



UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

PhD student in Neuroscience

at the Centre for Multimodal Pain Research, University of Toronto, Faculty of Dentistry. Closing date: October 1st, 2020

This PhD student position is available at the Centre for Multimodal Sensorimotor and Pain Research at the Faculty of Dentistry, University of Toronto, ON, Canada. The Centre is co-directed by Drs. Massieh Moayed and Iacopo Cioffi.

Pain poses the largest health-related burden on society: it is the primary cause of emergency room visits and long-term disability. In addition, pain severely diminishes the quality of life of the individual and those around them. Although pain signals come from the body, the experience of pain is created in the brain. However, how and where pain emerges in the brain is not known; we do not know which brain regions can be targeted to manage pain. This limits our ability to treat pain effectively, especially when it lasts longer than is needed to protect the person — i.e., chronic pain. This lack of understanding has led to social and health crises, such as the opioid crisis.

The Centre for Multimodal Sensorimotor and Pain Research uses innovative approaches to find pain-specific activity in the brain and its relationship to the source of pain in the body. The Centre uses a multi-pronged approach to understand how pain is represented in the brains of healthy people and in those with chronic pain. The Centre has specific expertise in temporomandibular disorders, a painful condition of the muscles of mastication and/or the jaw joint, which is the most common cause of chronic orofacial pain.

Project description

Identifying a novel neuromuscular biomarker signature of chronic temporomandibular disorders

Pain poses the most significant health-related burden on society and is the primary cause of long-term disability. Temporomandibular disorders (TMD), a set of conditions affecting the muscles of mastication and the temporomandibular joint (the jaw joint), is the most common cause of chronic (persistent) pain relating to the mouth and face. Mechanisms of chronic muscular TMD (mTMD), the most common TMD, are still poorly understood, and a definite cause of this condition has yet to be identified. Of importance, the lack of clear biological correlates of disease severity, which could be used by health care providers to complement patient pain self-report, makes treatment of chronic mTMD challenging. More than 30% of patients with TMD have recurrent or persistent pain after 5 years regardless of the treatment they had received. This project aims to identify and characterize the muscular and neural abnormalities associated with chronic muscular TMD and determine whether the biological severity of these abnormalities predicts patient disability. We will use multiple imaging methods to characterize the structure and function of the muscles of mastication, and the structure of the nerves and the brain in patients with chronic mTMD. In the long term, our project will allow to classifying the extent of spread of TMD, thereby informing about its biological severity and develop more personalized and cost-effective treatments, which will reduce the burden to patients and the healthcare system

Qualification requirements

Information about academic requirements for entering a PhD program at the University of Toronto, Faculty of Dentistry, can be found here:

<https://www.dentistry.utoronto.ca/program>

Candidates will be accepted under the general regulations of the School of Graduate Studies at the University of Toronto. Eligible applicants must have either a dental degree or a 4-year Bachelor's degree with a A- or 3.70 GPA (PhD program) standing in the final year, or possess equivalent qualifications. As English is the primary language of instruction and communication at the University of Toronto, applicants must demonstrate an adequate level of proficiency in English, regardless of their citizenship status or country of origin. Applicants

from universities outside Canada where English is not the primary language of instruction must provide results of an English language proficiency examination as part of their application.

Selection

The selection among the eligible candidates will be based on their capacity to benefit from the training. The following criteria will be used to assess this capacity: the candidates' documented knowledge in the field of muscle biology and/or neuroimaging, written and oral proficiency in English, the capacity for analytical thinking, the ability to collaborate, as well as creativity, initiative, and independence. The assessment will be based on previous experience and grades, relevant experience, interviews, and the candidate's written motivation for seeking the position.

Candidates are encouraged to send their CV together with their most recent transcript, and a 1-page document describing the candidate's motivation for seeking the position, to Drs Cioffi (iacopo.cioffi@dentistry.utoronto.ca) and Moayed (m.moayed@utoronto.ca) before submitting a full-application package.

The University of Toronto promotes an equitable and inclusive campus community, free from discrimination or harassment. While remaining alert and sensitive to the issue of fair and equitable treatment for all, the University has a special concern with the participation and advancement of members of four designated groups that have traditionally been disadvantaged in employment: women, visible minorities, aboriginal peoples and persons with disabilities

Terms of study funding

Students in the PhD program involving research training will undertake customized advanced study and research requiring a minimum of four years full-time attendance.

The student will receive a stipend for the entire duration of the program (starting at \$17,000/year). Tuition fees will be covered by the Faculty of Dentistry and the Supervisors. The candidate will be encouraged to apply for additional scholarships during the program. If the student obtains external funding, the stipend will increase.

Contact

For more information, please contact Drs. Iacopo Cioffi and Massieh Moayed:
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You are welcome to apply!

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