

Biomedical Research Award

Dr. Iacopo Cioffi, *University of Toronto, Faculty of Dentistry*

Short biography

Dr. Cioffi is an orthodontist with expertise in physiology and pathophysiology of masticatory muscles and Temporomandibular disorders (TMD). He was trained in dentistry, orthodontics (specialty degree), and temporomandibular disorders at the University of Naples Federico II, Italy. He also completed a PhD program in Oral Sciences. During his training, he worked at the University of Zurich (Switzerland) and ACTA (Amsterdam, the Netherlands). Dr. Cioffi completed the dental specialty training and assessment training program (Orthodontics) at the University of Toronto. Currently, he is a fellow of the Royal College of Dentists of Canada.



Dr. Cioffi is a full-time tenured Associate Professor at the Faculty of Dentistry, University of Toronto. He co-directs the Centre for Multimodal Sensorimotor and Pain Research (<http://painresearchcentre.org/>), which is funded by both the Ontario and the Federal Governments. The Centre uses innovative approaches to study chronic pain with a specific focus on orofacial pains. Dr. Cioffi has authored >60 papers in the field of orthodontics, temporomandibular disorders, and neuroscience. He is a member of the Editorial Boards of Orthodontics and Craniofacial Research, Journal of Oral Rehabilitation, and Aligner Orthodontics. He also actively serves as a reviewer for the American Journal of Orthodontics, The European Journal of Orthodontics, the Journal of Oral and Facial Pain and Headache, and many other pain and neuroscience journals. Dr. Cioffi has been an invited speaker at many international orthodontic and pain meetings.

Description of the project

TMD are the most common cause of chronic orofacial pain. They exert considerable suffering and pose a significant economic burden. Despite numerous studies, a definitive cause of myogenous TMD (mTMD) has yet to be identified.

The etiology of mTMD remains poorly understood, and mechanisms of this painful condition remain elusive. MTMD is on the rise during the COVID19 pandemic, and this has been attributed to increased anxiety and uncertainty. Accordingly, behavioral studies have highlighted that clinically relevant levels of anxiety and stress play an essential role in mTMD, as they increase the incidence of non-functional oral behaviors, such as awake bruxism (i.e., wake-time tooth clenching) which are strongly associated with mTMD onset and maintenance. Of importance, awake bruxism is thought to represent a maladaptive coping strategy to manage stress.

The aim of this project is to identify and characterize novel brain circuits in chronic mTMD. By using functional and structural MRI, we will identify structural and functional connections between the motor nuclei of the trigeminal nerve and the limbic system.

Our research will clarify mechanisms of TMD, and contribute, in the long term, to develop more effective strategies for this condition. Dr. Cioffi's research will benefit both dental and orthodontic education by providing a better knowledge of mTMD. Through support from the AAOF, Dr. Cioffi will be able to conduct cutting-edge research and offer new research opportunities to orthodontic residents as they train to develop excellent clinician and scientists.