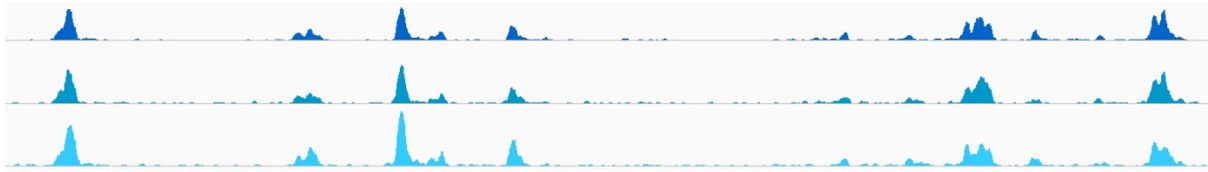




Master's thesis position



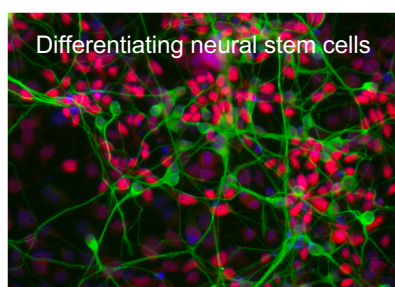
Host lab: Prof. Simon Braun – Chromatin regulation in brain development and disease

Research interests:

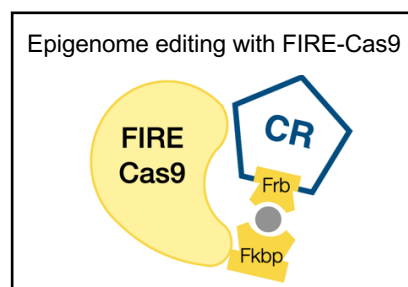
Our goal is to understand what drives brain cell diversity during development. We focus on the role of epigenetic regulators that control **chromatin accessibility** and gene expression. The lab uses **epigenome editing** technologies (FIRE-Cas9), mouse stem cell cultures, *in vivo* models and state-of-the-art genomic techniques to study mechanisms of chromatin regulation in the brain. Our aim is to gain novel insights into **neurodevelopmental disorders** like autism, which are frequently associated with mutations in epigenetic regulators.

Project description:

Chromatin regulators control the active and repressive chromatin states that regulate gene expression during brain development. A key driver of neural cell fate is the **BAF (or mSWI/SNF) chromatin remodeling complex**, as highlighted by the hundreds of mutations in BAF complex subunits that have been linked to human neurodevelopmental disorders. In this project we will investigate how BAF complexes, which do not bind to specific DNA motifs, regulate chromatin accessibility at specific neural genes. We plan to use the FIRE-Cas9 system to recruit BAF complexes to specific genes *in mouse embryonic stem cells* which can be differentiated into neural stem cells and neurons *in vitro*.



Differentiating neural stem cells



Epigenome editing with FIRE-Cas9

Relevant publications:

- Braun, S. *et al.* BAF subunit switching regulates chromatin accessibility to control cell cycle exit in the developing mammalian cortex. *Genes & Development* (2021).
- Braun, S. *et al.* Rapid and reversible epigenome editing by endogenous chromatin regulators. *Nature Communications* (2017).

To apply, please send your CV and motivation letter to: simon.braun@unige.ch

[More information available at lab website](#)