

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

May 2016

ACTIVITIES OF THE NIDCR DIRECTOR

Since the last meeting of the National Advisory Dental and Craniofacial Research Council on January 22, 2016, NIDCR Director Martha J. Somerman, DDS, PhD, maintained an active schedule of attending research symposia, delivering presentations to stakeholders, and meeting with working groups and other organizations.

Bidirectional Communication

During her tenure as Director of NIDCR, Dr. Somerman has emphasized that the knowledge that dental practitioners gain from clinical practice has the potential to influence research directions, and she is actively seeking ways to encourage input from dental practitioners, as well as other health care providers. In 2015, NIDCR partnered with the American Dental Association to learn the best ways to engage dentists in bidirectional communication. In the February issue of the *Journal of the American Dental Association* (JADA), Dr. Somerman and NIDCR Science Communication Branch Chief David Vannier, PhD, published a guest editorial to encourage dentists to become active participants in research by communicating their clinical observations. In preparation for release of the editorial, JADA Editor Michael Glick, DMD, interviewed Dr. Somerman on camera on January 11, and in February, JADA released the video of the interview, along with the journal article, "Integrating the domains of dentistry and research."

AADR Annual Meeting

From March 16 to 19, Dr. Somerman attended the 2016 Annual Meeting of the American Association for Dental Research (AADR) in Los Angeles, California. Dr. Somerman was joined at the meeting by staff members from the Center for Clinical Research, Division of Extramural Activities, Division of Extramural Research, Division of Intramural Research, Office of Science Policy and Analysis, and Office of Communications and Health Education. This annual meeting provides meaningful opportunities for NIDCR staff to engage with scientific investigators, research trainees, and students. NIDCR staff gave presentations, chaired symposia, conducted training events, and participated as panelists.

On March 16, Dr. Somerman took part in many NIDCR-sponsored events at the AADR meeting. She began the day as a table mentor at the AADR/NIDCR Mentoring and Networking Breakfast. At this event, students and postdoctoral fellows discussed research and career development with over 20 mentors, including researchers and NIDCR program directors. After the breakfast, Dr. Somerman introduced the NIDCR-supported Trainee Research Poster Presentations Session, and later in the morning, she moderated the NIDCR-supported Trainee Oral Presentations. There were more than 60 poster presentations and 10 oral presentations from NIDCR-supported diversity supplement recipients, trainees, fellows, and career development awardees. The oral session provided an opportunity for selected trainees to present a four-minute synopsis of their research to colleagues, mentors, and NIDCR staff. In the afternoon, Dr. Somerman welcomed and introduced training directors at the NIDCR Training Directors Meeting. The previous day at the AADR Faculty Development Workshop, NIDCR's Research Training and Career Development Branch (RTCDB) Chief Lynn King, PhD, presented "Identifying a pathway to success through NIH/NIDCR—Funding opportunities for new investigators."

On March 17, Dr. Somerman provided an update on NIDCR activities at the AADR Institutional Sections, Deans and Research Deans Meeting. Also on that day, training directors at NIDCR offered "NIDCR Opportunities for Dental, Oral, and Craniofacial Research Career Pathways" for both PhD Scientists and Dentist Scientists. The purpose of these two meetings was to educate potential trainees about the

resources available at NIDCR. Intramural Training Director Deborah Philp, PhD, gave a presentation with Clinical Director Janice Lee, DMD, MD, MS, RTCDB Chief Lynn King, PhD, and Extramural Training Officer Leslie Frieden, PhD, on research training opportunities. In addition, the training directors and clinical director were available in the NIDCR booth for one-on-one consultations for training candidates and current awardees.

Also on March 17, Jason Wan, PhD, acting director of the Dental Materials and Biomaterials Program in NIDCR's Division of Extramural Research, co-chaired a symposium titled "Moving Dental Composites Beyond Methacrylate-based Resins," which was about the NIDCR novel dental composite materials initiative. Six teams presented updates about their research accomplishments and shared examples about how they collaborated with each other to develop polymers and methods for materials testing. Later in the day, Marilyn Moore-Hoon, PhD, and Crina Frincu, PhD, of NIDCR's Division of Extramural Activities, hosted a meeting on "Peer Review: Overview and What's New."

On March 18 at the symposium "Establishing a Learning Health System within the National Dental Practice-Based Network," Dr. Somerman gave a presentation titled "NIDCR: Advancing the Integration of Big Data, Precision Medicine and Clinical Practice." David Clark, PhD, of NIDCR's Behavioral and Social Sciences Research Branch organized a symposium called "Advances in Big Data: Implications for Dental Research." Bruce Dye, DDS, MPH, of NIDCR's Office of Science Policy and Analysis presented on NHANES, linkage data, and NIDCR funding opportunities related to big data. Dr. Clark also organized "Implementation Science and Oral Health: Moving Evidence into Practice" with Dawn Morales, PhD, also of BSSRB. The goal of the symposium was to discuss the dissemination research focus on how, when, and why research evidence spreads throughout organizations, healthcare practice, policy, and front-line workers.

Other Activities

During the last four months, Dr. Somerman made several presentations:

- On February 23, Dr. Somerman presented a talk titled "NIDCR: Enhancing Oral Health through Research and Innovation" at Advocacy Day on Capitol Hill, which was hosted by AADR and Friends of the NIDCR (FNIDCR). AADR took on FNIDCR's programmatic activities when FNIDCR ceased operations at the end of 2015. Dr. John Kusiak, acting deputy director of NIDCR, Dr. Morgan O'Hayre, special assistant to the director, and Dr. Jonathan Horsford, acting director of the Office of Science Policy and Analysis, and representatives from six patient advocacy groups were present for the briefing.
- On April 12, Dr. Somerman gave a presentation about research and innovation at the American Dental Education Association's Advocacy Day on Capitol Hill.
- On April 14, at the 16th Annual Osteogenesis Imperfecta Foundation Scientific Meeting, which was called "Novel Targets and New Therapeutic Strategies in Treating OI," she presented a talk titled "Periodontal Manifestations of Osteogenesis Imperfecta."

Other notable activities included:

- Dr. Somerman provided an update on NIDCR activities and research highlights to the Ad Hoc Group for Medical Research during their annual visit with NIDCR at the NIH campus on February 3.
- On April 11, Dr. Somerman participated in the NIDCR Fellows Scientific Training. More details about this event are found in "NIDCR Fellows Scientific Training" on page 12.

BUDGET UPDATE

FY 2016

The FY 2016 enacted budget for NIDCR is \$415,582,000. This amount has been reduced by a transfer out (for HIV/AIDS) for \$2.186 million, leaving NIDCR with an operating level of \$413,396,000.

FY 2017

The President's Budget Request would provide \$413,396,000 for NIDCR. See the table below for distribution by budget mechanism. The complete NIDCR Budget Justification is available for viewing via <http://www.nidcr.nih.gov/AboutUs/BudgetCongressionalStatements/CongressionalJustifications/Documents/NIDCRBudgetCJFY17.pdf>.

**National Institute of Dental and Craniofacial Research
Budget Mechanism - Total
(Dollars in Thousands)**

MECHANISM	FY 2016 Operating Level		FY 2017 President's Budget	
	No.	Amount	No.	Amount
<u>Research Grants</u>				
Research Projects				
Noncompeting	414	\$197,585	396	\$189,215
Supplements	(24)	4,000	(24)	4,000
Competing	149	59,513	136	66,806
Subtotal, RPGs	563	261,098	532	260,021
SBIR/STTR	30	10,764	32	11,300
Research Project Grants	593	271,862	564	271,321
Research Centers	3	7,281	0	4,146
Other Research				
Research Careers	47	6,257	54	7,135
Other	18	2,090	13	1,147
Other Research	65	8,347	67	8,282
Total Research Grants	661	287,490	631	283,749
Total Research Training	242	11,945	242	11,945
Research & Development Contracts	26	21,494	26	23,425
Intramural Research		66,221		67,500
Research Management and Support		26,246		26,777
Total, NIDCR		413,396		413,396

HHS/NIH UPDATE

NIH Director Presents Fiscal Year 2017 Budget Request to Congress

In March, NIH Director Francis Collins, MD, PhD, appeared before the House Appropriations Subcommittee on Labor, HHS, Education, and Related Agencies and presented the fiscal year 2017 budget request. In April, Dr. Collins presented the budget request to the Senate Appropriations Subcommittee on Labor, HHS, Education, and Related Agencies. Research topics included the Precision Medicine Initiative, the BRAIN Initiative, prescription drug abuse, the Zika virus, and the Cancer Moonshot.

NIH Establishes Framework for Carrying Out Mission in 2016 to 2020

NIH released the *NIH-Wide Strategic Plan, Fiscal Years 2016–2020: Turning Discovery Into Health*, which will ensure that the agency remains well positioned to capitalize on new opportunities for scientific exploration and to address new challenges for human health. More than 450 stakeholders provided written input for the strategic plan, and more than 750 took part in interactive webinars.

NIH Releases National Pain Strategy

In March, the Interagency Pain Research Coordinating Committee (IPRCC) published the National Pain Strategy. The 83-page report addresses the need for a population health-level strategy for pain and will shape future research endeavors. The IPRCC is a federal advisory committee created by the Department of Health and Human Services to enhance pain research efforts and promote collaboration across the government, with the ultimate goals of advancing the fundamental understanding of pain and improving pain-related treatment strategies.

11th Annual NIH Pain Consortium Symposium

On May 31 and June 1, the NIH Pain Consortium will convene the 11th Annual NIH Pain Consortium Symposium on Advances in Pain Research. The symposium will feature keynote speakers David Clark, MD, PhD, of Stanford University and Rob Gereau, PhD, of Washington University, as well as expert panel sessions. Members of the extramural scientific community, the NIH scientific community, health care providers, and the public are invited to attend or view the NIH videocast (<http://www.videocast.nih.gov>).

Precision Medicine Initiative Summit

Dr. Collins joined President Barack Obama at the White House on February 25 for the Precision Medicine Initiative (PMI) Summit. NIH's charge is to develop the PMI Cohort Program, which will be a landmark longitudinal research study to expand the understanding of ways to improve health and treat disease. By the end of this year, NIH will enroll 79,000 people into the PMI Cohort Program, and by the end of 2019, one million people will be enrolled.

Eric Dishman Becomes Director of Precision Medicine Initiative Cohort Program

In April, Eric Dishman was selected to be director of the PMI Cohort Program. As a social scientist and researcher, as well as an important member of the PMI Working Group, Mr. Dishman will now lead NIH's effort to build the PMI cohort of one million volunteers. Previously, Mr. Dishman was a vice president and Intel Fellow of Intel Corporation's Health & Life Sciences Group. He is recognized as a global leader in healthcare innovation.

Blue Ribbon Panel for Cancer Moonshot

In April, a blue ribbon panel was selected for Vice President Joe Biden's National Cancer Moonshot Initiative. To inform the scientific direction and goals, the National Cancer Institute (NCI) selected a panel of scientific experts, cancer leaders, and patient advocates. The panel will serve as a working group of

the presidentially appointed National Cancer Advisory Board (NCAB) and will provide scientific guidance from thought leaders in the cancer community. Scientific members of the panel represent a spectrum of scientific disciplines, including biology, immunology, genomics, diagnostics, bioinformatics, and cancer prevention and treatment. Scientific members also include investigators with expertise in clinical trials and cancer health disparities. Three co-chairs were named for the panel:

- Tyler Jacks, PhD, who is chair of the National Cancer Advisory Board, and director of the Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology, Cambridge
- Elizabeth Jaffee, MD, who is professor and deputy director for translational research at the Sidney Kimmel Comprehensive Cancer Center, Johns Hopkins University School of Medicine, Baltimore
- Dinah Singer, PhD, who is NCI's acting deputy director and director of NCI's Division of Cancer Biology

NIH Creating Atlas of Human Malformation Syndromes in Diverse Populations

Researchers with the National Human Genome Research Institute collaborated with physicians and medical geneticists around the world to create the Atlas of Human Malformation Syndromes in Diverse Populations. When complete, the atlas will have photos of physical traits of people with many different inherited diseases around the world, including Asia, the Indian subcontinent, the Middle East, South America, and sub-Saharan Africa. Previously, the only available diagnostic atlas for health care providers featured photos of patients with northern European ancestry. The free electronic atlas was announced online in Genetics in Medicine.

NIH Celebrates Pi Day

On March 14, NIH held a Pi Day Celebration with events and activities that bring attention to the role of the quantitative sciences in overcoming challenges in biomedical science.

NIDCR UPDATE

Institute News

NIDCR Supports Seven Studies to Determine Biological and Physiological Effects of Electronic Cigarette Aerosol Mixtures

In March, NIDCR awarded seven research grants totaling more than \$2 million to improve the understanding of the effects of electronic cigarette aerosol mixtures on the oral cavity. The following projects were funded (RFA-DE-16-004 and RFA-DE-16-005):

- Deposition profile and toxicology of e-cigarettes in the oral epithelium; Principal Investigator: Steven Belinsky, Lovelace Biomedical and Environmental Research; 1R01DE026013-01
- E-cigarette use as a modifier of oral host defense and microbiome in young adults; Principal Investigators: Shyam Biswal; Claire Fraser; Mary Ann Ye Jabra-Rizk; Johns Hopkins University; 1R01DE026031-01
- Genetic, epigenetic, and transcriptomic effects of e-cig aerosol on oral epithelium; Principal Investigator: Ahmad Besaratinia; University of Southern California; 1R01DE026043-01
- Modulation of oral microenvironment by e-cigarette aerosol mixtures; Principal Investigators: Deepak Saxena and Xin Li; New York University; 1R01DE025992-01
- Biology of the Oral Epithelium of E-Cigarette Smokers; Principal Investigators: Ronald Crystal and Jason Mezy; Weill Medical College of Cornell University; 1R56DE026027-01
- Effect of e-cigarettes on oral tissues in health and disease; Principal Investigators: Tara Aghaloo and Sotirios Tetradis; University of California, Los Angeles; 1R21DE025982-01
- Perturbation of craniofacial morphogenesis, healing, and regeneration by e-cigarette aerosol mixtures; Principal Investigators: Rene Olivares-Navarrete and Amanda Dickinson; Virginia Commonwealth University; 1R56DE026024-01

NIDCR Joins Other NIH Institutes in Seeking Zika Virus Research Applications

In February, NIDCR and other NIH Institutes issued an expedited funding mechanism called "Rapid Assessment of Zika Virus (ZIKV) Complications." The virus has been linked to infants born with an abnormally small head resulting from an underdeveloped and/or damaged brain.

White House Selects NIDCR Grantees for PECASE Awards

On May 4, two NIDCR grantees—Samantha A. Brugmann, PhD, of the Cincinnati Children's Hospital Medical Center, and Muhammad F. Walji, PhD, of the University of Texas School of Dentistry in Houston—were honored at an NIH reception on the NIH campus for the prestigious Presidential Early Career Award for Scientists and Engineers (PECASE). Later in the day, a government-wide awards ceremony was held in Washington, DC, and on May 5, awardees were invited to visit the White House. Dr. Brugmann's research focuses on craniofacial development, and Dr. Walji's projects apply informatics approaches to the improvement of oral health care delivery. The PECASE award is the highest honor bestowed by the U.S. government to outstanding scientists and engineers beginning their independent careers. Awardees were nominated in 2013.

Crain's Cleveland Business Selects Suchitra Nelson, PhD, as 2016 Health Care Hero

In February, *Crain's Cleveland Business* selected NIDCR grantee Suchitra Nelson, PhD, of Case Western Reserve University to be a 2016 Health Care Hero. Every year, *Crain's Cleveland Business* honors those providing exceptional service and dedication to Northeast Ohio's health care sector. Dr. Nelson's research aims to reduce oral health disparities among children. One of her recently awarded NIDCR research projects is "Multi-Level Interventions to Reduce Caries Disparities in Primary Care Settings," which is part of the NIDCR Oral Health Disparities and Inequities Research Consortium. In addition, NIDCR is funding "Family Intervention with Caregivers of Children with Dental Needs," which is a multi-site randomized clinical trial to be conducted in schools located in the states of Washington and Ohio.

Four Young Researchers Share Their NIDCR Research Stories

Before applying to graduate or professional school, or after starting dental school, young researchers may apply for training awards to spend one or two years working with investigators at NIDCR. One of these biomedical research programs is called the NIH Postbaccalaureate Intramural Research Training Award Program. Recently published on the NIDCR website are stories about Loretta Grey Cloud, Matthew Moore, and Ellis Tibbs, who hope to inspire undergrads to apply for a training award at NIDCR. Another story was published this winter in video form by LabTV. The video interview called "At the NIH Clinical Center: Molly Hague searches for a cure for oral cancer" is about an NIDCR researcher who was part of the NIH Medical Scholars Research Program. Ms. Hague worked in the Cell Biology Section of NIDCR's Laboratory of Cell and Developmental Biology from 2014 to 2015 before returning to the University of California, San Francisco, to complete her education at the School of Dentistry.

Gabriella Miller Kids First Pediatric Research Program

On March 24, the funding opportunity announcement called "Discovery of the Genetic Basis of Childhood Cancers and of Structural Birth Defects: Gabriella Miller Kids First Pediatric Research Program (X01)" was released. Investigators may apply for access to whole genome sequencing at a Kids First-supported sequencing center to elucidate the genetic contribution to childhood cancers, and to investigate the genetic etiology of structural birth defects. The data will become part of the Gabriella Miller Kids First Pediatric Data Resource (also called the Kids First Data Resource) for the pediatric research community. Emily Harris, PhD, Steven Scholnick, PhD, and Kathryn Stein, PhD, of the Translational Genomics Research Branch and Lillian Shum, PhD, director of NIDCR's Division of Extramural Research participate in the NIH staff working group for the Gabriella Miller Kids First Pediatric Research Program.

Small Research Grants for Data Analysis

On January 8, the funding opportunity announcement called "NIDCR Small Research Grants for Data Analysis and Statistical Methodology Applied to Genome-wide Data (R03)" was reissued as PAR-16-070. It supports statistical analysis of existing genome-wide data and statistical methods development, relevant to human dental, oral, and craniofacial conditions or traits. Data may come from dbGaP, the Gabriella Miller Kids First Program, or the parent study.

Microbiome Research Activities

Dwayne Lunsford, PhD, director of the Microbiology Program in NIDCR's Division of Extramural Research serves as the NIDCR representative on the Trans-NIH Microbiome Working Group and attends the monthly work sessions. Most recently, he has joined the writing group that has been charged with producing a paper to appear in *Cell Host and Microbe* on the status of human microbiome research at NIH. This paper will be the official NIH response to the recent White House Office of Science and Technology Policy data call on trans-agency microbiome research activities. In addition, he joined the sub-group that will organize the 2017 Microbiome Futures Meeting to be held August 16-18, 2017.

Proceedings Published for the 7th World Workshop on Oral Health & Disease in AIDS

Isaac Rodriguez-Chavez, PhD, co-led and co-organized the 7th World Workshop on Oral Health & Disease in AIDS (Hyderabad, India, 6–9 held in November 2014), which was co-sponsored by NIDCR through a U13 cooperative agreement. The proceedings from this workshop have been published in a special issue of *Oral Diseases* titled "The Mouth and AIDS: Lessons Learned and Emerging Challenges in Global Oral Health."

Oral Health Coordinating Committee Publishes Strategic Framework 2014-2017

The United States Public Health Service's Oral Health Coordinating Committee, with representatives from NIDCR and several other federal agencies, directs and coordinates a broad range of oral health policy, research, and programs within the Public Health Service, across federal agencies, and between the public and private sectors. Current and former NIDCR staff, including current staff Drs. Margo Adesanya and Bruce Dye, and former NIDCR staff Drs. Isabel Garcia and Khara Ramos, participated in the development of the HHS Oral Health Strategic Framework 2014-2017. The Framework reflects the collective deliberations and next steps proposed by HHS and other federal partners to realize the HHS oral health vision to eliminate oral health disparities. The Framework builds upon and outlines a strategic alignment of HHS operating and staff divisions' resources, programs, and leadership commitments to improve oral health with activities of other federal partners.

NIDCR Offers Researchers Access to Human Genomic Datasets

NIH developed the Database of Genotypes and Phenotypes (dbGaP) to archive and distribute the data and results from investigations of the interaction between genotypes and phenotypes in people. The NIDCR website offers an easy way to access dbGaP through the Genomics Resources part of the "Tools for Basic Researchers" web page. Recent data releases from NIDCR-supported projects include the following:

- NIDCR Sjögren's International Collaborative Clinical Alliance: Center for Inherited Disease Research Genome-Wide Genotyping
- Center for Craniofacial and Dental Genetics: Genetics of Orofacial Clefts and Related Phenotypes
- Whole Exome Sequencing in Multiplex Cleft Families
- Genetic Analysis of Normal Human Facial Variation

Personnel Update

Several Staff Members Join Dental Clinical Research Core

The Dental Clinical Research Core has hired several new staff members in the past year, including the following:

- Hospital Dentist Robert Range, DDS, received his DDS from New York University College of Dentistry. He then completed a residency in Hospital Dentistry at the San Diego VA Medical Center, and a fellowship in clinical simulation at the San Francisco VA Medical Center, before joining NIDCR in fall of 2015.
- Medical Officer Brian Walitt, MD, MPH, received his medical degree from the SUNY Health Science Center at Syracuse in New York, and was board-certified in internal medicine in 2001 and in rheumatology in 2004. He was an associate professor at Georgetown University before joining the National Institute of Nursing Research as a medical officer in 2013, a post he still holds jointly today. He was also director of Clinical Pain Research for the National Center for Complementary and Integrative Health before joining NIDCR in January 2016.

- Staff Clinician Bonnie Gitman, DMD, MD, received her DMD from McGill University in Montreal, Canada, and her medical degree from Mount Sinai School of Medicine in New York City. She then completed an internship in general surgery, and a residency in oral and maxillofacial surgery at the Mount Sinai Hospital in New York. She was an assistant clinical professor at New York University College of Dentistry before joining the NIDCR Clinic in the spring of 2015.
- Getriz (Jet) Martin, BSN, earned her nursing degree from Penn Valley Community College and her bachelors from Excelsior. She is a Major in the U.S. Army Nurse Corps Warrior Transition Unit. She has been at the NIH since 2008 working as a nurse in the Clinical Center Department of Nursing in the Pediatric Medical Genetics clinic. She joined NIDCR in January 2016 as a nurse specialist on the dental clinic team in support of the third molar protocol.
- Michelle Millwood, RN, received her nursing degree from Bowie State University in Maryland. She has more than seven years of research experience, including urology and nursing research. She joined NIDCR as a nurse specialist offering clinical research support in pediatric and adult clinical trials related to rare bone diseases.
- Esther Akpa, MPH, MSN, RN, received her master's in public health and master's in nursing from the University of Texas Health Science Center. She has more than 16 years of experience in clinical research, including protocol administration management and international trial management. Her specialty is interventional cancer research. She is currently working with the Skeletal Clinical Studies Unit, Craniofacial Research Team, and the Adeno-associated Virus Biology Section in the Dental Clinic.

This spring, the *NIH Catalyst* magazine and the NIH Clinical Center newsletter both published articles about the dental clinic's increased capacity for research collaborations and oral health consults.

Kevin D. McBryde, MD, Joins NIDCR's Division of Extramural Research as Medical Officer

Kevin D. McBryde, MD, joined the Division of Extramural Research as a medical officer. He will provide oversight for the DER clinical research program by advising on clinical research regulations, policies, and standards. Dr. McBryde came from the National Institute of Diabetes and Digestive and Kidney Diseases, where he had been a program director at the Office of Minority Health Research Coordination since 2010. Prior to that, he was medical officer at the Center for Devices and Radiological Health at the Food and Drug Administration for three years. Dr. McBryde earned his medical degree from Emory University in 1994. He completed his residency training in general pediatrics at St. Christopher's Hospital for Children, Philadelphia, and pediatric nephrology at University of Michigan, Ann Arbor. He held faculty positions in pediatrics at Temple University School of Medicine, Temple University Children's Medical Center, Children's National Medical Center, and The George Washington University School of Medicine. Dr. McBryde is board certified in pediatric nephrology.

Anna Nicholson, MSHS, Becomes Director of the Office of Clinical Trials Operations and Management

In January, Anna Nicholson, MSHS, joined NIDCR's Office of the Director as the director of the Office of Clinical Trials Operations and Management. Previously, Ms. Nicholson was the clinical research manager for the National Institute of Arthritis and Musculoskeletal and Skin Diseases. Before that, she was the project team lead at a contract research organization, where she oversaw a clinical trial operation and management support contract for NIH. Anna received an MSHS in clinical research administration from The George Washington University.

Mary Daum Becomes Chief of the Health Information and Public Liaison Branch

In late January, NIDCR appointed Mary Daum as chief of the Health Information and Public Liaison Branch in the Office of Communications and Health Education. Ms. Daum manages NIDCR's public inquiry and exhibit programs, leads the development of oral health information, and oversees the contract for the National Oral Health Information Clearinghouse. Ms. Daum joined the NIDCR communications office as a writer-editor more than 25 years ago. She has a B.A. from the Catholic University of America and studied journalism at American University and the University of Maryland.

Nicole García-Quijano, MD, MPH, Joins the Health Information and Public Liaison Branch

In April, Nicole García-Quijano, MD, MPH, joined NIDCR's Health Information and Public Liaison Branch. Dr. Garcia-Quijano will manage NIDCR's print and digital Spanish-language health information

and outreach. Previously, she assisted other NIH Institutes with public inquiry response and health information programs as a contractor. Before that, Dr. Garcia-Quijano led health programs for the National Alliance for Hispanic Health in Washington, DC, and the Puerto Rico Department of Health. She earned a medical degree from the University of Puerto Rico School of Medicine in San Juan, and an M.P.H. in health communication from the Johns Hopkins Bloomberg School of Public Health. She is board certified in preventive medicine.

Gabriela Lopez Mitnik Joins OSPA

Gabriela Lopez Mitnik, who is a statistician and data analyst, recently joined the Program Analysis and Reporting Branch of NIDCR's Office of Science Policy and Analysis. Before joining NIDCR, she was a statistician for the Pharmacovigilance Center of the US Army Office of the Surgeon General, where she conducted drug utilization and risk analyses using Military Health System data. Before that, Ms. Mitnik was a statistical programmer for a data management company involved in managing the operational data of the National Children Study, and she was a statistician for the pediatrics department of the University of Miami. Ms. Mitnik obtained a master's degree in biostatistics at the University of Chile, and a second master's degree in policy analysis at the Pardee RAND Graduate School in Los Angeles.

John Cisar, PhD, Retires

After 39 years at NIH, John Cisar, PhD, retired on December 31, 2015. Dr. Cisar joined NIDCR in 1977 as a senior staff fellow, and then became a research microbiologist in 1981. In 1996 he was appointed as a senior investigator and chief of the Microbial Receptors Section of the Laboratory of Cell Biology. His research focused on the cell surface components of oral bacteria that mediated dental plaque formation, and he also oversaw a clinical study on bacterial actions in supragingival biofilms. In addition to his research, he served on many NIH and NIDCR committees, notably as the chair of the NIDCR Animal Care and Use Committee.

Roberto Weigert, PhD, Becomes Senior Investigator at the National Cancer Institute

Roberto Weigert, PhD, who was tenured at NIDCR in 2014, accepted a position as a senior investigator in the Laboratory of Cellular and Molecular Biology at the National Cancer Institute. He will retain a joint appointment with NIDCR to continue his many fruitful collaborations. Dr. Weigert has been with NIDCR since 2006.

Meetings and Conferences

Staff Presentations

On April 16 to 20, many NIDCR staff attended the 2016 National Oral Health Conference (NOHC) in Cincinnati, OH. David Clark, PhD, of the Behavioral and Social Science Research Branch, organized the "Implementation Science and Oral Health Workshop" to provide participants with an overview of implementation science. Examples of successful implementation studies from both within and outside of oral health were presented, followed by an interactive small group exercise to identify barriers/facilitators to implementation, develop an implementation plan, and devise a rigorous method to test implementation strategies for given scenarios.

Also at NOHC, staff from OSPA delivered poster and oral presentations:

- Bruce Dye, DDS, MPH, and colleagues presented on the importance of big data for improving oral health for vulnerable populations through increased involvement of the patient care, research, and payer community. The speakers described federal initiatives associated with the Affordable Care Act that require electronic billing and health data collection, and they raised awareness of the various types of datasets that contain dental data (such as population survey, claims data, and electronic health records).
- Amrita Mukherjee, BDS, an NIDCR dental public health resident, presented a poster called, "Oral Health-Related Quality of Life in Methamphetamine Users by Level of Use and Route of Administration."
- Steffany Chamut, DDS, MPH, who also is a dental public health resident, presented a poster called, "Self-Rated Oral Health and Dental Visits Among Older Adults Receiving Services from the Administration On Aging."

Other OSPA attendees at NOHC included Drs. Margo Adesanya, Timothy Iafolla, and Shadi Boroumand. Another significant presentation by an OSPA staff member took place at the Society for Benefit-Cost Analysis, on March 17 and 18 in Washington, DC. Sue Hamann, PhD, presented a paper titled "Benefit Cost Analysis in the Outcome Evaluation of Small Biomedical Research Portfolios."

At multiple other conferences, workshops, and meetings, Division of Extramural Research staff served as panelists and delivered poster and oral presentations:

- Yolanda Vallejo-Estrada, PhD, director of the Molecular and Cellular Neuroscience Program, represented NIDCR at the TMJ (temporomandibular joint) Implant Roundtable planning meeting, held on February 24, which was organized by the TMJ Association. The roundtable is bringing stakeholders together to build a body of data on implant performance, surgical outcomes, adverse events, and surgical complications. Meeting participants included patients, patient advocates, and federal agency representatives.
- On March 4, NIDCR's Center for Clinical Research hosted a face-to-face meeting with the national network director, deputy director, and regional directors of the National Dental Practice-Based Research Network. The directors provided updates on the network's ongoing and planned studies and held discussions of network operations and practitioner engagement activities.
- Isaac Rodriguez-Chavez, PhD, director of the AIDS and Immunosuppression Program, co-organized with NCI the first HPV (human papillomavirus) Serology Standardization Meeting with the following objectives: to understand the strengths and weaknesses of available assays, platforms and data analytics for high-throughput serology testing and to identify key features required to describe and document these assays. Dr. Rodriguez-Chavez also co-chaired Session IV, "strategic planning for serology standardization initiatives." This meeting was held on the NIH campus on March 7 and 8.
- Dr. Vallejo-Estrada represented NIDCR at the Pathways to Prevention Federal Partners Meeting on the Role of Opioids in the Treatment of Chronic Pain held on March 9 in Rockville, Maryland. The objective of this meeting was to identify actionable items such as funding opportunities and to apply information gained thus far to close gaps in research and prevention strategies.
- Gallya Gannot, DMD, PhD, of the Center for Clinical Research, represented NIDCR as a voting member at the meeting of the American Dental Association Standards Committee on Dental Products in Los Angeles, CA on March 13 and 14. During the meeting, she also participated as an observer at a working group session on biologic evaluation of dental materials.
- Nadya Lumelsky, PhD, director of the Tissue Engineering and Regenerative Medicine Research Program, presented a poster titled "Launching of NIDCR-supported Dental, Oral and Craniofacial Tissue Regeneration Consortium (DOCTRC)" at the Gordon Research Conference called Craniofacial Morphogenesis & Tissue Regeneration, which was held March 13-18 in Ventura, CA.
- Dr. Rodriguez-Chavez co-led and co-organized, along with staff at the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development and other NIH Institutes, the 2016 Pediatric HIV/AIDS Cohort Study (PHACS) Network Spring Retreat, which was held in Baltimore, MD, March 15 and 16. The goal was to discuss the progress made during the last year in the pediatric HIV/AIDS non-interventional clinical studies conducted within PHACS and the design of future clinical studies. These presentations and discussions included oral health-related study within the Complications Working Group.
- On March 18, Jane Atkinson, DDS, director of the Center for Clinical Research, gave a presentation to visiting physician and dentist fellows in health policy, public health, and management. These future leaders are focused on transforming health care delivery systems for vulnerable populations. As part of their training, they participate in leadership forums and seminars with nationally recognized leaders in health care delivery systems, minority health, and public policy.

- With NIH colleagues, BSSRB staff presented a symposium titled, “Openness, Integrity, and Reproducibility: A Frank Discussion About How to Get There,” presented at the 37th Annual Conference of the Society of Behavioral Medicine, held in Washington, DC, from March 30 to April 2. A poster by BSSRB was also presented. BSSRB staff also co-presented a poster with colleagues from the Science of Behavior Change working group.
- On April 4, 2016, Dena Fischer, DDS, MSD, MS, of the Center for Clinical Research, participated in a Central IRB Network Roundtable, hosted by the National Center for Advancing Translational Sciences. During the roundtable, she presented information on the National Dental PBRN infrastructure and its central IRB process.
- Sundar Venkatachalam, PhD, director of Oral and Salivary Gland Cancer Biology Program, attended the American Association for Cancer Research annual meeting in New Orleans, LA, April 16-20. He delivered a presentation on “Oral and Salivary Gland Cancer Research at NIDCR” to potential applicants and junior investigators.
- Division of Extramural Research Director Lillian Shum, PhD, as well as Kathryn Stein, PhD, and Steven Scholnick, PhD, of the Translational Genomics Research Branch, attended the annual FaceBase Consortium scientific conference and steering committee meeting held at the University of Colorado in Denver on May 2 and 3. The first day of the meeting included progress report presentations by the principal investigators and invited scientific talks by outside speakers, which were accessible via webcast to the wider scientific community. The second day consisted of consortium working group meetings.

Staff Attendance

Division of Extramural Research staff attended conferences, workshops, and meetings to offer their expertise to investigators and trainees involved in NIDCR-supported research:

- 2016 Armed Forces Institute of Regenerative Medicine II (AFIRM II) Grantees Meeting and Programmatic Meeting of Integrated Project Team, which oversees the scientific progress of AFIRM II, held in Bethesda, MD, on January 11-13.
- Inter-Society Coordinating Committee for Practitioner Education in Genomics held in Bethesda, MD, on January 14.
- Conference on Retroviruses and Opportunistic Infections (CROI), Boston, MA, on February 22-25.
- Semi-Annual Meeting of NIH/DARPA/FDA Microphysiological Systems held in Arlington, VA, on February 24-25.
- Inaugural Meeting of the Global Oral Cancer Forum held in New York City from March 5-6.
- Craniofacial Morphogenesis & Tissue Regeneration Gordon Research Conference, Ventura, CA, on March 13-18.
- Trans-NIH Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS) Working Group and ME/CFS Federal Partners group held in Rockville, MD, on March 18.
- Keystone Symposia: HIV Persistence: Pathogenesis and Eradication (X7) held in Olympic Valley, CA, on March 20-24.
- The Illuminating the Druggable Genome Project (IDG) Consortium held in Bethesda, MD, on March 22-23.
- Immunotherapy Biomarkers 2016: Overcoming the Barriers, held in Bethesda, MD, on April 1.
- Better With Both: The Impact of Consideration of Sex as a Biological Variable on the Health of Women held in Crystal City, VA, on April 14.

On February 25 and 26, Margo Adesanya, DDS, MPH, chief of the Science Policy and Planning Branch, attended the NIH Tribal Consultation Advisory Committee meeting, which was held on the NIH campus. The Committee serves as an advisory body to NIH, helping to ensure that Tribes and American Indian/Alaska Native people have meaningful and timely input in the development of relevant NIH policies, programs, and priorities.

On April 7 and 8, several OSPA staff members, including Drs. Jonathan Horsford, Margo Adesanya, Wendy Knosp, and Chantelle Ferland-Beckham, attended the NIH and the Science of Science Innovation and Policy (SciSIP): A Joint NIH-NSF Workshop. The workshop was designed to promote open exchange and dialogue with the broader academic community about the most rigorous methods, tools, and data sources for studying policy questions relevant to the biomedical research community. OSPA staff were engaged in learning about a number of topics of relevance to NIDCR, including approaches to modeling and assessing the biomedical research workforce, capturing research outcomes and impacts, enhancing peer review and the research process, and measuring the effects of collaboration and team science on research output and health practice.

Training and Career Development Update

NIDCR Fellows Scientific Training

The tenth annual NIDCR Fellows Scientific Training was held April 11 and 12 at the William F. Bolger Center in Potomac, MD. Seventy-two graduate students, predoctoral and postdoctoral trainees, clinical fellows, staff scientists, biologists, and core facility staff attended the retreat along with the Division of Intramural Research Scientific Director, Veterinary Resources Core Director, and Office of Education staff. Activities at the event included the following:

- Keynote address by Karin List, PhD, associate professor at the Barbara Ann Karmanos Cancer Center, Wayne State University School of Medicine
- Four 15-minute oral presentations by attendees
- One three-minute oral presentation
- Two attendee poster sessions
- Two concurrent career development workshops
 - Lori Conlan, PhD, director of the Office of Postdoc Services and the Career Services Center at NIH Office of Intramural Training and Education (OITE), led a workshop titled “Networking Strategies; The Best Ways To Utilize LinkedIn.”
 - Elena Hernández Ramón, MD, PhD, OITE’s scientific program manager, led a pre-doctoral trainee workshop titled “The Unwritten Rules of Applying to Professional School.”

In addition, NIDCR Director Martha Somerman gave a brief presentation and engaged the attendees in a question and answer session. Other activities included a new investigator showcase to introduce Jacqueline Mays, DDS, PhD, as the newest assistant clinical investigator at NIDCR, and a panel discussion on careers after training at NIDCR. Panelists included Dr. List (who was an NIDCR/OPCB visiting fellow and research fellow), Natalia Chalmers, DDS, PhD, director of Analytics and Publication at DentaQuest Institute (who was an NIDCR/OPCB Graduate Student and Clinical Fellow); Maura Kibbey, PhD, director of Science and Standards at Global Biologics U.S. Pharmacopeia (former NIDCR/LCDB postdoctoral fellow); and Evelyn Lucas-Perry, DDS, MPH, director of Public Health Policy Research at the American Dental Education Association Policy Center (a former public health residency scholar in the NIDCR Public Health Residency Program).

Summer Dental Student Awards

The Office of Education continues its recruitment efforts for students interested in oral health training opportunities. This year, eight dental students from across the country were selected to receive the 2016 NIDCR Summer Dental Student Award. The following students will complete an 8-week translational research project at NIDCR: Lauren Aber of Boston University, Sarah Anvery and Usman Ahmad of Howard University, Blake Bandeff and Sean Burke of University of Connecticut, Anthony Contratto of the University of Missouri - Kansas City, Preston Harris and Miriam Walker of Meharry Medical College, and Andy Tu of University of Minnesota.

Highlights of Trainee Scientific Achievements

Trainees Who Have Achieved Subsequent NIH Grants

First R01/U01

- **Catherine Binkley, DDS, PhD**, former NIDCR K23 awardee, associate professor, Department of Surgical and Hospital Dentistry, University of Louisville, NIDCR U01, “Oral Health Promotion (OHPROM) Strategy for Persons with Intellectual & Developmental Disabilities.”
- **Elizabeth Fozo, PhD**, former NIDCR T32 predoctoral trainee, assistant professor, Department of Microbiology, University of Tennessee, Knoxville, NIAID R01, “Membrane alterations and daptomycin tolerance.”
- **Nan Hatch, DMD, PhD**, former NIDCR T32 postdoctoral trainee, associate professor, Department of Orthodontics and Pediatric Dentistry, University of Michigan, NIDCR R01, “Molecular Mechanisms of Craniosynostosis.”
- **Stephen Lai, MD, PhD**, former NIDCR K08 awardee, associate professor, Department of Head and Neck Surgery, University of Texas MD Anderson Cancer Center, NIDCR R01, “Using Dynamic Contrast-Enhanced Magnetic Resonance Imaging (DCE-MRI) to Establish Objective Clinical Outcome Measures for Mandibular Osteoradionecrosis.”

Pathway to Independence Awards (K99/R00)

The following investigators have transitioned to tenure track research faculty positions (R00 phase):

- **Yu Lei, DDS, PhD**, assistant professor, Department of Periodontics and Oral Medicine, University of Michigan, R00: “Autophagy-promoting NLRX1-TUFM complex and cancer cell resistance to cetuximab.”
- **Sara Palmer, PhD**, assistant professor, Division of Biosciences, The Ohio State University, R00: “Genetics and Genomics of the yidC paralogs in *Streptococcus mutans*.”

Transitions from Institutional Training Grant Support to Individual Awards

NIDCR strongly encourages trainees supported on institutional training grants to apply for and achieve individual fellowships or career development awards.

- **Jeffrey Hall, PhD**, University of Minnesota, NIDCR F32 postdoctoral fellowship, “Peptide signaling of adhesins in oral streptococci.”
- **Chad Novince, DDS, PhD**, Medical University of South Carolina, NIDCR K08 career development award, “Impact of the Microbiome on Osteoimmunology and Skeletal Development.”
- **Jacob Simon**, University of California San Francisco, NIDCR F30 predoctoral fellowship to support dual degree DDS-PhD training, “Methods for Assessing Lesion Depth and Severity with Near-IR Light.”

Recent Publications from Trainees

F Fellows

- **Bor B**, Poweleit N, Bois JS, Cen L, Bedree JK, Zhou ZH, Gunsalus RP, Lux R, McLean JS, He X, Shi W. Phenotypic and Physiological Characterization of the Epibiotic Interaction Between TM7x and Its Basibiont Actinomyces. *Microb Ecol*. 2016 Jan;71(1):243-55.
- **Erick TK**, Brossay L. Phenotype and functions of conventional and non-conventional NK cells. *Curr Opin Immunol*. 2016 Feb;38:67-74.
- **Lee RC**, Darling CL, Fried D. Assessment of remineralized dentin lesions with thermal and near-infrared reflectance imaging. *Proc SPIE Int Soc Opt Eng*. 2016 Feb 13;9692.

- **Vasudevan HN**, Soriano P. A Thousand and One Receptor Tyrosine Kinases: Wherein the Specificity? *Curr Top Dev Biol.* 2016;117:393-404.
- **Vo TN**, Shah SR, Lu S, Tataru AM, Lee EJ, Roh TT, Tabata Y, Mikos AG. Injectable dual-gelling cell-laden composite hydrogels for bone tissue engineering. *Biomaterials.* 2016 Mar;83:1-11.

Institutional Training Grant (T15/T32/T90/R90) Trainees and K12 Scholars

- **Complete Vora SR, Camci ED**, Cox TC. Postnatal Ontogeny of the Cranial Base and Craniofacial Skeleton in Male C57BL/6J Mice: A Reference Standard for Quantitative Analysis. *Front Physiol.* 2015;6:417.
- **Ge C**, Cawthorn WP, Li Y, Zhao G, Macdougald OA, Franceschi RT. Reciprocal Control of Osteogenic and Adipogenic Differentiation by ERK/MAP Kinase Phosphorylation of Runx2 and PPAR γ Transcription Factors. *J Cell Physiol.* 2016 Mar;231(3):587-96.
- **Kim J**, Kong YP, Niedzielski SM, Singh RK, Putnam AJ, Shikanov A. Characterization of the crosslinking kinetics of multi-arm poly(ethylene glycol) hydrogels formed via Michael-type addition. *Soft Matter.* 2016 Feb 21;12(7):2076-85.
- **Kim N**, Ramon S, Thatcher TH, Woeller CF, Sime PJ, Phipps RP. Specialized proresolving mediators (SPMs) inhibit human B-cell IgE production. *Eur J Immunol.* 2016 Jan;46(1):81-91.
- **Masterson EE**, Sabbah W. Maternal Allostatic Load, Caretaking Behaviors, and Child Dental Caries Experience: A Cross-Sectional Evaluation of Linked Mother-Child Data From the Third National Health and Nutrition Examination Survey. *Am J Public Health.* 2015 Nov;105(11):2306-11.
- **Pozhitkov AE**, Daubert D, Brochwicz Donimirski A, Goodgion D, Vagin MY, Leroux BG, Hunter CM, Flemmig TF, Noble PA, Bryers JD. Towards microbiome transplant as a therapy for periodontitis: an exploratory study of periodontitis microbial signature contrasted by oral health, caries and edentulism. *PLoS One.* 2015;10(10):e0140393.
- **Simon JC**, A Lucas S, Lee RC, Darling CL, Staninec M, Vaderhobli R, Pelzner R, Fried D. Near-infrared imaging of secondary caries lesions around composite restorations at wavelengths from 1300-1700-nm. *Dent Mater.* 2016 Apr;32(4):587-95.
- **To TT**, Gümüş P, Nizam N, Buduneli N, Darveau RP. Subgingival Plaque in Periodontal Health Antagonizes at Toll-Like Receptor 4 and Inhibits E-Selectin Expression on Endothelial Cells. *Infect Immun.* 2015 Oct 19;84(1):120-6.
- **Tu M**, Chia D, Wei F, Wong D. Liquid biopsy for detection of actionable oncogenic mutations in human cancers and electric field induced release and measurement liquid biopsy (eLB). *Analyst.* 2016 Jan 4;141(2):393-402.

K Awardees

- Albino J, **Tiwari T**. Preventing Childhood Caries: A Review of Recent Behavioral Research. *J Dent Res.* 2016 Jan;95(1):35-42.
- Diniz IM, Chen C, Ansari S, Zadeh HH, Moshaverinia M, Chee D, Marques MM, Shi S, **Moshaverinia A**. Gingival Mesenchymal Stem Cell (GMSC) Delivery System Based on RGD-Coupled Alginate Hydrogel with Antimicrobial Properties: A Novel Treatment Modality for Peri-Implantitis. *J Prosthodont.* 2016 Feb;25(2):105-15.
- **Khariwala SS**, Le B, Pierce BH, Isaksson Vogel R, Chipman JG. Antibiotic Use after Free Tissue Reconstruction of Head and Neck Defects: Short Course vs. Long Course. *Surg Infect (Larchmt).* 2016 Jan;17(1):100-5.
- **Kramer JM**, Holodick NE, Vizconde TC, Raman I, Yan M, Li QZ, Gaile DP, Rothstein TL. Analysis of IgM antibody production and repertoire in a mouse model of Sjögren's syndrome. *J Leukoc Biol.* 2016 Feb;99(2):321-31.
- Lee HL, Yu B, Deng P, Wang CY, **Hong C**. Transforming Growth Factor- β -Induced KDM4B Promotes Chondrogenic Differentiation of Human Mesenchymal Stem Cells. *Stem Cells.* 2016 Mar;34(3):711-9.
- **Leslie EJ**, et. al. A Genome-wide Association Study of Nonsyndromic Cleft Palate Identifies an Etiologic Missense Variant in GRHL3. *Am J Hum Genet.* 2016 Apr 7;98(4):744-54.

- Merritt JM, Greenlee G, Bollen AM, Scott JM, **Chi DL**. Racial disparities in orthodontic service use for Medicaid-enrolled children: An evaluation of the Washington Medicaid program. *Am J Orthod Dentofacial Orthop*. 2016 Apr;149(4):516-22.
- Sharma A, Kiripolsky J, Klimatcheva E, Howell A, Fereidouni F, Levenson R, Rothstein TL, **Kramer JM**. Early BAFF receptor blockade mitigates murine Sjögren's syndrome: Concomitant targeting of CXCL13 and the BAFF receptor prevents salivary hypofunction. *Clin Immunol*. 2016 Mar;164:85-94.
- Rowe MJ, Kamocki K, Pankajakshan D, Li D, Bruzzaniti A, Thomas V, Blanchard SB, **Bottino MC**. Dimensionally stable and bioactive membrane for guided bone regeneration: An in vitro study. *J Biomed Mater Res B Appl Biomater*. 2016 Apr;104(3):594-605.

PUBLICATIONS

Selected Extramurally Funded Science Advances

High Impact Findings from Seasoned Investigators

During the last four months, 318 extramurally funded studies were published in the scientific literature. Below is a list of the most important papers published from each program area.

Behavioral and Social Science Research

Bhardwaj A, Ramoni R, Kalenderian E, Neumann A, Hebballi NB, White JM, McClellan L, **Walji MF**. Measuring up: Implementing a dental quality measure in the electronic health record context. *J Am Dent Assoc*. 2016;147(1):35-40.

Shinn EH, Valentine A, Jethanandani A, Basen-Engquist K, Fellman B, Urbauer D, Atkinson E, Yusuf SW, Lenihan D, Woods ML, Kies MS, Sood AK, Carmack C, Morrison WH, Gillenwater A, Sturgis EM, Garden AS. Depression and Oropharynx Cancer Outcome. *Psychosom Med*. 2016;78(1):38-48.

Center Clinical Research

Pesce MA, **Strauss SM**, Rosedale M, Netterwald J, Wang H. Measurement of HbA1c in gingival crevicular blood using a high-pressure liquid chromatography procedure. *Lab Med*. 2015 Fall;46(4):290-8. doi: 10.1309/LM9SISYYKBA2ZDBY.

Wang L, Ren Y, Gao Y, Tang Z, Chen KC, Li J, Shen SG, Yan J, Lee PK, Chow B, **Xia JJ**, Shen D. Estimating patient-specific and anatomically correct reference model for craniomaxillofacial deformity via sparse representation. *Med Phys*. 2015 Oct;42(10):5809-16. doi: 10.1118/1.4929974.

Gordan VV, Riley 3rd JL, Rindal DB, Qvist V, Fellows JL, Dilbone DA, Brotman SG, **Gilbert GH**, National Dental Practice-Based Research Network Collaborative Group. Repair or replacement of restorations: A prospective cohort study by dentists in The National Dental Practice-Based Research Network. *J Am Dent Assoc*. 2015 Dec;146:895-903.

Ismail AI, Lim S, Tellez M. Tooth surface level caries progression in the primary dentition among preschool children. *Caries Res*. 2015;49(4):442-8. doi: 10.1159/000434729.

Simon JC, A Lucas S, Lee RC, Darling CL, Staninec M, Vaderhobli R, Pelzner R, **Fried D**. Near-infrared imaging of secondary caries lesions around composite restorations at wavelengths from 1300-1700-nm. *Dent Mater*. 2016 Apr;32(4):587-95. doi: 10.1016/j.dental.2016.01.008.

Yang L, Poles MA, Fisch GS, Ma Y, Nossa C, Phelan JA, **Pei Z**. HIV-induced immunosuppression is associated with colonization of the proximal gut by environmental bacteria. *AIDS*. 2016 Jan 2;30(1):19-29. doi: 10.1097/QAD.0000000000000935.

Aghaloo T, Lee S, Zhang Y, Khalilinejad K, Murphy MC, Pan HC, Zhang X, Wu B, Zhou YH, Zhao Z, **Zheng Z**, Soo C. Fibromodulin reprogrammed cells: A novel cell source for bone regeneration. Li CS, Yang P, Ting K, Biomaterials. 2016 Mar;83:194-206. doi: 10.1016/j.biomaterials.2016.01.013.

Ilievski V, Cho Y, Katwala P, Rodriguez H, Tulowiecka M, Kurian D, Leoni L, Christman JW, Unterman TG, **Watanabe K**. TLR4 expression by liver resident cells mediates the development of glucose intolerance and insulin resistance in experimental periodontitis. PLoS One. 2015 Aug 28;10(8):e0136502. doi: 10.1371/journal.pone.0136502.

Integrative Biology and Infectious Diseases

Alzayady KJ, Wang L, Chandrasekhar R, Wagner LE, Van Petegem F, **Yule DI**. Defining the stoichiometry of inositol 1,4,5-trisphosphate binding required to initiate Ca²⁺ release. Sci Signal. 2016 Apr 5;9(422):ra35. doi: 10.1126/scisignal.aad6281.

Cezar CA, Roche ET, Vandeburgh HH, Duda GN, Walsh CJ, **Mooney DJ**. Biologic-free mechanically induced muscle regeneration. PNAS USA, February 2016, 113 (6), 1534-39.

Zhang, X, Li Y, Chen YE, Chen J, **Ma PX**. Cell-free 3D scaffolds with two-stage delivery of miRNA-26a to regenerate critical-sized bone defects. Nature Communications, January 2016, (7) 10376.

Maekawa T, Briones RA, Resuello RR, Tuplano JV, **Hajishengallis E**, Kajikawa T, Koutsogiannaki S, Garcia CA, Ricklin D, Lambris JD, Hajishengallis G. Inhibition of pre-existing natural periodontitis in non-human primates by a locally administered peptide inhibitor of complement C3. J Clin Periodontol. 2016 Mar;43(3):238-49.

Baer AN, Petri M, Sohn J, **Rosen A**, Casciola-Rosen L. Association of Antibodies to Interferon-Inducible Protein-16 with Markers of More Severe Disease in Primary Sjögren's Syndrome. Arthritis Care Res (Hoboken). 2016 Feb;68(2):254-60.

Thompson H, Rybalka A, Moazzez R, **Dewhirst FE**, Wade WG. *In vitro* culture of previously uncultured oral bacterial phylotypes. Appl Environ Microbiol. 2015;81:8307-14. doi:10.1128/AEM.02156-15.

Velsko IM, Chukkapalli SS, Rivera-Kweh MF, Zheng D, Aukhil I, Lucas AR, Larjava H, **Kesavalu L**. Periodontal pathogens invade gingiva and aortic adventitia and elicit inflammasome activation in $\alpha\beta6$ integrin-deficient mice. Infect Immun. 2015;83:4582-4593. doi:10.1128/IAI.01077-15.

de Molon RS, Hsu C, Bezouglaia O, Dry SM, Pirih FQ, Soundia A, Cunha FQ, Cirelli JA, Aghaloo TL, **Tetradis S**. Rheumatoid Arthritis Exacerbates the Severity of Osteonecrosis of the Jaws (ONJ) in Mice. A Randomized, Prospective, Controlled Animal Study. J Bone Miner Res. 2016 Mar 7 [epub ahead of print].

Subramaniam M, Pitel KS, Withers SG, Drissi H, **Hawse JR**. TIEG1 enhances Osterix expression and mediates its induction by TGF β and BMP2 in osteoblasts. Biochem Biophys Res Commun. 2016 Feb 12;470(3):528-33.

Ge X, Ye Q, Song L, Laurence JS, Misra A, **Spencer P**. Probing the dual function of a novel tertiary amine compound in dentin adhesive formulations. Dent Mater. 2016 Apr;32(4):519-28. doi: 10.1016/j.dental.2015.12.003. Epub 2016 Jan 5.

Brayer KJ, Frerich CA, Kang H, **Ness SA**. Recurrent Fusions in MYB and MYBL1 Define a Common, Transcription Factor-Driven Oncogenic Pathway in Salivary Gland Adenoid Cystic Carcinoma. Cancer Discov. 2016 Feb;6(2):176-87.

Rettig EM, Talbot C, Sausen M, Jones S, Bishop JA, Wood LD, Tokheim C, Niknafs N, Karchin R, Fertig E, Wheelan S, Marchionni L, Considine M, Fakhry C, Papadopoulos N, Kinzler KW, Vogelstein B, Ha PK,

Agrawal N. Whole-Genome Sequencing of Salivary Gland Adenoid Cystic Carcinoma. *Cancer Prev Res (Phila)*. 2016 Apr;9(4):265-74. doi: 10.1158/1940-6207.CAPR-15-0316. Epub 2016 Feb 9.

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DasGupta T, Nweze EI, Yue H, Wang L, **Jin J,** Ghosh SK, Kawsar HI, Zender C, Androphy EA, **Weinberg A, McCormick TS,** Jin G. Human papillomavirus oncogenic E6 protein regulates human β -defensin 3 (hBD3) expression via the tumor suppressor protein p53. *Oncotarget* 2016 March 28: 1-15. DOI: 10.18632/oncotarget.8443.

Chen Z, Zhu H, Malamud D, Barber C, Ongagna YY, Yasmin R, Modak S, Janal MN, Abrams WR, **Montagna RA.** A Rapid, Self-confirming Assay for HIV: Simultaneous Detection of Anti-HIV Antibodies and Viral RNA. *J AIDS Clin Res*. 2016 Jan;7(1). pii: 540. Epub 2016 Jan 31.

Translational Genomics Research Branch

Xu J, Liu H, Lan Y, Aronow BJ, Kalinichenko VV, **Jiang R.** A Shh-Foxf-Fgf18-Shh Molecular Circuit Regulating Palate Development. *PLoS Genet*. 2016 Jan 8;12(1):e1005769. doi: 10.1371/journal.pgen.1005769.

Leslie EJ, Carlson JC, Shaffer JR, Feingold E, **Wehby G,** Laurie CA, Jain D, Laurie CC, Doheny KF, McHenry T, Resick J, Sanchez C, Jacobs J, Emanuele B, Vieira AR, Neiswanger K, **Lidral AC,** Valencia-Ramirez LC, Lopez-Palacio AM, Rivera Valencia D, Arcos-Burgos M, Czeizel AE, Field LL, Padilla CD, Cutiongco-de la Paz EM, Deleyiannis F, Christensen K, **Munger RG,** Lie RT, Wilcox A, Romitti PA, Castilla EE, Mereb JC, Poletta FA, Orioli IM, Carvalho FM, **Hecht JT,** Blanton SH, **Buxó CJ, Butali A,** Mossey PA, Adeyemo WL, James O, Braimah RO, Aregbesola BS, Eshete MA, Abate F, Koruyucu M, Seymen F, Ma L, Enríquez de Salamanca J, Weinberg S, **Moreno L,** Murray JC, **Marazita ML.** A multi-ethnic genome-wide association study identifies novel loci for nonsyndromic cleft lip with or without cleft palate on 2p24.2, 17q23 and 19q31. *Hum Mol Genet*. 2016 Mar 30. pii: ddw104. [Epub ahead of print].

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Publications from New Investigator R01-funded Projects

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Teles R, Benecha HK, Preisser JS, Moss K, Starr JR, Corby P, Genco R, Garcia N, Giannobile WV, Jared H, Torresyap G, Salazar E, Moya J, Howard C, Schifferle R, Falkner KL, Gillespie J, Dixon D, Cugini M. Modeling changes in clinical attachment loss to classify periodontal disease progression. *J Clin Periodontol*. 2016 Mar 3. doi: 10.1111/jcpe.12539. [Epub ahead of print].

Allin N, Cruz-Almeida Y, Velsko I, Vovk A, Hovencamp N, Harrison P, Huang H, Aukhil I, Wallet SM, **Shaddox LM**. Inflammatory response influences treatment of localized aggressive periodontitis. *J Dent Res*. 2016 Feb 25. pii: 0022034516631973. [Epub ahead of print].

Selected Division of Intramural Research Publications: Peer-Reviewed

El-Maouche D, Dumitrescu CE, Andreopoulou P, **Gafni RI, Brillante BA, Bhattacharyya N**, Fedarko NS, **Collins MT**. Stability and degradation of fibroblast growth factor 23 (FGF23): the effect of time and temperature and assay type. *Osteoporos Int*. 2016 Feb 29. [Epub ahead of print].

Leet AI, **Boyce AM**, Ibrahim KA, Wientroub S, Kushner H, **Collins MT** Bone-Grafting in Polyostotic Fibrous Dysplasia.. *J Bone Joint Surg Am*. 2016 Feb 3;98(3):211-9.

Ishikawa M, Williams LG, Ikeuchi T, Sakai K, Fukumoto S, **Yamada Y**. Pannexin 3 and Connexin 43 modulate skeletal development via distinct functions and expression patterns. *J Cell Sci*. 2016 129:1018-30. Doi: 10.1242/jcs.176883.

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Jendryke T, **Prochazkova M, Hall BE**, Nordmann GC, Schladt M, Milenkovic VM, **Kulkarni AB**, Wetzel, CH. 2016. TRPV1 function is modulated by Cdk5-mediated phosphorylation: insights into the molecular mechanism of nociception. *Sci. Rep*. 2016 6:22007. Doi:10.1038/serp22007.

Review Articles

Doyle AD, Yamada KM. Mechanosensing via cell-matrix adhesions in 3D microenvironments. *Exp Cell Res*. 2015 Doi:10.1016/j.yexcr.2015.10.033. [Epub ahead of print].

Joo EE, Yamada KM. Post-polymerization crosstalk between the actin cytoskeleton and microtubule network. *Bioarchitecture* 2016 [Epub ahead of print] PubMed PMID: 27058810.

Division of Extramural Research Staff Publications

Atkinson JC and Clark DB. Design and interpretation of clinical research studies in oral medicine: a brief review. *Oral Dis*. 2016 Mar;22(2):87-92.

Merchant AT, Georgantopoulos P, Howe CJ, Virani SS, **Morales DA**, Haddock KS. Effect of Long-Term Periodontal Care on Hemoglobin A1c in Type 2 Diabetes. *J Dent Res*. 2016 Apr;95(4):408-15.

Office of Science Policy and Analysis Staff Publication

Vogtmann E, Graubard B, Lofffield E, Chaturvedi A, **Dye BA**, Abnet CC, Freedman ND. Contemporary impact of tobacco use on periodontal disease in the USA. *Tob Control*. 2016 Feb 15.

Shetty V, Harrell L, Clague J, Murphy DA, **Dye BA**, Belin TR. Methamphetamine Users Have Increased Dental Disease: A Propensity Score Analysis. *J Dent Res*. 2016 Mar 18.

Capurro DA, **Iafolla T**, Kingman A, Chattopadhyay A, Garcia I. Trends in income-related inequality in untreated caries among children in the United States: findings from NHANES I, NHANES III, and NHANES 1999-2004. *Community Dent Oral Epidemiol*. 2015 Dec;43(6):500-10. doi: 10.1111/cdoe.12174. Epub 2015 Jun 3.

FUNDING UPDATE

Program Announcements

Academic Research Enhancement Award (Parent R15)

Mentored Quantitative Research Development Award (Parent K25)

NIH Pathway to Independence Award (Parent K99/R00)

Mentored Patient-Oriented Research Career Development Award (Parent K23)

Mentored Clinical Scientist Research Career Development Award (Parent K08)

Mentored Research Scientist Development Award (Parent K01)

Independent Scientist Award (Parent K02)

Short-term Mentored Career Enhancement Award in Dental, Oral and Craniofacial Research for Mid-Career and Senior Investigators (K18)

Development and Commercialization of Technologies to Create, Characterize or Improve Animal Models of Human Disease (R43/R44)

Development and Commercialization of Technologies to Create, Characterize or Improve Animal Models of Human Disease (R41/R42)

Tools for Cell Line Identification (R43/R44)

Mechanisms, Models, Measurement, and Management in Pain Research (R21)

Mechanisms, Models, Measurement, and Management in Pain Research (R01)

NIH Research Project Grant (Parent R01)

NIH Exploratory/Developmental Research Grant Program (Parent R21)

New Technologies for the Glycosciences (R43/R44)

New Technologies for the Glycosciences (R41/R42)

NIDCR Dentist Scientist Career Transition Award for Intramural Investigators (K22)

NIDCR Dual Degree Dentist Scientist Pathway to Independence Award (K99/R00)

Discovery of the Genetic Basis of Childhood Cancers and of Structural Birth Defects: Gabriella Miller Kids First Pediatric Research Program (X01)

Tailoring Dental Treatment for Individuals with Systemic Diseases that Compromise Oral Health (R01)

Tailoring Dental Treatment for Individuals with Systemic Diseases that Compromise Oral Health (R21)

Population Health Interventions: Integrating Individual and Group Level Evidence (R01)

Population Health Interventions: Integrating Individual and Group Level Evidence (R21)

Improvement of Animal Models for Stem Cell-Based Regenerative Medicine (R21)

Improvement of Animal Models for Stem Cell-Based Regenerative Medicine (R01)

Rapid Assessment of Zika Virus (ZIKV) Complications (R21)

NIDCR Small Research Grants for Data Analysis and Statistical Methodology Applied to Genome-wide Data (R03)

NIH Pathway to Independence Award (Parent K99/R00)

Administrative Supplements for Research on Sex/Gender Differences (Admin Supp)

Requests for Applications

BD2K Mentored Career Development Award in Biomedical Big Data Science for Clinicians and Doctorally Prepared Scientists (K01)

BD2K Mentored Career Development Award in Biomedical Big Data Science for Intramural Investigators (K22)

NIH Director's New Innovator Award Program (DP2)

NIH Pioneer Award Program (DP1)

NIH Director's Transformative Research Awards (R01)

NIH Director's Early Independence Awards (DP5)

Oral Immune System Plasticity in Chronic HIV Infection Under Treatment and Oral Co-Infections (R01)

Center without Walls for the Identification and Validation of Molecular Mechanisms Contributing to Tau Stimulating Peripheral Activity to Relieve Conditions (SPARC): Pre-clinical Development of Existing Market-approved Devices to Support New Market Indications (U18)

NIH Blueprint Training in Computational Neuroscience: From Biology to Model and Back Again (T90/R90)

Genome Sequencing Center for the Gabriella Miller Kids First Pediatric Research Program (U24)

Establishment of Resource Centers for Dental, Oral and Craniofacial Tissue Regeneration Consortium (U24)

Pre-application: Stimulating Peripheral Activity to Relieve Conditions (SPARC): Technologies to Understand the Control of Organ Function by the Peripheral Nervous System (OT1)

Limited Competition - Stimulating Peripheral Activity to Relieve Conditions (SPARC): Technologies to Understand the Control of Organ Function by the Peripheral Nervous System (OT2)