

National Institute of Dental and Craniofacial Research

National Advisory Dental and
Craniofacial Research Council

Minutes of Meeting
September 13, 2022

Via Videoconference

U.S. DEPARTMENT OF HEALTH
AND HUMAN SERVICES
NATIONAL INSTITUTES OF HEALTH

DEPARTMENT OF HEALTH AND HUMAN SERVICES
NATIONAL INSTITUTES OF HEALTH
NATIONAL INSTITUTE OF DENTAL AND CRANIOFACIAL RESEARCH

MINUTES OF THE
NATIONAL ADVISORY DENTAL AND CRANIOFACIAL RESEARCH COUNCIL

September 13, 2022

The 231st meeting of the National Advisory Dental and Craniofacial Research Council (NADCRC) was convened on September 13, 2022, at 10:00 a.m., via videoconference. The meeting was open to the public from 10:00 a.m. until 2:56 p.m.; it was followed by the closed session for Council business and consideration of grant applications from 4:15 p.m. until adjournment at 4:44 p.m. Dr. Rena D'Souza presided as Chair.

OPEN SESSION

Members Present

Dr. Joel Collier
Dr. Terry Dickinson*
Dr. Luisa DiPietro*
Dr. Frank Ebetino
Dr. Raul I. Garcia
Dr. Lee A. Niswander
Dr. Jacques Nor
Dr. Wenyuan Shi
Dr. Amy Smith Slep
Dr. Axel Visel

*ad hoc member

National Institute of Dental and Craniofacial Research

Dr. Rena D'Souza, Director
Dr. Jennifer Webster-Cyriaque, Deputy Director
Dr. Lynn King, Executive Secretary, and Director, Division of Extramural Activities (DEA)
Dr. Matthew P. Hoffman, Scientific Director, Division of Intramural Research (DIR)
Dr. Janice S. Lee, Clinical Director, DIR
Mr. John Prue, OD, Director, Office of Information Technology (OIT)
Dr. Lillian Shum, Director, Division of Extramural Research (DER)
Ms. Kathleen Stephan, OD, Associate Director for Management/Executive Officer
Dr. Marian Young, DIR, Deputy Scientific Director
Dr. Shaun Abrams, DIR
Ms. Mehrnoosh Abshari, Combined Technical Research Core, DIR
Ms. Alexandria Alfarano, DER
Dr. Lorena Baccaglini, DER, Center for Clinical Research (CCR)

Dr. Nisan Bhattacharya, DEA, Scientific Review Branch (SRB)
Ms. Laurie Brenchley, DIR
Dr. Anissa Brown, DEA, Research Training and Career Development Branch (RTCDB)
Dr. Thomas Bugge, DIR, Proteases & Tissue Remodeling Section
Dr. Preethi Chander, DER, Integrative Biology and Infectious Diseases Branch (IBIDB)
Dr. Zhong Chen, DER, IBIDB
Dr. Wanjun Chen, DIR, Mucosal Immunology Section
Dr. Aiwu Cheng, DEA, SRB
Dr. Sean Choi, DIR
Ms. Alicia Chou, DER, Translational Genomics Research Branch (TGRB)
Mr. Kevin Chu, OD, OIT
Dr. Michael Collins, DIR, Skeletal Disorders & Mineral Homeostasis Section
Ms. Mary Daum, OD, OCHE
Mr. Jimmy Do, OD, Financial Management Branch (FMB)
Dr. Alicia Dombrowski, DEA
Dr. Akintunde Emiola, DIR, Microbial Therapeutics Unit
Dr. Olga Epifano, DEA, OD
Dr. Dena Fischer, DER, Director, CCR
Dr. Melissa Ghim, DER, IBIDB
Dr. Margaret Grisius, DER, CCR
Mr. Joel Guzman, DER
Ms. April Harrison, DEA, GMB
Dr. Belinda Hauser, DIR, Office of Training and Education
Mr. Gabriel Hidalgo, DEA, GMB
Dr. Tanya Hoodbhoy, DER, IBIDB
Mr. Tem Ibidapo, OD, OIT
Dr. Leila Khaki, DER, Behavioral and Social Sciences Research Branch (BSSRB)
Dr. Zohreh Khavandgar, DIR
Dr. Pranav Kumar, DIR, Structural Biochemistry Unit
Dr. Na Liu, DIR
Dr. Orlando Lopez, DER, IBIDB
Ms. Amber Lowery, OD, OMB
Ms. Jayne Lura-Brown, DER
Ms. Susan Macharia, DEA
Dr. Tamara McNealy, DER, IBIDB
Ms. Susan Medve, DEA, GMB
Dr. Yun Mei, DEA, SRB
Dr. Amanda Melillo, DER, IBIDB
Ms. Amy Mhatre-Owens, OD, Office of Clinical Trials Operations & Management (OCTOM)
Dr. Niki Moutsopoulos, DIR
Ms. Mable Nee, OD, FMB
Mr. Paul Newgen, DEA, GMB
Ms. Anna Nicholson, OD, OCTOM
Mr. Thomas O'Farrell, DEA, SRB
Ms. Lisa Peng, OD, OIT
Ms. Debbie Pettitt, DEA, GMB

Dr. Elise Rice, DER, BSSRB
Dr. Melissa Riddle, DER, BSSRB
Dr. Pamela Robey, DIR, Skeletal Biology Section
Dr. Jose Ruiz, SEA, BSSRB
Ms. Diana Rutberg, DEA, GMB
Dr. Yasaman Shirazi, DEA, SRB
Dr. Ashley Smith, OD, OIT
Dr. Kathryn Stein, DER, TGRB
Dr. Shoba Thirumangalathu, DEA, RTCDB
Dr. Jason Wan, DER, IDIDB
Dr. Lu Wang, DER, CCR
Dr. Yan Wang, DIR
Dr. Hongen Yin, DER, TGBR

National Institutes of Health

Dr. Robert Carter, Deputy Director, National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)

Guests

Dr. Bruce Donoff, Harvard University
Dr. Dana Graves, Penn Dental Medicine, University of Pennsylvania
Dr. Kenneth Hargreaves, University of Texas Health Science Center at San Antonio
Mr. Matthew Miller, Neal R. Gross & Co.
Dr. David Yule, University of Rochester

I. WELCOME

Dr. Lynn King, Director of the Division of Extramural Activities (DEA) and Advisory Council Executive Secretary, called the open session of the 231st Advisory Council meeting to order at 10:00 a.m. and discussed the virtual meeting logistics. Dr. Rena D'Souza, Director, NIDCR, welcomed staff, Council members, and other attendees to the meeting. She spoke about how much she has learned during the first two years of her tenure as she traveled and met with stakeholder organizations and dental schools, particularly regarding the impact of the COVID-19 pandemic. These gatherings have helped elicit new challenges but also new directions for NIDCR to explore.

II. APPROVAL OF MINUTES FROM PREVIOUS MEETING

Dr. King asked Advisory Council members if there were corrections or comments on the minutes of the May 15, 2022 Advisory Council meeting. There were no comments and the Advisory Council voted unanimously to approve the minutes.

III. REPORT OF THE DIRECTOR, NIDCR

Dr. D'Souza's written Director's Report for the September 2022 Council meeting was provided to the Council members and is available on the NIDCR website (<http://www.nidcr.nih.gov>).

One of the major lessons learned from the pandemic is the importance of team science, teamwork, and integration of diverse scientific perspectives into research. The pandemic has also highlighted translational science, the value of community engagement, and the successful use of telehealth and teledentistry. NIDCR must leverage these lessons in its efforts to address ongoing public health threats in its mission area and in confronting the changing dental school landscape. Dr. D'Souza emphasized the role of professional organizations and other stakeholders as partners in this process.

Dr. D'Souza then provided an update of personnel changes at NIDCR. First, she introduced two ad hoc Council members, Drs. Luisa DiPietro and Terry Dickson, who are members of the NADCR 2022 nomination slate. At the Institute level, Ms. Alisa Machalek has been recruited as Director of Communications. Dr. Wendy Knosp has joined NIDCR as Chief of the Science Policy and Planning Branch and Dr. Marushka Silveira has been brought on as a Health Science Policy Analyst. Dr. D'Souza also announced that Dr. Leslie Frieden is leaving NIDCR; Dr. D'Souza thanked her for her years of service to the NIDCR and NIH. Dr. D'Souza also briefed the Council on leadership changes at the NIH level. Dr. Lawrence Tabak, former NIDCR Director and current NIH Principal Deputy Director, is serving as NIH Acting Director until Dr. Francis Collins' successor is nominated by the President and appointed by Congress. Dr. Monica Bertagnolli is the new Director of the National Cancer Institute (NCI), the first woman to serve in this role.

One of the research priority areas for this administration, and the NIH as a whole, is pain management and substance use disorders. Dr. D'Souza noted that the national overdose crisis has only worsened during the pandemic. Other priority areas are the Cancer Moonshot, improving maternal health and reducing maternal health disparities, and supporting the All of Us Research Program genomic data repository. Dr. D'Souza also noted some of the major projects that emerged from NIH's response to the COVID-19 pandemic, including the NIH RECOVER Initiative on long COVID, the NIH Community Engagement Alliance (CEAL) on enhancing diversity in clinical trial participation, and the Rapid Acceleration of Diagnostics (RADx) initiative that funded cutting edge early-pandemic COVID-19 diagnostics research. Dr. D'Souza also discussed the many COVID-19 research activities of the National Dental Practice-Based Research Network (PBRN), including research on masking, testing practices, and aerosols. She described NIDCR's contributions to the RADx program, including research on biosensors, synthetic antibodies for screening, and rapid saliva antigen testing.

Dr. D'Souza updated the Council on the publication of the Oral Health in America report, which was released in December 2021, and NIDCR's efforts to disseminate the report's findings. As described in Dr. D'Souza et al.'s article in the New England Journal of Medicine, the bottom line is: "while good oral health is vitally important to the health and well-being of everyone, the report shows that oral healthcare has not been, and is not equitably available across America." The findings of the report run in parallel with the Institute's 2021-2016 Strategic Plan, which

tasks NIDCR with advancing research and training priorities with an overarching theme of translation, with the ultimate goal of ensuring oral health for all. Since the release of the report, NIDCR has strived to ensure the Strategic Plan works to address and respond to the report's findings. Enhancing diversity, equity, inclusion, and accessibility (DEIA) is an important component of this effort and is also an NIH-wide priority. For NIDCR, this is reflected in its 2022 racial/ethnic equity plan called Building Belonging.

Dr. D'Souza discussed NIDCR's participation in several NIH-wide research programs, including the Helping to End Addiction Long-term (HEAL) Initiative and the Bespoke Gene Therapy Consortium. She then highlighted the recent activities of the NIDCR Intramural and Extramural programs. On the Intramural side, under Dr. Janice Lee, NIDCR runs the NIH Dental Clinic in the NIH Clinical Center. The Dental Clinic provides clinical care to patients enrolled in protocols at the NIH Clinical Center, along with research support and consultation services in collaboration with clinical investigators. Dr. D'Souza provided an overview of the research sections in the NIDCR Intramural Program and some examples of specific studies and therapeutic research that has resulted in Cooperative Research and Development Agreements (CRADAs) with industry partners. NIDCR also offers a Clinical Research Fellowship program, which has been highly successful in placing fellows in research careers. Turning to the extramural Research Program, Dr. D'Souza noted the NIDCR funds \$350M in research across a wide array of research areas and participates in NIH-wide programs such as the Accelerating Medicines Partnership (AMP). Dr. D'Souza highlighted an initiative in partnership with NCI called Advancing Head and Neck Cancer Early Detection (AHEAD), as well as the TMD Collaborative for Improving Patient-Centered Translational Research (TMD IMPACT), which creates a national, interdisciplinary, trans-NIH research consortium to advance basic and clinical research on temporomandibular disorders (TMDs). Dr. D'Souza then described several active NIDCR funding opportunities, including the U01 Practice-Based Research Integrating Multidisciplinary Experiences in Dental Schools (PRIMED), which aims to provide clinical faculty and early-career researchers with skills development opportunities and patient-oriented clinical research experiences through collaborative mentoring partnerships and by supporting developmental and/or small-scale practice-based research studies. Dr. D'Souza briefly highlighted exciting science and noteworthy findings that have emerged from research funded by the Division of Extramural Research, led by Dr. Lillian Shum, and highlighted the American Association for Dental, Oral, and Craniofacial Research (AAODCR) mentoring network for postdocs and junior faculty from diverse backgrounds, called the MIND the Future Program, supported by NIDCR.

Dr. D'Souza noted several intramural training programs that are managed by Dr. Belinda Hauser and followed with an announcement that NIDCR's three-year Dental Public Health Residency & Fellowship has recently commenced with its first cohort.

Dr. D'Souza concluded by discussing NIDCR's plans to honor the Institute's 75th anniversary in 2023, which will focus on the future of NIDCR and will include several in-person symposia with stakeholder groups across topics central to the Institute's mission.

IV. COMPLEX DISEASES: OPPORTUNITIES TAKEN (AND LESSONS LEARNED)

Dr. King invited Dr. Robert Carter, NIAMS Deputy Director, to present to the Council on lessons learned from NIAMS' approach to research in complex diseases, in particular through the lens of the Back Pain Consortium (BACPAC), which is funded under the Helping to End Addiction Long-term Initiative, or the HEAL Initiative.

While the NIH R01 individual investigator Research Project Grant (RPG) remains the bedrock of NIH-funded research, Dr. Carter believes that more complex diseases require the input of multiple disciplines. It was with this belief in mind that NIAMS developed the BACPAC program with the basic science goal of developing an integrated model of lower back pain, the translational goal of identifying factors that are predictive of treatment effectiveness, and clinical goal of developing algorithms that match patients to treatments. To tackle this broad range of goals, BACPAC was designed as a research network that includes a data and program management center, approximately 12 technology sites, and 3 mechanistic research centers. In the RFA review process, NIAMS put greater emphasis on which applicants would contribute the best to team science rather than traditional application scores. The experience of pain is a highly complex phenomenon with many influencing factors, not all of which are located in the physical structure (e.g., psychosocial or genetic factors). Part of the mission of BACPAC is to develop means of measuring these components. Dr. Carter noted that the theoretical model of pain used by BACPAC, while complex, can be generalized to other types of pain, such as TMD pain. He then described BACPAC's Biomarkers for Evaluating Spine Treatments (BEST) cooperative clinical trial, which is unique in that it is designed to identify differences in treatment outcomes based on patient phenotype.

NIAMS partners with NIDCR on another complex topic, joint pain, with the Restoring Joint Health and Function to Reduce Pain (RE-JOIN) Consortium. This initiative takes the perspective of the joint as a whole "organ," rather than only investigating, for example, cartilage by itself. Dr. Carter spotlighted a new RE-JOIN RFA that aims to better define the types of nerves in the articular and periarticular tissues and then identify mediators to block nerve activation and reduce pain. This RFA will primarily focus on the knee and temporomandibular joint, but other joints may be considered.

Another example of how NIH tackles complex diseases is the Accelerating Medicines Partnership (AMP) program. Dr. Carter briefly discussed the history of AMP and NIAMS' initial involvement in the AMP Rheumatoid Arthritis and Lupus program. That program's successor, AMP Autoimmune and Immune-Mediated Diseases (AMP AIM), is now underway. NIDCR is one of the 5 participating NIH ICs, along with many private sector partners. The disease areas that AMP AIM will focus on are rheumatoid arthritis, systemic lupus erythematosus, psoriasis, psoriatic arthritis, and Sjogren's syndrome.

Dr. Carter discussed the importance of creating a research ecosystem based on a systems biology model for the research of complex diseases. This ecosystem must be able to reach across research teams, platforms, and, in the case of AMP, across diseases. Dr. Carter concluded by discussing a proposed AMP concept on the systems biology of inflammation (SBI) which NIDCR is invited to join. This concept will attempt to study shared inflammatory pathways

across the AMP disease areas using the trove of 'omics data collected by AMP thus far. Dr. Carter highlighted three areas of shared interest among NIAMS and NIDCR that are fruitful for future collaboration – inflammation, autoimmunity, and joint pain – and looks forward to continued partnership.

V. DATA SCIENCE STRATEGY WORKING GROUP UPDATE

Dr. King invited Council member Dr. Axel Visel, The Joint Genome Institute Deputy for Science Programs, to provide an update on the activities of the Council's Data Science Strategy Working Group, which he co-chairs along with Dr. Amit Acharya of Advocate Aurora Research Institute.

Dr. Visel began his presentation by reminding the Council of the purpose of NIH National Advisory Council working groups, which is to convene outside experts to gather information on certain topics and to report their findings and recommendations to the Council. The NIDCR Council approved two other working groups on the topics of the oral health research workforce and enhancing equity, diversity, and inclusion in dental, oral, and craniofacial (DOC) research.

Dr. Visel noted, generally speaking, data science refers to the fields of artificial intelligence (AI) and machine learning (ML), but for NIH purposes also includes subjects such as data access and sharing, data ecosystems, harmonization and integration of electronic clinical records, and the use of data to address health disparities and inequalities, among other data-related subjects. Dr. Visel described how NIH's Strategic Plan for 2016-2020, the 2018 NIH Strategic Plan for Data Science, and NIDCR's 2021-2026 Strategic Plan were all strategic drivers for the development of an NIDCR Data Science Strategy. The Data Science Strategy Working Group was established to assist in creating a strategy that would harness the ability of data science to drive new biomedical insights and hasten the development of health solutions. The Working Group expects to meet over the course of a year and will provide periodic updates to the Council. A final report to the Council with short-term and long-term recommendations is anticipated. Dr. Visel presented the Working Group roster, which includes experts from across the translational spectrum and key NIDCR staff.

Discussion

Dr. D'Souza asked if the Working Group would consider data science training and the scope and availability of extant technologies during its analysis. Dr. Visel confirmed that both topics will be considered by the Working Group, and they will remain open to additional guidance as it gets underway. Dr. Raul Garcia said he would be interested in seeing a list of data science-relevant programs already offered or underway at NIDCR. Dr. King said that information could be provided. Dr. Webster-Cyriaque suggested that the Working Group look at dental informatics training programs. Dr. D'Souza emphasized the importance of including stakeholder groups in the NIDCR working group process. Dr. King said information about the working groups will be posted on the NIDCR website.

VI. ORAL HEALTH RESEARCH WORKFORCE WORKING GROUP UPDATE

Dr. King invited Dr. Dana Graves, Penn Dental Medicine and Oral Health Research Workforce Working Group Co-Chair, to deliver the update.

The Oral Health Research Workforce Working Group is tasked with recommending to NIDCR evidence-based approaches to recruit, train, and retain researchers in order to build a diverse DOC and dentist-scientist research workforce. Dr. Graves co-chairs the Working Group with Dr. Luisa DiPietro, and he briefly noted the other members. The Working Group is confronted with challenges such as declining DOC research workforce participation, low workforce diversity, and declines in career progression among women researchers. Dentists-scientists are burdened with high educational debt, lack of institutional support and incentives, and challenges balancing clinical and research training and career objectives. The Working Group has met twice and has worked to define important questions to address. As an example, the group must explore what makes an excellent and effective training program, how program are outcomes defined, and what can be learned from programs at NIDCR and other ICs, among other questions. In the coming months, the Working Group will hold information sessions with stakeholder groups to solicit their input and convene listening sessions with trainees and faculty from training programs. Dr. Graves anticipates the group submitting its final report and recommendations by the summer of 2023.

Discussion

Dr. D'Souza and Council members emphasized the importance of this topic. Drs. Graves and DiPietro agreed and promised to conduct a deep dive and deliver a report with broad and impactful recommendations.

VII. REDESIGNING AND IMPROVING HEALTHCARE: INTEGRATING ORAL AND MEDICAL RESEARCH PRACTICE

Dr. King welcomed Dr. R. Bruce Donoff, Harvard University School of Dental Medicine, to deliver his presentation.

Dr. Donoff began by noting his agreement with Dr. D'Souza's article in the New England Journal of Medicine with Dr. Collins and Surgeon General Vivek Murthy that "oral health is central to overall health." Dr. Donoff believes the DOC community needs to create dental-medical champions for change, and he pointed to NIDCR's Clinical Director, Dr. Janice Lee, as one such individual. The community must strive to change the scope of dental practice by making a space for oral health in primary care and driving disruptive innovation. Dr. Donoff traced the history of the separation of medical schools and dental schools back to the founding of the Baltimore College of Dentistry, the nation's first dental school, which first offered the DDS degree, and the Harvard Dental School, which offered the DMD degree. Dr. Donoff argued that these were missed opportunities to include dentistry in the already extant medical schools. Recent decades have seen little growth in the number of university-based dental schools; most new schools have been osteopathic. Dr. Donoff mentioned several noteworthy, but ultimately

unsuccessful, attempts to integrate medicine and dentistry at certain institutions during the 20th century, and more recent pushes to highlight the importance of oral health in general wellbeing, particularly by NIDCR.

Dual degree dentist-scientists can fulfill important roles addressing access and health disparities, advancing science and surgical treatments, and training future generations. Dr. Donoff shared several historical anecdotes about how major change can be difficult, even when the need is obvious, but stressed the importance of pilot training programs such as those discussed today. Dr. Donoff presented some findings from a review of recent dental-medical integration efforts, among which were to place greater emphasis on foundational and applied medical education in the dental school curriculum, that training should be provided on team science and interaction with other healthcare providers, and that dental education must incorporate electronic health records systems that offer full functionality with the surrounding healthcare system. Dr. Donoff emphasized the need for a larger cohort of dual-degree dentist-scientists, with residencies, to serve as champions for this overall effort of "putting the mouth back in the body." The dental practice of the future would include integrated care and integrated financing to create a truly interprofessional practice. The pandemic could serve as a unique opportunity to forge an alliance between medicine and dentistry. Research can play a driving role in this process by developing treatments to eradicate dental diseases, which is something that the dental profession has historically not been able to do. Among the existing programs that support dental-medical integration are the Harvard School of Dental Medicine's Initiative to Integrate Oral Health and Medicine and the Center for Integration of Primary Care and Oral Health (CIPCOH).

Discussion

Dr. D'Souza thanked Dr. Donoff for the presentation and encouraged the Oral Health Research Workforce Working Group to study the dual-degree and residency pathway. She agreed with Dr. Donoff that a small but impactful cadre of thought leaders can help in the long-term project of getting the medical field writ-large to consider the mouth and head as parts of the body.

VIII. CONCEPT CLEARANCE

Dr. King, Director, DEA, noted that NIDCR is required to present the purpose, scope, and objectives of proposed concepts for research initiatives to the Council in a public forum for the Council's review, discussion, and approval, and for public comment. Concepts approved by the Council are published on the NIDCR website ([future research initiatives](#)). NIDCR staff presented six concepts, and designated Council members led the discussion, as summarized below.

Collaborative Science to Achieve Disruptive Innovations in Dental, Oral, and Craniofacial (DOC) Research

Dr. Amanda Melillo, Chief, Integrative Biology and Infectious Diseases Branch, and Director, Oral Opportunistic Pathogens and Viral Disease Program, DER, presented the concept.

The objective of this initiative is to support highly integrated research teams to address challenging questions with the potential to significantly advance DOC fields of research interventions. The concept will support research teams of three to six PIs to address ambitious and challenging research questions of high priority to NIDCR that cross technical and conceptual boundaries. Dr. Melillo noted that this concept will help fulfill one of NIDCR's priorities to foster a collaborative team science approach to pressing research questions.

The Council's lead discussants for the concept were Drs. Visel, DiPietro, and Lee Niswander. Dr. DiPietro praised the concept for requiring the teams to address a single, well-integrated question, which makes it unique among NIDCR multi-PI awards. She cautioned NIDCR to not be surprised if there is a learning curve for applicants given this uniqueness. Dr. Visel highlighted examples of successful team science and expressed the hope that this concept would pave the way for similar NIDCR mechanisms in the future. Drs. DiPietro and Visel encouraged NIDCR to monitor and update the concept's priority areas as needed. Dr. Visel also suggested that NIDCR consider making the priority areas strong recommended but optional. Dr. Niswander agreed with the comments of her colleagues. Dr. Graves advised NIDCR to take care to ensure that credit for publication and discovery is shared equally across all investigators.

The Council unanimously approved the concept.

Maternal Health and Dental, Oral and Craniofacial Health and Development of Their Offspring

Dr. Margaret Grisius, Program Officer, Oral and Comprehensive Health Program, DER, presented the concept. She noted that maternal mortality and morbidity rates in the U.S. are among the highest in the world and disproportionately affect minorities, rural individuals, and people of lower economic background. Improving maternal health is a priority of the NIH and this administration. Importantly, maternal health also has health impacts on their children. There is a significant gap of knowledge on understanding how maternal prenatal health affects childhood DOC development. The goal of the concept is "to support research on prenatal environmental and physical stressors experienced by women during pregnancy that affect their child's DOC development through altered maternal physiology." Studies under this concept might include observational studies of mothers who have experienced emotional stress during pregnancy and the impact on the developing DOC structures of their children or epidemiologic studies comparing prenatal maternal health and disease and their child's DOC development, among others.

The Council's lead discussants for the concept were Drs. Dickinson, Niswander, and Amy Slep. Dr. Niswander expressed support for the concept and praised its timeliness. Dr. Slep was excited about the inclusion of socioemotional impacts as a research topic. Dr. Dickinson concurred with his fellow reviewers.

The Council unanimously approved the concept.

Understanding Persistent Oral Human Papillomavirus (HPV) and Human Immunodeficiency Virus (HIV) Co-infection and Its Role with Oropharyngeal Cancer Induction

Dr. Hongen Yin, Program Officer, HIV/AIDS & Oral Health Research Program, DER, presented the concept. The goal is "to solicit research to better understand the mechanisms of persistent oral HPV and HIV co-infection and its role in the induction and pathogenesis of HPV-associated oropharyngeal cancers." Dr. Yin noted that people with HIV have a significantly increased risk of oral HPV infection and increased incidence of HPV-associated oropharyngeal cancers. This concept aims to help address knowledge gaps in epidemiology, mechanistic biology, and pathogenesis in relation to persistent oral HPV infection and induction of HPV-associated oropharyngeal cancers in the context of people with HIV. Specific areas of interest include, among others, studying the epidemiology and biology of HPV acquisition, persistence, and progression in people with HIV; exploring the mechanisms of epidemiology and biology for synergistic relationships between HIV and oral HPV infection; elucidating mechanisms related to how and to what extent HIV infection affects oral HPV infection; evaluating the impact of HIV pharmacologic management on oral HPV acquisition and persistence; uncovering the mechanisms and pathogenesis of onco-genomics and onco-immunology related to how oral HPV and HIV co-infection contribute to the induction of HPV-associated oropharyngeal cancers.

The Council's lead discussants for the concept were Drs. Jacques Nor, Joel Collier, and Wenyuan Shi. Dr. Nor expressed support for this concept, which he believes tackles a very important and timely topic. Dr. Collier commended the concept's alignment with both NIH and NIDCR strategic priorities, particularly the integration of oral and overall health that has been discussed in this meeting. This concept might also be used as a foundation for future collaborative research with NCI. Dr. Collier encouraged NIDCR to center vulnerable populations in this concept. Dr. Shi likewise supported the concept and concurred with his colleagues' remarks.

The Council unanimously approved the concept.

Chronic Inflammation of the Oral Cavity: An Agent for Oral Mucosal Disease

Dr. Preethi Chander, Program Officer, Integrative Biology and Infectious Diseases Branch, DER, presented the concept. The concept aims to "encourage interdisciplinary research that investigates the mechanisms driving chronic inflammation and its relationship with the physiology of the oral cavity, including oral manifestations of chronic systemic diseases." Research has shown that chronic inflammation can contribute to serious health conditions in the oral cavity, and that the oral cavity is a gateway for possible etiopathogenetic factors in various diseases, including oral cancers. This concept hopes to further our understanding of the functional role of chronic inflammation in post-viral infection sequelae, explore relevant host-microbe interactions, and develop therapeutic approaches for chronic inflammation focused on functional endpoints in the oral cavity, among other topics of interest.

The Council's lead discussants for the concept were Drs. Nor and Shi. Dr. Nor said this concept is significant because it calls for mechanistic studies looking into how chronic

inflammation can cause or promote the progression of oral diseases, which thus far are lacking in the literature. Dr. Shi expressed strong support for the concept and urged NIDCR to do what it can to encourage applicants to aim big, rather than settle for incremental progress.

The Council unanimously approved the concept.

Developing Salivary Components as Therapeutics for Oral Health

Dr. Chander presented the concept. Saliva plays an essential role in maintaining oral health; reduced salivary flow can lead to oral health issues like dental caries, oral fungal infections, or halitosis. The goal of this concept is to "encourage interdisciplinary research that harnesses the functional components of saliva towards therapeutics." NIDCR hopes that one potential outcome of this research will be the development of effective surrogate saliva for clinical applications. These applications might include enamel remineralization, wound healing, or overall maintenance of healthy oral microbiota.

The Council's lead discussants for the concept were Drs. Shi and Nor. Dr. Shi expressed excitement for this concept and its potential for high-impact therapeutic discovery. Dr. Nor agreed and said the time is ripe for mechanistic studies of salivary biomolecules involved in wound healing. Dr. DiPietro encouraged NIDCR to think bigger and include consideration of this research's implication in other parts of the body.

The Council unanimously approved the concept.

Apply Data Science in Translational Dental, Oral, and Craniofacial Research

Dr. Lu Wang, Chief, Translational Genomics Research Branch, DER, presented the concept. This concept will promote the development, dissemination, and use and reuse of state-of-the-art data science resources and tools for DOC research. Applicants will be encouraged to develop and disseminate DOC data standards and tools that adhere to the FAIR (Findability, Accessibility, Interoperability, and Reusability) principles. Ultimately, it is hoped that data science resources and tools in this concept will be used "to discover disease prevention and treatment targets and translate discoveries into evidence-based clinical applications." This concept was designed to align with NIDCR's strategic priorities around data science and will hopefully be in concert with the recommendations on the Council's Data Science Strategy Working Group.

The Council's lead discussants for the concept were Drs. Slep and Visel. Dr. Slep expressed enthusiasm for the concept and its responsiveness to NIH and NIDCR strategic priorities. She said she hoped this concept will also help further NIDCR's efforts to make the mouth part of the body and consider the psychosocial aspects of the patient as a whole person. Dr. Visel said he was excited about the concept and believes it will go hand-in-hand with the efforts of the Data Science Strategy Working Group. He also praised the concept for taking a

broad approach to data science. Dr. Dickinson looked forward to the concept spurring efforts to integrate dental and medical health records.

The Council unanimously approved the concept.

CLOSED SESSION

This portion of the meeting was closed to the public in accordance with the determination that it was concerned with matters exempt from mandatory disclosure under Sections 552b(c)(4) and 552b(c)(6), Title 5, U.S. Code and Section 10(d) of the Federal Advisory Committee Act, as amended (5 U.S.C. Appendix 2).

IX. REVIEW OF APPLICATIONS

Total	Requested	Approved
Number	535	327
Dollars	\$ 207,402,368	\$115,116,641

X. ADJOURNMENT

CERTIFICATION

I hereby certify that the foregoing minutes are accurate and complete.

 /Rena D’Souza/
Dr. Rena D’Souza
Chairperson
National Advisory Dental and
Craniofacial Research Council

 /Lynn King/
Dr. Lynn King
Executive Secretary
National Advisory Dental and
Craniofacial Research Council

ATTACHMENTS

- I. Roster of Council Members