



## CDD job offer – Postdoctoral position in microfluidics for studying neuron myelination on chip models

### Environment

In the peripheral nervous system, Schwann cells (SCs) are the glial cells governing neuron myelination. Myelin is an insulating layer surrounding neuronal axons, which is critical for the propagation of action potentials. As such, they constitute key players in many peripheral neuropathies for which treatments usually lead to poor functional recovery, and current physiological models present limitations. Physiologically relevant microfluidic models are emerging as advanced neuropharmacological assays as well as fundamental tools to relate neuron structure and function. Our project currently develops neuron-glia cells co-culture to understand their interaction at different level, the main objective in FOMO is to study the neuron function of model of the peripheral nervous system using calcium imaging.

This project is hosted at MSC, a CNRS biophysics laboratory dedicated to physical / biology / medicine interface related to nanomedicine, morphogenesis, control of living organisms, cell therapies and extracellular vesicles (<https://msc-med.u-paris.fr>). The laboratory has privileged access to technological platforms (microfabrication, clean room and microscopy imaging) as well as animal facility and primary cell culture space (<https://t3s-1124.biomedicale.parisdescartes.fr/nos-equipes-de-recherche/equipe-102/>). The project is deeply interdisciplinary, in strong interaction with T3S, an INSERM biology laboratory specialized in biophysics and signaling aspects of myelin, INCC, a CNRS unit specialized in glia-glia and glia-neuron interactions (<https://incc-paris.fr/glia-glia-and-glia-neuron-interactions/>) and Eden Tech, a microfluidic company and a historical partner on this project that provides expertise on thermoplastic materials and their prototyping for biomicrofluidics.

### Background

**Mission:** We are seeking an **extremely motivated rigorous postdoctoral researcher** to adapt a recently developed thermoplastic microfluidic prototype compartmentalizing SCs-sensory neuron co-culture for studying them at a functional level using calcium imaging. The tailored microfluidic model of peripheral sensory neurons will host primary co-cultures of neuron and glial myelinating cells from transgenic mice allowing neuronal calcium imaging. The candidate will confirm the physiological relevance of myelination, demyelination and remyelination at both structure and function levels and will assess the potential for pharmacological assays using standard drugs.

**In this project, the role of the candidate is to adapt the current myelinating model on chip design and fabrication for calcium imaging.** The candidate will be in charge of **adapting / improving design and fabrication protocols, standardizing culture methods, and developing the proof of concept.**

**Profile:** a microfluidic scientist with an expertise applied to cell culture or a cell neurobiologist with a strong knowledge of microfluidics. **Consolidated expertise (≥3 years) in cell culture is absolutely required.** Experience in calcium imaging would be strongly appreciated but not necessary.

**Starting date:** September 2022

**Type of contract:** 1-year based contract

#### Contact:

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**Websites:** MSC, <https://msc-med.u-paris.fr>; T3S, <https://t3s-1124.biomedicale.parisdescartes.fr>

#### References:

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