Master’s project in human neuronal network development - Knoblich lab, IMBA, Vienna BioCenter

Our lab studies the development of the human brain and the mechanisms of neurodevelopmental disorders. To study these mechanisms, we developed cerebral organoids - 3D stem-cell-derived models that recapitulate the earliest steps of human brain formation, including the development of neuronal network activity. Human brain networks arise through the coordinated maturation of diverse neuronal subtypes, the establishment of synaptic connections, and the gradual refinement of excitatory-inhibitory balance. These processes shape how neurons communicate, organize into circuits, and generate complex patterns of activity that underlie behavior. Remarkably, as cerebral organoids mature, they form functional neuronal circuits, offering a unique opportunity to connect cellular development with emerging network activity in a human context.

Research area

Using state-of-the-art genetic and electrophysiological tools, this project aims to understand how healthy network activity is established in human brain development and to identify the mechanisms by which genetic perturbations derail this process. In this project, the techniques that the applicant will be exposed to include:

- Human stem cell and organoid culture
- AAV production
- Rabies-virus-based monosynaptic tracing
- Advanced intra- and extracellular electrophysiological techniques
- Bioinformatics analysis
- Immunohistochemistry
- Confocal and 2-Photon microscopy

Your profile

Applicants should be highly motivated and have an outstanding interest in brain development and neuroscience.

Experience in molecular biology and cell culture is essential. Bioinformatics experience (or general programming skills in Python and R) is an advantage.

We value diversity and strongly encourage applications from all qualified individuals, regardless of background, race, gender, or personal identity.

Our Offer:

This is an offer for an exciting project at one of the leading institutes in life sciences in Europe with unparalleled scientific infrastructure and a great work environment.

The master’s project is planned for 12 months (ideally master thesis).

The position includes a monthly stipend of ~ € 1,062, corresponding to a total gross annual salary of € 15,000.

Please apply via our **job portal.** Your application should include **CV, letter of motivation** and **contact details of your referees.**

Apply Now

IMBA - Institut für Molekulare Biotechnologie GmbH
www.imba.oeaw.ac.at; www.viennabiocenter.org