

National Institute of Dental and Craniofacial Research
FY 2017 Significant Items

Topics:

- [NIDCR's Mission](#)
- [Temporomandibular Disorders \(TMD\)](#)

Please note that the text under each topic heading is the written request from the congressional committee ('The Committee'). NIDCR's response is included under the heading '[Action taken or to be taken](#)'.

NIDCR's Mission

The mission of NIDCR is to improve the nation's oral, dental and craniofacial health through research and research training. NIDCR accomplishes its mission by performing and supporting basic and clinical research; conducting and funding research training and career development programs to ensure that there is an adequate number of talented, well-prepared, and diverse investigators; and coordinating and assisting relevant research and research-related activities. The Committee expects the Institute to systematically coordinate through other HHS agencies to share new scientific information to ensure it reaches the community and providers through various other HHS outreach programs.

Action taken or to be taken

NIDCR remains committed to its mission to improve the dental, oral, and craniofacial health of the nation; NIDCR will continue to collaborate on outreach efforts with other HHS agencies to share new scientific information with the community and providers.

Temporomandibular Disorders (TMD)

The Committee encourages NIBIB, NIAMS, and NIDCR to consider the recommendation that resulted from their jointly sponsored Roundtable on the Temporomandibular Joint in Health and Disease in 2013. Research to develop safe and effective techniques for joint repair and regeneration is essential. An analysis of problems associated with current joint replacements should provide guidance in these efforts.

Action taken or to be taken

Temporomandibular disorders (TMDs) are a group of conditions that cause pain and dysfunction in the jaw joint and the associated muscles and supporting tissues. The National Institute of Dental and Craniofacial Research (NIDCR) funds a diverse research portfolio related to the development, structure, function, regeneration, and replacement of the temporomandibular joint (TMJ), as well as studies on chronic pain, which is associated with TMD. In a continued effort to identify safe and effective therapeutics that can be used for TMD and a variety of other pain conditions, NIDCR, through support of a small business grant, is developing a promising compound, called AQU-118, which has been found to block neuropathic pain in various animal models.

Damage or displacement of the disc that cushions the jaw joint can occur in TMD. The National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) supports research to repair damaged disc tissue in other regions of the body, such as the spine, that should translate into efforts to improve the treatment of TMD. NIAMS-funded research is also providing insight into bone-loss caused by tiny implant particles, which is the most common reason for implant failure following joint replacement surgery. Researchers are developing and testing more durable or biologically compatible materials and generating new approaches for the early detection of complications following joint replacement surgery.

NIDCR co-funds a project with the National Institute of Biomedical Imaging and Bioengineering (NIBIB) to develop imaging methods for diagnosing and classifying bone damage in TMJ osteoarthritis in order to improve early diagnosis and monitoring of treatment outcomes. NIDCR and NIBIB also co-sponsor initiatives to encourage research grant applications on the “Biology of the Temporomandibular Joint in Health and Disease.” Research on the biology of joint function and the tissues that make up the TMJ will provide the basis for developing additional novel approaches to prevent, diagnose, assess risk, and treat TMD.

In September 2014, NIDCR partnered with other NIH ICs and the TMJ Association to sponsor a meeting on the genetic and epigenetic basis of TMD and related chronic overlapping conditions.¹⁷⁴ In a related effort, NIDCR has launched a new initiative to better define the genetic basis of variability in drug responses and adverse events in individuals with painful conditions of the dental, oral, and craniofacial region. These types of precision medicine studies are critical to developing effective and personalized pain management for acute and chronic pain patients.

¹ <http://www.molecularpain.com/content/pdf/1744-8069-10-72.pdf>