

May 18, 2020

The Honorable Mitch McConnell  
317 Russell Senate Office Building  
Washington, D.C. 20510

The Honorable Charles Schumer  
322 Hart Senate Office Building  
Washington, D.C. 20510

The Honorable Nancy Pelosi  
1236 Longworth House Office Building  
Washington, D.C. 20515

The Honorable Kevin McCarthy  
2468 Rayburn House Office Building  
Washington, D.C. 20515

The Honorable Steny Hoyer  
1705 Longworth House Office Building  
Washington, D.C. 20515

Dear Speaker Pelosi, Majority Leaders McConnell and Hoyer, and Minority Leaders Schumer and McCarthy:

The American Association for Dental Research (AADR), American Dental Association (ADA) and American Dental Education Association (ADEA), thank you and your colleagues for your tireless efforts in response to the COVID-19 pandemic. We are writing to bring your attention specifically to the needs of the dental research community as we look to align our research agenda to reflect the new reality of COVID-19 and the impact it will have on the practice of dentistry and oral health, as well as to request support for the research spectrum by providing relief for researchers and the ongoing research projects that will need to be restarted when it is safe to do so.

To address these specific needs, we respectfully request dedicated funding for National Institute of Dental and Craniofacial Research (NIDCR) as part of the next supplemental package, specifically:

- **\$170 million** to ramp back up NIDCR research to pre-pandemic activity levels
- **\$90 million** to address the new COVID-19 research agenda related to dental, oral and craniofacial research.

We also urge you to include relief for our nation's research infrastructure. We—along with peers in the scientific community—fear the far-reaching consequences the COVID-19 crisis will have on our nation's research establishment, including its capacity and its workforce, in both the short- and long-term.

## **Utilizing NIDCR to Answer Critical Delivery of Care Questions**

Policymakers across the country are grappling with when and how to safely reopen businesses. In our field, we are seeing questions about the COVID-19 exposure risk to dental practitioners, whether dental practices will need to be changed to safeguard both patients and practitioners, and what personal protective equipment (PPE) will be necessary to reduce risk of transmission.

Among the current research priorities that NIDCR can help answer are the following (a comprehensive proposed research agenda is included at the end of this letter):

- **Support research to develop patient treatment protocols and decision support tools to enhance dental response to pandemics and other public health emergencies.** This includes research into the risks of disease transmission in the dental clinic, with an emphasis on aerosolized and airborne infectious agents, the development of new practice paradigms, and the occupational health and safety of both dental teams and patients during treatment.
- **Support studies for the development of safe and effective infection control procedures and protocols for use in dental treatment environments.** This area includes research to address the risk of disease transmission within dental settings, PPE, and disease monitoring to protect the health of patients and the dental team.
- **Advance the understanding of anxiety and other mental health conditions that impact dental treatment during a public health emergency,** including mental health research aimed at both dental teams and patients.

## **Protecting the Nation's Research Enterprise**

The COVID-19 pandemic has been a stark reminder of the crucial role that biomedical and public health research play in our society. The research enterprise is essential to safeguarding public health, national security, economic growth and competitiveness in global scientific leadership.

Now, along with so many industries, the scientific research workforce is facing myriad challenges resulting from the COVID-19 crisis. While research institutions are understandably concentrating on coronavirus-related research, most other research has been scaled back or stopped entirely due to pandemic-induced closures of university campuses and laboratories. The longer this pandemic continues, the more harm and strain it will cause to our nation's research workforce and capabilities; sustaining its strength will be vital if the United States is to remain a leader in global research and in its ability to respond to future public health crises.

Given the potential devastating effects the COVID-19 pandemic could have on federal research, AADR, ADA and ADEA join our colleagues in the scientific research and public health communities in requesting supplemental appropriations of [\*\*\\$26 billion for our nation's\*\*](#)

[major research agencies](#), including the National Institutes of Health (NIH), National Science Foundation (NSF), and others—an amount that anticipates three or four months of research slowdowns, laboratory closures and harm to our research workforce and capabilities.

To demonstrate the need for these funds, the following represent just some of the ways the COVID-19 pandemic is currently impacting or has the potential to impact research and research personnel:

- **The research workforce is at risk—including graduate students, post-doctoral researchers (postdocs), early career researchers, principal investigators and technical support research staff.** With much of the nation's research workforce idle, there will be implications for those in every phase of their career: some graduate students will not be able to complete their degrees on schedule; postdocs will need extended periods for their post-doctoral work; early career researchers will miss out on important research opportunities; and staff scientists and technical workers who support research efforts on campuses and at other research facilities will lose work and pay.

In the short term, federal research agency guidance is helping maintain the continuity of compensation by allowing for no-cost grant extensions. However, in the long term, particularly if closures last several more months, greater assistance will be needed to support research personnel and the research itself as compensation costs eat into the salary dollars initially included in grant, contract and agency budgets. Continuing salary, benefits, stipend and tuition support is critical to maintaining research operations.

- **International graduate students and researchers play a key role in the U.S. research ecosystem.** The COVID-19 crisis has affected the ability and desire of students from other nations to obtain visas and travel, causing a strain on our nation's workforce. The United States has always prided itself on our ability to attract and retain top talent around the world—a flow that has now been disrupted and could have a lasting impact on research.
- **Ramp-up costs to restart research activities will be significant.** The scaling back and closing of research labs and facilities across the country has affected research projects in myriad ways, including the forced loss or destruction of cell cultures and biological samples, the disposal of hazardous materials, and the care for and replacement of animal subjects. In some cases, biological samples were frozen and stored, but some samples might not perform as well after thawing. Additionally, while some cell lines that have been lost could potentially be recreated from frozen samples, that process can sometimes take weeks or more.

There is also a financial cost associated with labs that have been donating or repurposing PPE for hospitals and front-line medical professionals. NIH allows researchers to donate PPE purchased using grant funds, and some NIDCR researchers have donated PPE to

frontline workers. However, once they can return to their labs, they will need to replace this equipment using their existing grant funds or submit administrative supplement requests to NIH for reimbursement.

- **Additional COVID-19-related research costs are diverting resources.** The research community has proudly answered the call to respond to the COVID-19 crisis. As part of the shift to address research questions that could improve our understanding of this disease, researchers have repurposed equipment, supplies and personnel. Universities have shouldered much of these costs—and while research needs related to COVID-19 are pressing, resources are being diverted from research that also contributes to society’s public health needs.

We recognize that the COVID-19 pandemic is affecting many individuals and institutions across the country and that Congress is providing unprecedented resources to help, but our core research infrastructure cannot be forgotten. In fact, the COVID-19 pandemic is demonstrating the need for a more resilient, comprehensive, and efficient research infrastructure as well as shining a light on the unmet research needs that are hampering our fight against this disease.

AADR, ADA and ADEA thank you again for your efforts and encourage you to provide relief that will preserve our current scientific workforce, ensure the United States is prepared to continue its scientific leadership, and allow us the chance to come out stronger once this crisis ends. We are ready to assist in any way possible.

If you have questions or need additional information, please contact AADR Assistant Director of Government Affairs Lindsey Horan at [lhoran@aadr.org](mailto:lhoran@aadr.org) or 703.299.8098; ADA Congressional Lobbyist Jennifer Fisher at [fisherj@ada.org](mailto:fisherj@ada.org) or 202.789.5160 or ADEA Chief Advocacy Officer Tim Leeth at [leetht@adea.org](mailto:leetht@adea.org) or 202.236.5354.

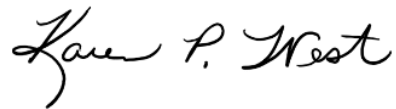
Sincerely,



Christopher H. Fox, DMD,  
DMSc  
Chief Executive Officer  
American Association for  
Dental Research



Kathleen O’Loughlin, DMD,  
MPH  
Executive Director  
American Dental Association



Karen West, DMD, MPH  
President and Chief  
Executive Officer  
American Dental Education  
Association

## VIRUS RESEARCH AS ESSENTIAL TO THE NIDCR STRATEGIC PLAN

- ▶ **The NIDCR and the dental profession need to proactively develop and implement viral pandemic strategies.** The organizations need to rapidly respond to better understand the current pandemic and support critical studies to address/prevent the next pandemic virus.
- ▶ **Research personnel.** Professionals in our disciplines need to be better educated to deal with viral pandemics including basic, clinical and public health researchers, and providers.

## TESTING AND CHARACTERIZING SARS-COV-2 INFECTION-SHORT TERM/HIGH IMPACT

- ▶ Saliva or breath for rapid testing for infection (virus), and immunity (slgA, IgG), considering the durability of antibody response, viral load, and transmission including markers of asymptomatic infection (i.e., sequence isolates) and the impact of co-morbidities
- ▶ Do loss of taste and smell translate into early diagnostic molecular sentinels?
- ▶ Oral intradermal mucosal vaccine to create local and systemic immunity and compare to a nasal vaccine.
- ▶ Optimize virus detection platforms including electric-field induced release and measurement (EFIRM), which is an electric chemical analytical platform optimized for salivaomics target detection (technology developed with NIDCR support). Preliminary data indicate that the SI viral antigen is exquisitely sensitive for EFIRM detection (CLIA certified).
- ▶ Develop tests to be used in the dental office by dental personnel to accurately test personnel and screen patients (i.e., point-of-service tests)

## FUNDAMENTAL AND FOUNDATIONAL STUDIES

- ▶ **Mapping oral/oropharyngeal/nasal sites with ACE-2 receptors**
- ▶ **Mechanism of Cov-2 entry/infection into oral/oropharyngeal and salivary epithelial cells.** Can COVID-19 proliferate and survive in oral epithelial cells and induce immune response? In addition to the ACE2 receptor,

we need to examine the spike protein processing proteases (i.e., endosomal cathepsins, cell surface transmembrane protease/serine (TMPRSS) proteases, furin, and trypsin) in oral/tongue epithelial cells.

- ▶ **Use mechanisms of coronavirus infection to better understand the acquisition of other respiratory and ingested infectious agents** (i.e., influenza, other coronaviruses, enterovirus, and bacterial agents such as Listeria and Salmonella ssp.)
- ▶ **Role of mucosal microflora on susceptibility to coronavirus infection; promoting dysbiosis**
- ▶ **Phagocyte response to SARS-CoV2 in oral mucosa:** As the first line of immune defense, how do neutrophils, monocytes/macrophages, and dendritic cells respond to SARS-CoV2? Can myeloid cell responses be pharmacologically enhanced for a more efficient eradication of the virus?
- ▶ **Roles of dendritic cells (DC) and T cell functions in SARS-CoV2 infection in the oral cavity:** How do the functions of oral mucosal DCs and T cells determine SARS-CoV2 infectivity and host responses?
- ▶ **Role of T-resident memory cells in the oral mucosa in immunity/preventing recurrence**
- ▶ **Role and regulation of innate immunity in response to SARS-CoV-2**
- ▶ **Genetic factors in SARS-CoV-2 infection: resistance vs. susceptibility.** Develop an understanding of inter-individual differences (e.g. linked to age, gender, ethnicity, etc.), and correlations with susceptibility to infection
- ▶ **Blocking oral/oropharyngeal/nasal sites for infection (i.e., ACE-2 inhibitors, blocking agents) as a potential preventive strategy in high risk populations**
- ▶ **Route of oral/oropharyngeal transmission; reservoirs of virus; post- receptor/downstream signaling pathways** mediate SARS-CoV2 infectivity in oral mucosa?
- ▶ **Contribution of oral/oropharyngeal SARS-CoV-2 infection to systemic cytokine storm**
- ▶ **Role of saliva:** neutral, inhibitory, augmenting infectivity

## Fundamental and Foundational Studies (continued)

- ▶ **Why does Cov-2 affect taste, smell?** Does COVID-19 affect the chemosensing by taste receptors, relationship to ACE-2 receptors on the tongue, or interfere with signal transduction or other pathways?
- ▶ **Generate critical reagents for studies of Cov-2 and host cell interactions;** i.e., producing and sharing pseudovirions with reporter constructs for visualization, receptor-binding domain proteins, spike proteins, cell lines and organoids, mouse and other animal models of oral/oropharyngeal infection
- ▶ **Natural history studies** to determine the effect of CoVID19 on the pathobiology of oral, oropharyngeal, and salivary gland tissues and their contributions to pulmonary and systemic outcomes, and cytokine storm

## EPIDEMIOLOGIC STUDIES

- ▶ **What are the long-term effects of COVID-19 and treatment on oral health and associated systemic diseases, including autoimmune diseases such as RA and Lupus?**
- ▶ **Oral health equality and social determinants of health related to COVID infection**
- ▶ **Identify social predictors of transmission in different communities and the impact of different interventions on disease prevalence using seroepidemiology and mapping studies.**
- ▶ **Contact tracing — oral health care providers and patients**
- ▶ **Testing in dental offices; monitor potential virus contamination in the dental clinic given different infection control practices, types of ventilation, and types of dental procedures (with and without generating aerosol)**
- ▶ **Understanding how COVID-19 may change dental practice**
- ▶ **Understanding social and cultural constraints of**
  - oral testing
  - oral screening
  - billing and insurance reimbursements
- ▶ **Efficacy of dental treatment post-SARS-CoV-2 infection and/or development of COVID-19:**
  - across the lifespan (pediatric, geriatric populations)
  - across the specialties/disciplines

- ascertain effects of prior infection on procedural outcomes and healing (i.e., grafting materials, implants etc.)
- ascertain risk factors (behavioral, social, genetic) that predict poor patient outcomes

## INFORMATICS STUDIES

- ▶ **Linkage of emerging and existing data sets to determine risk factors** including oral risk factors for infection
- ▶ **Building a Bio/data repository**

## STUDIES RELATED TO CLINICAL CARE

- ▶ **Salivary detection of SARS-CoV2 in a dental setting**
  - **Oral sensors:** Can oral sensors be developed for fast detection of salivary SARS-CoV2?
  - **Antibody testing:** Can saliva be used for fast and non-invasive testing for antibodies (both IgM and IgG) against SARS-CoV2?
  - **Define and characterize salivary and nasopharyngeal aerosols:** Can viral particles and various surface proteins/ accessory molecules of SARS- CoV2 be detected in salivary and nasopharyngeal aerosols?
  - **Spread kinetics of virus particles in aerosols and saliva:** Is 6-feet sufficient? Is there a diluting halo of dispersion of infectious SARS-CoV2; very critical determinant of viral spread and contamination?
- ▶ **What is the impact of COVID-19 on oral health?**
  - Periodontal health
  - Caries
  - Oral cancers
  - Bone/cartilage (including craniofacial structures and TMJ)
  - Diabetics and others with co-morbidities with COVID-19-associated coagulopathies
- ▶ **Impact of antiviral medication usage on oral health**
  - Opportunistic infections associated with SARS-CoV2
  - Effects of antiviral medications with differing pharmacology
  - Effects of cytokine storm immunosuppressive agents on mucosal immunity
  - Novel treatment strategies for SARS-CoV2

## *Studies Related to Clinical Care (continued)*

- ▶ **Effective use of teledentistry in the context of the pandemic**
  - Determine rate of adoption and obstacles including state practice policies, reimbursement, patient and provider acceptability and utilization changes.

## **INFECTION CONTROL**

- ▶ **New, more efficient approaches to disinfection and sterilization in dental clinics** (e.g. UV-disinfection, extraoral suction units)
  - Hospital setting
  - Private clinics
- ▶ **Determine the effectiveness and optimal design of face masks in protecting against transmission in the primary care setting**
- ▶ **Novel methods to minimize aerosolization and monitor infectious particles in the dental setting**
- ▶ **Effectiveness and means of UV decontamination**
- ▶ **Additional PPE and decontamination protocols**
- ▶ **Viral testing in water lines**
- ▶ **Ensuring staff and patient safety in delivering routine dental care**
  - What are minimum requirements to reopen in terms of engineering of the office design (e.g., individual office operatory versus open bays, commercial vs hospital grade HVAC systems, minimum airflow, negative pressure rooms.)
  - Are dental offices located within in larger professional/ medical or commercial office buildings safe for adjoining tenants?
  - Evidence needed to establish the new “Universal Precautions” with CDC/OSAP.
- ▶ **Establish public-private partnership with dental manufacturers to develop new instrumentation to minimize all-source aerosols** (e.g., handpieces, air/water syringe, high speed suction, etc)
- ▶ **Establish a HIPPA-compliant patient registry of oral health personnel with COVID**
  - Determine source of exposure, underlying health conditions, and other risk factors

- ▶ **Update safety protocols for conducting human and animal research studies**
- ▶ **To enable dentists to provide clinical services during the next pandemic (i.e., not Covid-19), engage dentists and outside experts to identify potentially unforeseen vulnerabilities and create mitigation plan.**

## **BEHAVIORAL STUDIES**

- ▶ **How does the pandemic change patient access/ willingness/avoidance for care?**
- ▶ **Are these concerns/practices different for underrepresented and/or marginalized populations?**
- ▶ **Characterize stress on dental care professional and develop strategies to cope or treat.**
- ▶ **Development of educational programs targeted at providers and patients**
- ▶ **Given (post-) pandemic concerns, which practice settings or environments are likely to be most effective; characteristics of providers that will be more effective**
  - Costs to dental practice of additional infection control procedures
- ▶ **Establish an implementation sciences research agenda to determine that dental practices adopt these new infection control protocols and other changes.**
  - Include public, private, and academic settings
- ▶ **Determine that oral healthcare delivery is managed optimally during and after the pandemic.**
  - Impact to communities after dental practices close due to the pandemic and did not open (by geography, community population characteristics, size of practice, characteristics of provider etc.)

## **IMPACT ON DENTAL EDUCATION**

- ▶ **Effects of the pandemic on dental education**
  - New virology/microbiology curricula for basic and clinical education
  - Develop online education and testing
  - Providers need to be trained to collect data to assess implementation of new protocols.

## CONTRIBUTORS

*UNC-Chapel Hill*

Shannon Wallet

Jennifer Webster-Cyriaque

Jane Weintraub

*Case-Western Reserve University*

Aaron Weinberg

*University of Nevada Las Vegas*

Jeffrey Ebersole

*University of Louisville*

Gill Diamond

*Dental College of Georgia*

*at Augusta University*

Chris Cutler

*Forsyth Institute*

Alpdogan Kantarci

Thomas E. Van Dyke

Markus Hardt

Hatice Hasturk

Xiaozhe Han

Qing Yu

*UCLA*

Cun-Yu Wang

David Wong

*University of Minnesota*

Mark Herzberg (organizer)

Karen F Ross

Bruno Lima

Ian Stone

Will Boyle

*Boston University*

Natasha Hochberg

(Infectious Disease/Epidemiology)

*AADR Board of Directors*

Mark Herzberg

Jacques Eduardo Nör

Jane A Weintraub

J. Timothy Wright

Olga Baker

Brenda Heaton

Carmem Silvia Pfeifer

Luciana Shaddox

Mary Fete

Mildred C Embree

Joe D Oxman

Natalie Atyeo

Alexandra Oklejas

Nicholas Jakobovics

Jocelyne Feine

Christopher H. Fox