“Scratching the surface of itch and pain”

Master project at the Department of Neuroscience, sensory circuits

Autumn 2020/Spring 2021

The neuronal circuits that resides in the dorsal horn of the spinal cord and trigeminal nuclei of the brainstem are responsible for accurately relaying and modulating sensory information, such as pain and itch from the body and head. Persistent itch is a major symptom in diseases such as atopic dermatitis and psoriasis. In Sweden, 250000-300000 persons suffer from psoriasis. Persistent pain severely affects quality of life and is today a major medical and social problem throughout the world and approximately 20% of the population suffers from persistent/recurrent pain that affects performance of daily tasks and quality of life. To restore pathological states in the dorsal horn and trigeminal nuclei in a targeted manner, we need to understand how these neuronal circuits are organized, e.g. which neuronal populations that resides there, what their characteristics are and how they can be targeted.

The aim of this project is to find and characterize neuronal subpopulations in the spinal cord dorsal horn and trigeminal nuclei. The student will use techniques such as immunohistochemistry, in situ hybridization (RNAScope) and in vivo analysis of transgenic animals. We are especially interested in Neurobiology students and students from the Engineering Programmes in Bioinformatics and Molecular Biotechnology.

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