From neuronal circuits to motor deficits: exploring spinal network maturation in cerebral palsy

Laboratory: Spinal circuits in sensorimotor disorders, Dr. Claudia Kathe
https://dnf-unil.ch/group/spinal-circuits-in-sensorimotor-disorders

Abstract

Cerebral palsy (CP) is a neurodevelopmental disorder affecting up to 3 out of 1000 newborns. CP patients often retain their cognitive abilities but suffer from debilitating motor impairments that greatly impact their daily lives. Despite 89% of CP patients having severe spasticity, no effective treatments for motor dysfunction in CP currently exist. While CP research often utilizes rodent models to study brain function, the spinal cord remains underexplored. This gap hinders the development of effective therapies to treat motor symptoms.

The proposed PhD project will investigate the spinal cord maturation in a mouse model of CP leading to motor deficits. Based on gathered results, specific treatment options will be tested including RNA-editing techniques. The specific aims of the proposed project are:

1) Characterise the maturation of spinal networks and how this relates to motor function during post-natal development in healthy mice
2) Establish how preclinical models of cerebral palsy affect motor development and spinal network maturation
3) Develop therapies using programmable RNASensing technology

By uncovering critical spinal network alterations in CP, we will provide a foundation for novel therapeutic strategies therapeutic approaches which could not only be preventative but would enable recovery of function in patients with CP.