On behalf of the American Association for Dental Research (AADR) and the Friends of National Institute of Dental and Craniofacial Research (FNIDCR), I am pleased to submit testimony describing our fiscal year (FY) 2018 requests, which include at least a $2 billion increase over the FY17 level for the National Institutes of Health (NIH) and $452 million for the National Institute of Dental and Craniofacial Research (NIDCR). We are grateful that Congress approved the 21st Century Cures Act which created the NIH Innovation Account. It is critical the funding afforded via this account is used to supplement and not supplant core NIH funding. We strongly urge Congress to honor the long standing tradition of allocating resources to the entire biomedical research enterprise at NIH including all the institutes and centers. Importantly, a discovery in one area of research may be applied to another. Maintaining flexibility, honoring the scientific peer review process and supporting all research is critical to our endeavor to bring cures to Americans.

Moreover, since the federal government is currently operating under a Continuing Resolution through April 28, 2017, we strongly urge Congress to approve the bi-partisan Senate FY17 LHHS Appropriation bill which includes $34.1 billion for NIH and $430.5 million for NIDCR immediately. We are extremely concerned that macro budget issues-including but not limited to-sequestration, the southern border wall and a movement to increase defense spending at the expense of non-defense discretionary will make any future increase in funding for NIH and NIDCR extremely challenging. Therefore, Congress must build on the momentum
generated in the FY16 omnibus appropriations bill and provide NIH and NIDCR with predictable, sustained and increased funding as soon as possible.

Increasing the appropriation for NIDCR will improve the oral health of the nation, reduce societal costs of dental care and enhance the scientific evidence base for the dental profession. Specifically, increased funding would enable NIDCR to expand its portfolio of work on immunotherapies for oral cancer; research on cleft lip and cleft palate; and address oral health disparities among the aging population.

NIDCR is the largest institution in the world dedicated exclusively to research to improve dental, oral and craniofacial health. The health of the mouth and surrounding craniofacial (skull and face) structures is central to a person’s overall health and well-being. Left untreated, oral diseases and poor oral conditions make it difficult to eat, drink, swallow, smile, communicate and maintain proper nutrition. Scientists also have discovered important linkages between periodontal (gum) disease and heart disease, stroke, diabetes and pancreatic cancer.

Investments in NIDCR funded research during the past half century have led to improvements in oral health for millions of Americans through its impact on areas such as community water fluoridation; the implementation of dental sealants to reduce cavities in children; and emerging opportunities to assess the efficacy of a human papilloma virus (HPV) vaccine for oral and pharyngeal cancers.

As a result of these investments, today over 210 million Americans are benefiting from community water fluoridation. Absent advances in oral health research in the fight against dental caries (tooth decay) and periodontal diseases, there would be an additional 18.6 million Americans aged 45 or older who have lost all of their natural teeth. Perhaps most striking is
that since the 1950s the total federal investment in NIH-funded oral health research has saved the American public at least $3 for every $1 invested.

Despite these improvements, however, treating oral health conditions remains extremely costly—with the nation spending $117.5 billion on dental services in 2015. While tooth decay and gum disease are the most prevalent threats to oral health, complete tooth loss, oral cancer and craniofacial congenital anomalies, such as cleft lip and palate, impose massive health and economic burdens on Americans. Below for your reference are additional examples of the important research supported by NIDCR to address some of these topic areas:

**Point of Care Diagnostics:** Salivary diagnostics are devices that draw and analyze saliva to test for conditions and infections such as HIV, human papillomavirus (HPV), substance abuse, caries, periodontitis and oral cancer. Specifically, recognizing the emergence of Zika virus as a significant public health issue, NIDCR is supporting researchers who are developing salivary diagnostics to test for Zika virus infection and provide rapid, inexpensive, point-of-care detection.

**E-Cigarettes** According to the CDC the use of e-cigarettes has tripled among middle and high school students in one year. Currently, there is no scientific evidence to support the safety of electronic cigarettes and initial studies indicate that a variety of chemicals are produced during the vaporization of nicotine and additives by these devices. In 2016, NIDCR funded seven ongoing research projects to investigate the effects of aerosols from e-cigarette vapors on the oral microbiome, oral epithelia and wound healing.

**Precision Medicine:** Precision medicine is an emerging approach for disease prevention and treatment that takes into account people’s individual variations in genes, environment, and
lifestyle. NIDCR supports a diverse precision medicine portfolio including research on cancer, craniofacial developmental disorders, and salivary diagnostics.

**Enhanced Tissue Replacement and Regeneration:** NIDCR-funded scientists are developing new restorative materials with enhanced longevity and have developed effective techniques to enable the use of stem cells to form bone and cartilage for oral, dental and craniofacial purposes. The isolation and enrichment of pluripotent stem cells is also being explored, which would enhance the cells’ ability to regrow bone and cartilage. NIDCR recently funded a tissue engineering consortium that uses multidisciplinary teams to translate basic research into innovative tools and strategies to regenerate damaged and diseased tissues.

**HPV-Related Oral Cancer:** Scientists predict that oropharyngeal cancer will be the most common HPV-related cancer by 2020. In fact, HPV is now causing more oropharyngeal cancers than smoking. But simply identifying the presence of HPV in a mouth swab or a blood draw does not definitively indicate the presence of cancer. More research is needed for the early detection of HPV-related oropharyngeal cancer, as well as prevention and treatment approaches.

**Evidenced-Based Practice:** NIDCR supports a National Dental Practice Based Research Network (NDPBRN) headquartered at the University of Alabama at Birmingham School of Dentistry. A dental practice-based research network is an investigative union of practicing dentists and academic scientists. The network provides practitioners with an opportunity to propose or participate in research studies that address daily issues in oral health care. These studies help to expand the profession’s evidence base and further refine care.

**Orofacial Pain and Temporomandibular Joint Disorders:** NIDCR supports the Orofacial Pain: Prospective Evaluation and Risk Assessment (OPPERA II) clinical research study,
which will advance understanding of the common mechanisms underlying temporomandibular joint disorder (TMD) and other overlapping pain conditions. The wealth of information in this large cohort makes OPPERA II a unique resource for identifying common mechanisms as well as differences in overlapping pain conditions.

From a patient perspective, the research at NIDCR has impacted millions of patients with a wide range of conditions that impede quality of life, are physically debilitating, and create a major financial and social burden. Many complex systemic diseases, ranging from TMD to autoimmune disorders, such as Behcet’s, and to ectodermal dysplasias, have a major oral component. Through research into the basic science that is clearly needed to better understand these diseases; through the discovery of biomarkers for better diagnosis and clinical care; and by the development of new and improved tools for management and treatment, NIDCR has provided hope for these patients and their families that their lives will one day be improved.

In addition to NIH, our members urge you to provide $35.8 million for the Title VII Health Resources and Services Administration (HRSA) programs training the dental health workforce, $19 million the Centers for Disease Control and Prevention (CDC) Division of Oral Health, $170 million for the National Center for Health Statistics (NCHS) and $364 million for the Agency for Healthcare Research & Quality (AHRQ).

Finally, with the return of full sequestration next year we strongly urge Congress to avoid making further reductions in these programs and work to replace the scheduled sequestration cuts through a package that is balanced—both in how such relief is paid for and how it is applied to defense and NDD programs.

Thank you for the opportunity to submit this testimony. We stand ready to answer any questions you may have.