D.D.S., Ph.D., is an Assistant Professor in the Section of Pediatric Dentistry, Division of Preventive and Restorative Sciences at the UCLA School of Dentistry. She received her DDS degree and went on to obtain a Ph.D. degree in Oral Biology from UCLA School of Dentistry in 2009 and 2012, respectively. She subsequently completed her residency in Pediatric Dentistry at UCLA School of Dentistry in 2014. Dr. Tran has been a board-certified pediatric dentist since 2015. Her dual-degree DDS/PhD training was supported by the Ruth L. Kirschstein Institutional National Research Service Award (NRSA) Institutional Research Training Grant (T32). She also received funding support from the National Institutes of Health (NIH) Pediatric Research Loan Repayment Program. Her research focuses on understanding the role of Streptococcus mutans and the associated oral microbiome and host factors related to caries disease and disparity in pediatric populations. Dr. Tran's research is currently funded by NIH/National Institute of Dental and Craniofacial Research (NIDCR) Mentored Clinical Scientist Research Career Development Award (K08) and Small Grant Program for New Investigators (R03). She was a recipient of the 2022 American Association for Dental, Oral, and Craniofacial Research (AADOCR) Anne D. Haffajee Fellowship Award.

Importance of Oral Health Research in Total Health Care

Michelle M. Henshaw, DDS, MPH
Professor, Department of Health Policy and Health Services Research
Associate Dean, Global and Population Health
Boston University Henry M. Goldman School of Dental Medicine

Dr. Henshaw is a Professor in the Department of Health Policy and Health Services Research and the Associate Dean for Global and Population Health at the Boston University Henry M. Goldman School of Dental Medicine. Her research focuses on community-based participatory research, and improving access to dental care for underserved populations across the lifespan, all with the focus on addressing oral health inequities. In addition to leading research projects in these areas, she has served as the Co-Director of the Northeast Center for Research to Evaluate and Eliminate Dental Disparities (CREEDD) and is a member of the NIDCR's Oral Health Disparities in Children Consortium.

Team Science: The Benefits of Research Collaborations



David H. Kohn, PhD
Natalie C. Roberts Endowed Professor
University of Michigan

Dr. Kohn is the Natalie C. Roberts Endowed Professor at the University of Michigan with appointments in the Departments of Biologic & Materials Sciences (School of Dentistry) and Biomedical Engineering (College of Engineering). He received his BS in BME from Tulane University and his Ph.D. in bioengineering from the University of Pennsylvania. Dr. Kohn is the Director of an NIDCR-supported Training Program in Tissue Engineering and Regeneration, Director of the Michigan-Pittsburgh-Wyss Regenerative Medicine Resource Center, an NIDCR-supported national consortium whose mission is to translate tissue engineering technologies to the clinic and private sector, and Director of a University Biosciences initiative in programmable biomaterials for regenerative medicine. Dr. Kohn is a

Past President of the Society for Biomaterials, a Fellow of the American Institute of Medical and Biological Engineering, AAAS and the International Union of Biomaterials Scientists and Engineers. He is also the recipient of an IADR Distinguished Scientist Award and Society for Biomaterials Clemson Award. Dr. Kohn serves on the advisory boards of several universities, has consulted for many medical device companies, and is a "retired" chartered member of the NIH Skeletal Biology Development and Disease study section.

Dr. Kohn's laboratory is dedicated to understanding causes of skeletal fragility and developing technologies to regenerate skeletal tissue. His laboratory utilizes combinations of engineering and biological technologies to advance musculoskeletal and oral health. Specifically, tissues are studied across many levels of scale by coupling mechanical, compositional and molecular analyses, and these structure-function relations are used to develop strategies to regenerate tissues. Principles of biomimicry, peptide engineering and cell-cell communication are used as platforms to design materials that can communicate with their biological microenvironment, leading to better control of cell function and spatially directed tissue formation in-vivo. Dr. Kohn's work has been funded by NIH, NSF, DoD, and industry continually for the past 26 years. He has published over 160 peer-reviewed papers and book chapters, holds 11 patents, and has over 140 invited presentations. Dr. Kohn has mentored 50 graduate students, 7 post docs, 50 undergraduates, 18 residents and 5 visiting professors in his laboratory, many of whom are now funded independent investigators.

Hyun (Michel) Koo, PhD
Co-Founding Director, Center for Innovation & Precision Dentistry
Professor, Department of Orthodontics
University of Pennsylvania, School of Dental Medicine

Hyun (Michel) Koo is a dentist-scientist trained in food engineering, microbiology, and cell biology, and an inventor with several US/international patents. He is a professor in the School of Dental Medicine at the University of Pennsylvania, and co-founder of the Center for Innovation & Precision Dentistry, a multidisciplinary institute with the School of Engineering that bridges clinicians, scientists, and engineers to advance oral-craniofacial health through research, training, and entrepreneurship. His research and training programs focus on applying engineering and computational approaches to study disease mechanisms, develop affordable therapies and precision diagnostics for susceptible populations.

Finding Your Niche in Dental, Oral, and Craniofacial (DOC) Research

Mary Cindy F.-Carson, PhD
Professor
Associate Dean for Research; Director of Clinical and Translational Research
UTHealth Houston, School of Dentistry

Cindy is a native of Galveston, Texas. She is an active researcher and has a federally and foundationally funded laboratory focused on tissue engineering, extracellular matrix and cancer biology. She is a pioneer in the use of complex 3D systems for cell and microtissue culture of both normal and cancerous tissues. She is the author of over 200 publications and frequently serves as a reviewer for both grant applications and journal articles. After eleven years as a faculty member at the University of Texas Health Science Center (UTHSC) Dental Branch, she left Houston in 1998 to join the faculty at the University of Delaware where she was a professor of Biological and Materials Sciences from 1998-2009. She was the founding director of the Center for Translational Cancer Research, a role she began in 2005 that brought together four institutions and hospitals with a focus on accelerating

translation of cancer research findings to the clinic. She came to Rice University in 2009 to provide scientific leadership and vision for the BioScience Research Collaborative and to foster a climate of interdisciplinary and translational research and innovation. She joined the Texas Medical Center as a strategic advisor in 2014. In fall of 2016, Cindy returned as a Professor of Diagnostic and Biomedical Sciences to the UTHSC, now UTHealth, in the School of Dentistry. In 2022, she assumed the position as Associate Dean for Research. She is passionate about bringing research from bench discovery through the marketplace and finally to the clinic. She hopes to one day bring the salivary gland her team is building to the clinic for patients who suffer from xerostomia due to hyposalivation (dry mouth) after having radiation for head/neck cancer.

Cristiane Miranda França, PhD
Research Assistant Professor of Restorative Dentistry, School of Dentistry
Oregon Health & Science University

Dr. Franca is a dentist-scientist holding a Ph.D. in Oral Pathology and post-doctoral training in Tissue Engineering and Microfluidics. She currently serves as a Research Assistant Professor at the School of Dentistry and holds a position at the Knight Cancer Precision Biofabrication Hub within the Cancer Early Detection Advanced Research Center (CEDAR) at the Oregon Health & Science University (OHSU). Her research journey has been consistently fortified by funding support from the NIH/NIDCR. She operates at the interface of engineering and biology, with a focus on investigating, understanding, and potentially controlling the interplay among cells, the extracellular matrix, local immune responses, and biomaterials. During a significant portion of her post-doctoral work, she dedicated her efforts to developing organ-on-chip platforms and disease models. Under the mentorship of Dr. Bertassoni, she secured funding through an R01 Diversity Supplement to create and characterize a pioneering microfluidic model known as the "Tooth-on-a-chip." This innovative model replicates the physiological biomaterial-dentin-pulp interface within the oral environment. To further expand her research program, Dr. Franca also worked on an NIDCR-funded project aimed at fabricating and optimizing pericytesupported capillary on-a-chip to understand the vascular changes observed in the stiffer cancer tumoral microenvironment, offering valuable insights into the role of perivascular cells in maintaining a protumorigenic milieu. Currently, Dr. Franca is funded by a K01 award, which supports her work in engineering an immunomodulatory material for dental pulp regeneration. Her objectives include utilizing tissue engineering tools to harness the body's innate healing capacity, gaining fresh insights into how the extracellular matrix regulates cell and tissue function, developing innovative organs-on-a-chip platforms tailored for oral and craniofacial research, and nurturing the next generation of scientists and clinicians within a lab culture founded on principles of excellence, innovation, integrity, diversity, cooperation, and respect.

Mock Study Session

Thomas (Tom) O'Farrell, PhD
Scientific Review Officer
Scientific Review Branch
NIDCR, NIH

Dr. Thomas O'Farrell started his career performing research on tooth remineralization solutions at the American Dental Association, Paffenbarger Research Center. His graduate research involved the study of extracellular protease enzymes and his post-doctoral research involved elucidating growth regulation mechanisms of B cell lymphomas. Dr. O'Farrell coordinated extramural grant peer reviews and worked in developing science policy at the Environmental Protection Agency, Office of Research and Development for sixteen years before joining NIDCR as a Scientific Review Officer in 2021. He has a B.S. in Biochemistry from the University of Maryland and a PhD in Biochemistry from the University of Tennessee, Memphis.

Overview of NIH Loan Repayment Programs

Matthew Lockhart, MBA
Director, Division of Loan Repayment, OER, NIH

Matthew Lockhart, M.B.A. is the Director of the Division of Loan Repayment (DLR) at the National Institutes of Health (NIH). In this role, Mr. Lockhart is responsible for administering and providing leadership for the NIH Loan Repayment Programs (LRPs) as well as representing NIH on matters related to the operations, policy development and evaluation of the LRPs. Before coming to NIH, Mr. Lockhart led the Veterinary Medicine Loan Repayment Program at the U.S. Department of Agriculture. Mr. Lockhart's academic background includes a B.A. in Mathematics from Gallaudet University and an M.B.A. in Organizational Management from the University of Maryland.

Maintaining Work/Life Balance while Pursuing a Research Career/ Finding your Ikigai

Sharon Milgram, PhD
Director, Office of Intramural Training and Education

Dr. Sharon Milgram received a BS degree in Physical Therapy from Temple University & a PhD in Cell Biology from Emory University. She completed postdoctoral training at The Johns Hopkins University before joining the faculty at The University of North Carolina at Chapel Hill. There, she rose to the rank of Full Professor in the Department of Cell & Developmental Biology. Dr. Milgram served as the Associate Director of the Medical Scientist Training Program, Director of the Interdisciplinary Biomedical Sciences Graduate Program, & the Director of the Summer Undergraduate Research Experience. In 2007 she joined the NIH Office of the Director as the Director of the Office of Intramural Training and Education (OITE) where she directs a trans-NIH Office dedicated to the career advancement of over 5000 trainees. Dr. Milgram lectures widely on science careers, mentorship, leadership, management, wellness, & resilience in research environments. She lives in Silver Spring, Maryland with her wife.

Career Panels
October 10th | 4:30PM ET

Pre Doc/Post Doc Trainees

Alexandra Herzog
University of Michigan School of Dentistry

Alexandra Herzog is a seventh year DDS/PhD candidate at the University of Michigan School of Dentistry. She received a B.S. in Honors Biochemistry and German from the University of Michigan in 2017. Alex has spent the last 7 years pursuing her dissertation research in Dr. Jacques Nör's lab, investigating signaling mechanisms that regulate phenotypic changes in head and neck cancer stem cells underlying resistance to conventional chemotherapies. The ultimate objective of her work is to facilitate the development of mechanism-based therapeutic approaches that target cancer stem cells. Throughout her graduate training, Alex has held both local and national leadership positions, having served as AADOCR National Student Research Group President, Regional Representative, and Member at Large. Alex has authored multiple publications, including a book chapter, as well as received numerous research-related awards and honors, including the NIDCR Ruth L. Kirschstein F30 Fellowship, the IADR and AADOCR Hatton Awards, the Dentsply-Sirona SCADA Award, and the AADOCR Student Research Fellowship. She was recognized as one of the Top 20 students in her dental class by the Omicron Kappa Upsilon Chi Chapter. Alex has recently been accepted into the graduate program in endodontics at the University of Michigan as an incoming resident for the summer of 2024, with the long-term career goal of becoming a clinician-scientist as a faculty at a research-intensive dental school.

Jason Semprini
University of Iowa, College of Dentistry

Jason Semprini, MPP, is a National Institutes of Health (NIH) fellow at the University of Iowa, College of Dentistry. Before beginning his PhD in health services research, Semprini completed his master's in public policy at the University of Chicago. He has dedicated his professional career to public service, having served four years as an AmeriCorps member in Iowa and two years as a Peace Corps volunteer in Fiji.

Mairobys Socorro, PhD
University of Pittsburgh School of Dental Medicine

Dr. Socorro is a Research Assistant Professor in the Department of Oral and Craniofacial Sciences at the University of Pittsburgh School of Dental Medicine. She is a dentist-scientist originally from Venezuela, with a PhD in Physiological Sciences. She joined the University of Pittsburgh School of Dental Medicine in 2018, where she gained postdoctoral research experience working on determining the role of mineralization-regulating transcription factors in susceptibility to dental caries and on defining novel interactions between transcription factors that are crucial for bone and dental tissue mineralization. Her research interest focuses on advancing our understanding of the fundamental molecular mechanisms involved in the formation and mineralization of skeletal and dental tissues. These studies will result in opportunities to develop better options for effective prevention and treatment of diseases that affect mineralized tissues, as well as for more assertive dental caries risk assessment and identification of high caries-risk groups. In addition, these studies will open an entirely new area of exploration into the fundamentals of the regulation of dentin

formation and its impact on the quality of enamel and dental caries risk. Dr. Socorro's research interest also focuses on understanding the development of temporomandibular joint disorders and the onset and progression of pain. She has a strong background in clinical and population research related to dental caries and dental fluorosis in pediatric patients in Venezuela. She has 7 years of postdoctoral experience and was awarded the Ruth L. Kirschstein National Research Service Award (NRSA) Individual Postdoctoral Fellowship in 2020. Her career goal is to become an independent researcher in the field of tissue mineralization, as well as a tenured professor in dentistry. She enjoys teaching and her passion is doing research and being a mom.

Dentist Scientist Residency and Post Residency Trainees

Kang Ko, DMD, DSCD
Assistant Professor of Periodontics
University of Pennsylvania, School of Dental Medicine

Dr. Kang Ko is an Assistant Professor in the Department of Periodontics at Penn Dental Medicine. He earned his B.S. degree in Physiology and Neuroscience in 2009 and an M.S. degree in Neurobiology in 2011 from the University of California, San Diego. He earned his D.M.D degree in 2015 and a combined certificate in Periodontics/D.Sc.D degree in 2020 from Penn Dental Medicine. He is an active member of the International Association of Dental Research, the American Academy of Periodontology, and the American Dental Association. He has received numerous awards for his teaching and research, including the K08 Mentored Clinical Scientist Development Awards and Ricardo Teles Research Award. Dr. Ko is a board-certified periodontist and currently leads a NIH-funded research program that investigates fibroblast heterogeneity and its impact on immunity in the oral cavity and skin.

Julie T. Marchesan, DDS, PhD
Assistant Professor, Division of Comprehensive Oral Health, Periodontology
Adams School of Dentistry, University of North Carolina at Chapel Hill

I am a researcher, teacher, and periodontist at the Adams School of Dentistry, University of North Carolina-CH. My research is distinguished by the strong translational nature of my investigations on the pathogenesis of periodontal disease. Our studies aim to uncover the different mechanisms that lead to bone destruction, aiming to foster the development of tailored periodontal interventions. To discover distinct biological pathways of disease, we replaced traditional periodontal disease classification systems by novel taxonomies of disease defined by either levels of microorganisms and IL-1b in the periodontium (Biologically-defined taxonomy) or by latent class analysis (Periodontal Profile Class taxonomy). We investigate these taxonomies in the clinical and pre-clinical setting using the simplified ligature-induced periodontitis mouse model (Marchesan et al. 2019; Ribeiro et al. 2022).

Using a biologically-defined approach, we identified novel genetic polymorphisms significantly associated with periodontal destruction (Offenbacher et al. 2016). Most of the genes discovered had never been explored in the context of periodontal disease. We discovered that two genes – IL37 and IFI16 – are negative regulators of inflammatory bone loss via distinct biological pathways (Marchesan et al 2017, Offenbacher et al, 2018, Swanson et al 2022). We are currently investigating the impact of biological sex in the IL-1b periodontal response.

By applying the Periodontal Profile Class taxonomy into new datasets, we discovered "hidden" classes of individuals with distinct signatures of plaque microbial and systemic IgG

antibodies against classic periodontal pathogens (Marchesan et al., 2020). The biological homogeneity of these novel classes was superior to traditional classification systems. We are currently investigating the biomarker profile of
individuals stratified by the PPC classification. Our collaborative work on genetic heritability further supports that biologically-informed classifications are more “precise” than traditional classification systems (Agler et al 2019), which may be important for the development of precise periodontal interventions.

Erica L. Scheller, DDS, PhD
Associate Professor
Division of Bone and Mineral Diseases
Washington University School of Medicine
Executive Director, Washington University Center of Regenerative Medicine
President, International Society of Bone Morphometry

Dr. Scheller is an Associate Professor in the Division of Bone and Mineral Diseases at Washington University in Saint Louis. She is also the current Executive Director of the Washington University Center of Regenerative Medicine (CRM) and the President of the International Society of Bone Morphometry (ISBM). Dr. Scheller has a research background that spans the fields of bone biology, neurobiology, and integrated physiology. She completed DDS/PhD and post-doctoral training at the University of Michigan prior to founding the Neuroskeletal Biology Lab at Washington University. Dr. Scheller has a directed interest in leveraging high-resolution imaging and other innovative techniques to study neural regulation of the skeletal microenvironment.

Chi T. Viet, DDS, MD, PhD, FACS
Loma Linda University

Chi T. Viet, DDS, MD, PhD, FACS is a surgeon scientist focused on head and neck cancer management. She is an Associate Professor at Loma Linda University. She earned her DDS and PhD from University of California, San Francisco, and her MD from New York University, where she completed her Oral and Maxillofacial Surgery residency. She then went on to complete fellowship training in Head and Neck Surgical Oncology and Microvascular Reconstructive Surgery in Portland, Oregon. Her clinical practice is devoted to the comprehensive surgical management of patients with head and neck benign and malignant pathology and microvascular reconstruction.

Dr. Viet is a principal investigator of a translational research lab focused on head and neck carcinogenesis and the neurobiological basis of symptoms faced by head and neck cancer patients. Her goal is to develop biomarkers for early head and neck cancer detection, and to use patient-specific biomarkers to design effective treatments for head and neck cancer. By using clinical samples, in vitro and in vivo models, she has demonstrated that epigenetic alterations play a causal role in head and neck cancer pain and carcinogenesis. Her research is funded by the National Institutes of Health (NIH), International Association for the Study of Pain (IASP), American Society of Clinical Oncology (ASCO) - Conquer Cancer Foundation (CCR), and Oral Maxillofacial Surgery Foundation (OMSF). Her work has resulted in publications in American Association of Cancer Research journals (Clinical Cancer Research; Cancer Epidemiology, Biomarkers and Prevention), Nature Portfolio (Scientific Reports), Springer Nature (Biomarker Research), and PAIN.

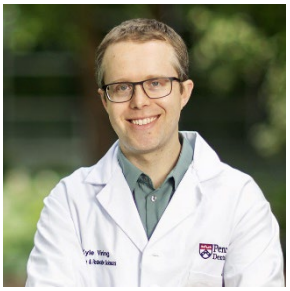
Early-Stage Investigators

Erin Bumann, PhD
Assistant Professor
University of Missouri-Kansas City

Erin Ealba Bumann, DDS, PhD, MS has been a tenure-track Assistant Professor in the Department of Oral and Craniofacial Sciences at the University of Missouri-Kansas City (UMKC) School of Dentistry since September 2017. She received her BS in Anthropology/Zoology and DDS from the University of Michigan in 2004 and 2008, respectfully. She subsequently received her PhD in Oral and Craniofacial Sciences from the University of California, San Francisco in 2013. She then conducted post-doctoral training in craniofacial biology and completed her residency and MS in Pediatric Dentistry at the University of Michigan. Dr. Bumann has been a Board-Certified Pediatric Dentist since 2018. Part of her PhD and all of her post-doctoral training were funded by a National Institutes of Health/National Institute of Dental and Craniofacial Research (NIH/NIDCR) K08 and Pediatric Research Loan Repayment Program. Dr. Bumann's research is currently funded by NIH/NIDCR and College of Diplomates of the American Board of Pediatric Dentistry grants. She has also been selected for funding from the Robert Wood Johnson Foundation and American Dental Association.

Erica Hutchins, PhD
Assistant Professor, Department of Cell & Tissue Biology
University of California, San Francisco

Dr. Erica Hutchins is an Assistant Professor in the Department of Cell and Tissue Biology at the University of California, San Francisco School of Dentistry. She completed her PhD at the University at Albany, State University of New York, where she studied post-transcriptional regulation and RNA-binding proteins during developmental axon outgrowth in the frog. After her graduate training, Dr. Hutchins worked as a postdoctoral fellow at Caltech, where she studied the mechanisms of neural crest cell fate choices in the context of craniofacial development. Her independent lab seeks to understand the post-transcriptional control mechanisms that control cranial neural crest development during craniofacial morphogenesis. Through the generous and continued support of NIDCR, Dr. Hutchins has been the recipient of a Kirschstein-NRSA F32 postdoctoral fellowship (2016-2019), a Loan Repayment Program (LRP) for Pediatric Research award (2018-present), and the K99/R00 Pathway to Independence award (2019-present). Dr. Hutchins has also recently received the prestigious Early-Stage Investigator Maximizing Investigators' Research Award, a five-year $2M grant from NIGMS.



Kyle Vining, DDS, PhD
Assistant Professor of Preventive and Restorative Sciences, Penn Dental Medicine, and Materials Science and Engineering, Penn Engineering
https://www.dental.upenn.edu/research/vining-lab/

Dr. Vining holds a PhD in bioengineering from Harvard University, a DDS from the University of Minnesota School of Dentistry, and a BS in biomedical engineering from Northwestern University. He was a postdoctoral scientist at the Dana-Farber Cancer Institute prior to joining Penn. He also previously completed a fellowship in the Medical Research Scholars Program at the National Institutes of Health.

Dr. Vining's research investigates mechanical regulation of tissue inflammation in bone marrow disease and head and neck cancer. He is also developing strategies to target

inflammation and promote tissue repair and regeneration in oral and craniofacial diseases. Among his projects in biomaterials development, he developed a fibrotic extracellular matrix hydrogel to investigate the effects of mechanical cues in fibrotic niches, as well as a new polymeric dental material that supports differentiation and proliferation of dental pulp stem cells for regenerative dentistry applications.

Dr. Vining was the first faculty member recruited by the Center for Innovation & Precision Dentistry (CiPD) at Penn Dental Medicine and Penn Engineering. Dr. Vining was recently awarded the 2023 CiPD/Penn Health-Tech IDEA prize for precision nanomedicine in regenerative dentistry. Dr. Vining is member of the Abramson Cancer Center, Penn Center of Musculoskeletal Disease (PCMD), Institute for Regenerative Medicine, an affiliate member of the Center for Engineering MechanoBiology (CEMB). His research has received funding from the NIH/NIDCR through the Mentored Clinical Scientist Career Development Award (K08) and Pathway to Independence Award (K99/R00). Dr. Vining was also recently awarded the PCMD Pilot Grant and CEMB Seed Grant. Dr. Vining maintains an active clinical practice in restorative and cosmetic dentistry at Penn Dental Family Practice at Locust Walk.

NIDCR Intramural Trainees

Francis Boska
National Institute of Dental and Craniofacial Reserch (NIDCR)

Jason Collins
National Institute of Dental and Craniofacial Reserch (NIDCR)

Leah Leinbach
Dental Public Health Research Fellow
National Institute of Dental and Craniofacial Reserch (NIDCR)

Leah Leinbach is a dental public health research fellow at the NIDCR. She earned her DMD at the University of Pennsylvania School of Dental Medicine, completed a general practice dental residency at The Johns Hopkins Hospital and MPH from the Johns Hopkins Bloomberg School of Public Health. She has prior clinical experience providing collaborative oral health care to primarily hospital-based patients and has served in leadership and programmatic roles at two large academic medical centers. She hopes to leverage this past experience with the research skills gained through the fellowship to promote further integration of oral health into the rest of healthcare.

Drashty Mody

Runbins Sharma, PhD
Postdoctoral Fellow, Oral Immunobiology
NIDCR

I am currently a postdoctoral fellow at the Oral Immunobiology unit at NIDCR mentored by Dr. Jacqueline Mays. I did my PhD from India studying "Genetics of Type 2 Diabetes". During these formative years of my research career, I secured Federal UGC grant for women scientists. Continuing the progress in my career, I moved to USA in pursuit of learning and contributing to cutting-edge technologies fueling scientific endeavors. My research revolves around unraveling the immunopathology of Oral Chronic Graft vs. Host Disease (cGVHD). I am specifically interested in role of IL17 production and disease prognosis. I specialize in multi-omics techniques like Single Cell RNA-sequencing, Spatial Transcriptomics and optimizing Hi-plex panels for Codex (multiplex immunohistochemical staining) to further elucidate the immune profile of conventional and rare T cell phenotypes mediating the cGVHD pathology in the oral cavity. I am a scientist whose fascination for data science, immunology and bioinformatics is the foundation for continuously pushing scientific boundaries.

In parallel with building the bioinformatics toolkit for our lab, I am actively involved in mentoring and supervising multiple trainees across NIDCR. My core value as a teacher and a learner myself is perseverance. I get excited when faced with a new challenge and encourage my students to do the same: embrace the chemistry of change. While not analyzing terabytes of data in lab, I love spending quality time outside in nature (or at a lovely restaurant) with my immensely supportive husband, Sandeep, and playing with my nieces. As I progress in my career, I am excited to share my experience with the future scientists in the group and be inspired by their aspirations.

Oral Presenters
October 11th | 12:35PM ET

Sustaining Outstanding Achievement in Research (SOAR) scholars

Sarah Knox, PhD
University of New South Wales

Dr. Knox received her PhD in Biomedical Engineering from the University of NSW, Sydney Australia and joined NIDCR as a postdoctoral fellow under the mentorship of Dr. Matthew Hoffman in 2007. Through her initial investigations in the developing salivary gland she discovered an essential role for autonomic nerves in organogenesis and specifically in the regulation of stem cells. This finding became the basis of her laboratory at UCSF and she has continued to reveal new roles for nerves not only in developmental processes but also in adult regeneration after injury. The Knox labs discovery that neurogenic agents can rescue the structure and function of salivary glands damaged by radiation has significant implications for head and neck cancer patients, a population for which radiation is standard. Based on this work she co-founded a startup company, Hydronovo, that is generating a neurogenic product for clinical application. However, in addition to translational research, Dr. Knox continues to be delving into our basic understanding of tissue regeneration for identifying additional mechanisms that can be therapeutically targeted in the future.

Carmem Pfeifer, DDS, PhD
Weight Professor of Restorative Dentistry
Division Head, Biomaterial and Biomedical Sciences, OHSU

Dr. Carmem Pfeifer (DDS, PhD) is Professor and Head of the Division of Biomaterials and Biomedical Sciences at OHSU School of Dentistry. Dr. Pfeifer teaches Dental Materials and serves as an instructor in several Restorative Dentistry pre-clinical disciplines. She has published over 130 research articles in the field of Dental Materials Sciences and Polymer Chemistry and serves as a standing member of the DSR study section for the National Institute of Dental and Craniofacial Research at NIH. She has been recently appointed Associate Editor for the Journal of Dental Research. Dr. Pfeifer's research focuses on the development of innovative polymeric materials for restorative dentistry, and she has received the inventor of the year award from OHSU for the commercial potential of her patented inventions, which have attracted the interest of several potential licensees. She has received over 12 million dollars in funding for her research and career development from the National Institutes of Dental and Craniofacial Research (including the hyper-competitive R35 – Sustaining Outstanding Achievement in Research award), Oregon Medical Research Foundation, National Science Foundation, as well as industry partners. She has mentored over 50 students throughout her career, including dental students and graduate students, and recently received the Mentorship award from the Gender Equity in Academic Health and Medicine for her many contributions to career development and equity at OHSU and beyond.

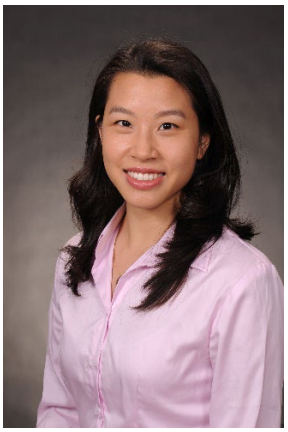
AADOCR Mentoring an Inclusive Network for a Diverse Workforce of the Future (MIND the Future) Awardees

Modupe Coker, PhD
Rutgers School of Dental Medicine

Trained as a dentist in Africa, I have also received some training in public health, statistical analysis and epidemiologic research. As a public health practitioner and epidemiologist, I served as the Technical Advisor to Strategic Information and Monitoring and Evaluation (M&E) units within the AIDS Care and Treatment in Nigeria (ACTION) supported by President's Emergency Plan for AIDS Relief (PEPFAR). In this role, I had the responsibility of designing approaches to assist the rapid scale-up of HIV care and treatment services in an urban and rural areas in Nigeria in which these services previously did not exist. Service scale-up included the conduct of numerous implementation science research evaluations for improved evidence-based practices related to pediatric and adult ART, pediatric and adult HIV-counseling and testing services, tuberculosis care and treatment, prevention of mother to child transmission (PMTCT), and oral health screening. I was involved in training and retraining staff and key personal on program M&E and researchoriented concepts and was instrumental to planning and implementing a 2-week biannual Epidemiology and Biostatistics Course on Statistical Methods in Epidemiology in sub-Saharan Africa.

In integrating distinct aspects of my training (dentistry, public health and epidemiology), my doctoral dissertation research, focused on the role of HIV or immune suppression on the development of oral diseases and bacterial colonization in HIV child-population. We compared the prevalence of dental caries in HIVinfected, HIV-exposed uninfected and HIV uninfected children in Nigeria, West Africa and also characterized and compared oral microbiota diversity between these groups. The information gained from this project is crucial to our understanding of the bacterial communities inhabiting the oral cavity in young children and how it differs across different groups with differing levels of

immunosuppression. As part of the Children's Center at Dartmouth within the New Hampshire Birth Cohort Study (NHBCS), newborns and children under five years are followed up to capture multiple health metrics including immunological, pulmonary, growth, and neurodevelopment outcomes, along with the developing microbiome and other relevant exposures such as diet, heavy metal exposure and others. Building on existing collaboration with several research institutions, I currently lead an existing cohort of HIV infected and exposed children in Nigeria examining the impact of HIV on oral bacterial colonization and caries development.



Jacqueline Burgette, PhD
University of Pittsburgh

Dr. Jacqueline Burgette is a clinician-investigator in oral health services research with a board-certification in pediatric dentistry. Dr. Burgette earned her DMD degree at Harvard School of Dental Medicine as a Presidential Scholar. After receiving her pediatric dentistry certificate and PhD in Health Policy and Management from the University of North Carolina at Chapel Hill, Dr. Burgette joined the faculty of the University of Pittsburgh School of Dental Medicine, where she serves as an Assistant Professor in the Departments of Dental Public Health and Pediatric Dentistry at the School of Dental Medicine.

Dr. Burgette's research addresses oral health disparities in children through health services research. She has over 30 peer-reviewed publications in journals such as the Journal of the American Dental Association, Journal of Public Health Dentistry, Journal of Dental Research, Health Services Research and the American Journal of Public Health. Her work also has received awards by the American Academy of Pediatric Dentistry, American Association of Public Health Dentistry, American Association for Dental Research and the American Public Health Association. Dr. Burgette won the 2020 New Investigators Award from the International Association for Dental Research. She also received the 2021 Junior Faculty Award from the American Dental Education Association for her commitment to mentorship and clinical teaching, especially for students from disadvantaged backgrounds. For her research, Dr. Burgette received funding from the prestigious Robert Wood Johnson Foundation Harold Amos Medical Faculty Development Program. For this 5-year career development program, Dr. Burgette conducts innovative research to understand the role of social networks on oral health of children. As a community-based researcher, she founded "Healthy Teeth, Healthy Me," an initiative that provides virtual oral health education and family activity boxes to vulnerable families. This initiative received funding from the National Network of Libraries of Medicine, University of Pittsburgh Clinical and Translational Institute and the Richard King Mellon Foundation.

Bruno Lima, DDS, PhD
University of Minnesota School of Dentistry

Bruno Lima, DDS, PhD, is an assistant professor at the University of Minnesota, School of Dentistry in the Department of Diagnostic and Biological Sciences. Dr. Lima received his dental degree from the Federal University of Rio Grande do Norte in Brazil before moving to the US to pursue his PhD in Microbiology and Immunology at Loyola University Chicago. His research focuses on understanding how bacteria interact with their environment and the consequence of these interactions on their physiology. As a dentist, Dr. Lima is particularly interested in studying how different environmental interactions affect dental plaque development and whether these interactions can be manipulated to promote oral health. Dr. Lima has authored several peer-reviewed articles and has received a K08 Career Development Award and an R03 grant from the National Institute of Dental and Craniofacial Research (NIDCR). In 2020, he was selected as the recipient of the 2020

American Association for Dental Oral and Craniofacial Research (AADOCR)/Procter & Gamble Underrepresented Faculty Research Fellowship and the AADOCR Mentoring an Inclusive Network for a Diverse Workforce of the Future (MIND the Future). He currently serves as the chair of the AADOCR Committee on Diversity and Inclusion.

Participating NIDCR Program Officers

Lorena Baccaglini
Program Officer, Clinical, Practice Based Research & Epidemiology
Anissa Brown
Chief (Institutional Training, R25), Research Training & Career Development (Extramural)
Preethi Chander
Program Officer, Salivary Biology & Immunology
NIDCR Small Grant Program for New Investigators (R03)
Zhong Chen
Program Officer, Oral & Salivary Cancer Biology
Alicia Chou
Health Specialist, Developmental Biology & Genetics
Belinda Hauser
Intramural Training Director
Hiroko Iida
Program Officer, Oral Health Disparities & Inequities
Lynn King
Director, Division of Extramural Activities (DEA)
Tamara McNealy
Program Officer, Oral Microbiota & Bacterial Disease
Amanda Mellillo
Chief, Oral Opportunistic Pathogens & Viral Disease
Noffisat Oki
Program Officer, Data Science, Computational Biology & Bioinformatics
Nadine Samara
Tenure Track intramural investigator
Rachel Sare
Program Officer (F awards, LRP), Research Training & Career Development (Extramural)
Lillian Shum
Director, Division of Extramural Research (DER), Mineralized Tissue Physiology/Neuroscience, of Orofacial Pain & Temporomandibular Disorders/Dental Materials & Biomaterials/ Small Business Innovation/Small Business Technology Transfer (SBIR/STTR)/ Behavioral & Social Sciences
Shoba Thirumangalathu
Program Officer (K awards, LRP, Diversity Supplements), Research Training & Career Development (Extramural)
Lu Wang
Chief and Director, Translational Genomics Reearch Branch

Participating NIDCR Leadership

Rena D'Souza
Director, NIDCR
Jennifer Webster-Cyriaque
Deputy Director, NIDCR
Alisa Machalek

Director, Office of Communications and Health Education, NIDCR
Kelly Ten Hagen
Senior Investigator, NIDCR Intramural Research - Developmental Glycobiology
Jay Chiorini
Senior Investigator, NIDCR Intramural Research Adeno-Associated Virus Biology
Niki Moutsopoulos
Senior Investigator, NIDCR Intramural Research Oral Immunity & Infection
Jacqueline W. Mays
Lasker Clinical Research Scholar, NIDCR Intramural Research Oral Immunobiology; NIDCR Dental Clinical Research Fellowship Program
Anna Nicholson
Director, Office of Clinical Trials Operations & Management, NIDCR
Janice S. Lee
Deputy Director, NIDCR Intramural Clinical Research
Wendy Knosp
Chief, NIDCR Science Policy and Planning Branch, Office of Science Policy and Analysis (OSPA)
Hosam Alraqiq
Health Science Analyst, Office of Science Policy and Analysis (OSPA); NIDCR Dental Public Health Residency Program
Lillian Shum
Director, NIDCR Extramural Research
Lynn King
Director, NIDCR Division of Extramural Activities

Oral Breakout Presentations
October 10th | 12:15PM ET
*See **Abstract Booklet** link on website for details.*

Developmental Biology & Genetics A

Azeez Alade	Integration of Genomics and Epigenomics Data Identify Novel Cleft Palate Loci
Mahfujul Khan	Increased Apoptosis of Runx2 Deficient Osteoblast is Associated with Cleidocranial-Dysplasia Skull Defect
Sahin Naqvi	Tuning Transcription Factor Levels to Understand Dosage Sensitivity in Craniofacial Development
Abeera Sikandar	Ring-box ubiquitin ligase regulate the turnover of Specificity protein-7
Mingyi Zhang	ARID1B maintains mesenchymal stem cell quiescence via BCL11B-mediated non-canonical Activin signaling

Developmental Biology & Genetics B

Hope Healy	Discovery of craniofacial genes driving craniofacial alterations through an evolutionary mutant model
Alexander Kiepas	Extracellular fluid viscosity alters cellular metabolism to fuel enhanced migration
Kayla McCullough	Essential components of SUMOylation are ubiquitously expressed during skeletogenesis

Prerna Sehgal	Role of Runx2 arginine methylation in functional interaction with its transcriptional co-factors
Emma Wentworth Winchester	Developmental cell type specific enhancers in craniofacial morphology and disease
Nicole Zur Nieden	miR361 enhances neural crest osteogenesis via modulation of non-canonical Wnt signaling

Mineralized Tissue Physiology A

Jonathan Banks	NG2/CSPG4 Transcriptionally Modulates Mandibular Chondrocyte Osteogenic Gene Expression During Endochondral Fracture Healing
Cristiane Franca	Perivascular cells mediate collagen stiffness and architecture sensing in blood vessels
Kasey Leung	Endogenous Protease Mediated Release of Engineered Extracellular Vesicles
Satoru Shindo	Piezo1-Expressed on Osteoclasts Down-regulates RANKL-Induced Bone Resorption in Periodontitis
Mauricio Sousa	Biomimetic regulation of osteoclastogenesis by osteocytes in engineered bone on-a-chip
Ligia Schmitd	Schwann Cell Reprogramming in Peripheral nerve Regeneration

Mineralized Tissue Physiology B

Faimeena Farheen	Runx2 gene deletion in chondrocyte does not affect the development of temporomandibular joint
Shawn Hallett	Deletion of Runx2 in Cranial Base Synchondrosis Chondrocytes Causes Midfacial Hypoplasia
Genevieve Romanowicz	Creation of Mineralized and Vascularized Bone-like Organoids Using High-throughput Bioprinting
Mairobys Socorro	Phosphate changes protein-protein interactions between Osterix and Trps1 in mineralization-competent cells
Luciana Yamamoto de Almeida	Heterochronic parabiosis reverses age-related impaired regeneration of large bone defects
Dayron Leyva Rodriguez	Treponema denticola Protease Dentilisin is Crucial for Aortic Endothelium Dysfunction

Cancer Biology

Areeg Elmusrati	Neutrophils as a Potential Therapeutic Target in Head and Neck Cancer
Charles Holjencin	Optimization of a Peptide Carrier for Improved Efficacy and Cell-Specificity
Christina Kingsley Ayse Sahan	Oral Epithelial Adherens Junctions Recruit RNAi Machinery to Maintain Homeostasis Spatial compartmentalization of mTORC1 to the nucleus to regulate transcription and impact nuclear Erk signaling
Jenny Hsin	Investigating Neuroblastoma Initiation Through the Lens of Neural Crest Development

Clinical Research, Epidemiology, & Health Disparities

Elizabeth Abe	Unusual Clinical Presentation of Oral Lichen Planus- a Case Report
Julia Bond	Preconception periodontitis and risk of spontaneous abortion in a prospective cohort study
Omotayo Francis Fagbule	Nigeria's Public Smoking Ban and Adolescents' Secondhand-Smoke Exposure: A Repeated Cross-Sectional Study
Shulamite Huang	The Impact of COVID-19 Dental Office Closures on Health Care System Burden from Dental Needs Among Publicly Insured Children in New York State
Amina Ogunlayi	A Ten-year Audit of Oral Ulcerations at a Tertiary Hospital
Abimbola Oladayo	Activating Community Voices: Cleft, Stigma and Genomic Risk Information in Africans

Temporomandibular, Neuroscience & Pain

Cherice Hill	Normative 3D Mandibular and TMJ Kinematics in Orthognathic Asymptomatic and Symptomatic Patients
Karen Lindquist	Diversity in mechanically-activated current responses for neurons innervating masseter muscle
Nicole Mercer Lindsay	Understanding and enhancing motor cortex stimulation-induced analgesia
Michael Miao	Temporomandibular Joint Disorder Pathogenesis: Bench to Bedside Exploration at NIH
Dustin Mueller	Ice-free Cryopreservation of Fresh TMJ Disc in a Pig Model
Cameron Randall	Pediatric Dentists' Perspectives on and Assessment of Procedure-Related Pain

Virus & Immunology

Carla Alvarez Rivas	Homeostatic and Pathogenic development of periodontal CD4+ Memory T cells Characterization of initial immune response by Macrophages and Neutrophils, and their role in host-pathogen interactions
Anyelo Diaz	Characterization of initial immune response by Macrophages and Neutrophils, and their role in host-pathogen interactions
Callahan Katrak	Partners in Grime: Exploring the role of catalase in synergism between Candida albicans and Streptococcus mutans
Zavier Eure	Differences in Pg OMV Mediated Responses due to Microbial Sphingolipid Status
Flavia Saavedra	Triggering mouth-resident antiviral T cells potentiates experimental periodontitis
Cole Matrishin	Phages are unrecognized players in the ecology of the pathogen Porphyromonas gingivalis

Salivary Biology, Immunology, & Behavioral and Social Sciences

Szilvia Arany	Anticholinergic burden is associated with dry mouth and minor saliva secretion
Achamaporn Punnanitinont	TLR7 activation of age-associated B cells mediates disease in a mouse model of primary Sjogren's disease
Rei Sekiguchi	Salivary Gland Tissue Recombination Can Alter Cell Fate
Louise Morais Dornelas-Figueira	Candida albicans is associated with root caries in older adults
Jacqueline Burgette	Mother's Social Networks and Children's Oral Health in Northern Appalachia
Astha Singhal	Synthetic indices of Medicaid adult dental benefits' coverage and payment generosity

Oral Microbiota

Christian Ahearn	A Streptococcus gordonii Adhesin Binds to Bacterial Cell Surface Sialic Acid Sugars
Kevin Matthew Byrd	The Host Biogeography of Polybacterial Intracellular Coinfection
Alexandra Peterson	Characterization of a Novel Zinc Export System in Streptococcus mutans
Zhi Ren	Selenomonas sputigena mediates spatial structure and biofilm virulence in vivo
Zachary Taylor	Moonlighting Meta: The Main Carbohydrate Transporter in Oral Streptococcus can Alter Fitness and Virulence
Bridgette Wellslager	Heat-Shock-Protein-27 is an Important Regulator in Porphyromonas gingivalis-Driven, Redox-Dependent Selective Autophagy

Data Science & Biomaterials

Sam Clinard	Towards Determining Accurate Acoustic Properties of Skull Bone
Devatha Nair	Smart Materials to Combat Biofilms in Composite Restorations
Jay Patel	Linking Electronic Dental Records with Electronic Health Records Between Temple University Kornberg School Of Dentistry and Temple Health System
Caroline Szczepanski	Utilizing multiple hydrogen-bonding site monomers to optimize dental adhesive networks
Vidhya Venkateswaran	EHR-Data And Polygenic Scores Reveal The Interplay Of Serum Bilirubin, Smoking, And Cancer

Poster Assignments

*See **Abstract Booklet** link on website for details.*

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Unusual Clinical Presentation of Oral Lichen Planus

2 Christian Ahearn
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A Streptococcus gordonii Adhesin Binds to Bacterial Cell Surface Sialic Acid Sugars

3 Sarah Aitken
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Transcriptional Regulation of Antigen I/II Adhesins in the Oral Commensal Streptococcus gordonii

4 Natalie Andras
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Functional Evidence from Gene Editing Verifies Ectomesenchymal Cementoblast Origin

5 Tyra Avery
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The Ubiquitination Pat hway is Involved in Chondrocyte Differentiation and Endochondral Ossification

6 Rucha Bapat
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Investigating the Enamel Phenotype in Novel Ambn-IRESCre/Smad4fl/fl Mouse Model

7 Evan Brooks
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Ciliary protein C2cd3 is required for the patterning of mandibular musculoskeletal tissues

8 Anyelo Diaz
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Characterization of initial immune response by Macrophages and Neutrophils, and their role in host-pathogen interactions

9 Lisa Duncan
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Interrogation of 16p11.2 Region Gene Perturbation

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Perivascular Mural Cells Regulate Vascular Function in Stiff Cancer-Associated Tumor Microenvironments On-a-chip

11 Qiman Gao
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Epigenetic Biomarkers for Chronic Painful Temporomandibular Disorder: A Pilot Study

12 Shawn Hallett
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Deletion of Runx2 in Cranial Base Synchondrosis Chondrocytes Causes Midfacial Hypoplasia

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Optimization of a Peptide Carrier for Improved Efficacy and Cell-Specificity

14 Kei Katsura
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Connecting Neural and Tooth Development in Pediatric Neurodevelopmental Disorders

15 Courtney Lucas
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Targeted Studies of Temporomandibular Joint Disorder (TMD): Immune System Surveillance Evasion Mechanism(s)

16 Carly Martin Martin
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HAT/DESC proteases and their role in epithelial homeostasis in the oral cavity

17 Cole Matrishin
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Phages are important unrecognized players in the ecology of oral pathogen Porphyromonas gingivalis

18 Brianyell McDaniel Mims
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Porphyromonasgingivalis Invades Brain Microvascular Endothelial Cells and Impacts Glutamine Metabolism for Intracellular Survival

19 Claire Mills
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Unraveling Field Cancerization to Improve Early Detection and Recurrence Prevention in Oral Cancer

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ZG16B expression is functionally critical in normal human exocrine cells

21 Sasirekha Narayanasamy
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Resolving the N-terminal determinants underlying STIM2 activation by Molecular Dynamics Simulation

22 Tiffany Nguyen
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Critical Role of Fibrinolysis in Hematopoietic Recovery After Myelosuppresion

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Acid Corrosion at Interfacial Environment between Dental Material and Oral Bacteria with Electrochemical Sensor

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A ten year audit of oral ulcerative leisons at a teritary facility in Ibadan, Nigeria

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Transcriptomic and histologic evaluation of the murine submandibular gland after radiation exposure

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Characterization of a Novel Zinc Export System in Streptococcus mutans

27 Aline Petrin
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DNA methylation profiles of monozygotic twins discordant for orofacial clefts

28 Carlos Pinero Robles
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Comparative Study on the Osteogenic Potential of Condylar Cells of the Goat TMJ

29 Thalyta Amanda Pinheiro Ferreira
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Increasing Non-classical Monocytes Reduces Osteoclastogenesis and Attenuates Periodontal Bone Loss

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TLR7 activation of age-associated B cells mediates disease in a mouse model of primary Sjogren's disease

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Selenomonas sputigena mediates spatial structure and biofilm virulence in vivo

32 Flavia Saavedra
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Triggering gingival-resident antiviral T cells potentiates experimental periodontitis

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Spatial compartmentalization of mTORC1 to the nucleus to regulate transcription and impact nuclear Erk signaling

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Role of Runx2 arginine methylation in functional interaction with its transcriptional co-factors

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Piezo1-Expressed on Osteoclasts Down-regulates RANKL-Induced Bone Resorption in Periodontitis

36 Natalie Silver
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Personalized therapeutic mRNA nano-vaccines are effective across translational models of head and neck cancer

37 Mairobys Socorro
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Phosphate changes protein-protein interactions between Osterix and Trps1 in mineralization-competent cells

38 Logan Stone
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Fluorescent Anti-EGFR Imaging to Access OSCC Bone Invasion In Vivo

39 Neeti Swarup
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Multi-Faceted Attributes of Salivary Cell-free DNA as Liquid Biopsy Biomarkers for Gastric Cancer Detection

40 Caroline Szczepanski
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Utilizing self-complementary, multiple hydrogen-bonding site monomers to optimize adhesive networks

41 Harim Tavares Dos Santos
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The Role of Tuft Cells in Salivary Gland Immunity

42 Zachary Taylor
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Moonlighting Meta: The Main Carbohydrate Transporter in Oral Streptococcus can Alter Fitness and Virulence

43 Cassandra Villani
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Transcriptome analysis indicates a stimulatory role of DMP1 in periodontal ligament stem cells and promotes osteoblast differentiation

44 Rong (Rose) Wang
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Machine Learning Analysis of Microtensile Bond Strength of Dental Adhesives

45 Darien Weatherspoon
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Epidemiologic Trends in Implant Prevalence among Older Adults in the United States, 1999-2020

46 Emma Wentworth Winchester
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Developmental cell type specific enhancers in craniofacial morphology and disease

48 Hyejin Yoon
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Developing an oral cavity interfacial tissue model for ex vivo co-culture with the oral microbiome

50 Andrew Zhang
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Visualization of Anthrax Toxin Intoxication in Mice

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Thank you to the incredible staff at Rose Li and Associates for helping make this Symposium a reality.

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