Group leader: **Rejane RUA**
Team: Immunosurveillance of the Central Nervous System
https://ciml.univ-mrs.fr/en/team/immunosurveillance-du-systeme-nerveux-central/
Centre d'Immunologie Marseille-Luminy
163 avenue de Luminy, 13288 Marseille, France

2 ERC-funded positions in Neuroscience/NeuroImmunology :

1 Post-doctoral fellow and 1 Research Engineer

'Regulation of neuronal function and plasticity by meningeal macrophages'

The surface of the Central Nervous System (CNS) is connected to the periphery by layers of highly vascularized membranes, the meninges. Although the brain has been considered immunoprivileged for decades, it has been recently shown by our team and others that the meninges are populated by a myriad of resident immune sentinels. Unexpectedly, immune cells specifically located in the meninges play a role in neuronal function, tissue homeostasis as well as infectious and neurodegenerative diseases. Due to their strategic location at the interface between the periphery and the brain, the **meninges thus function as a nurturing tissue enveloping the CNS and also represent its first line of protection.**

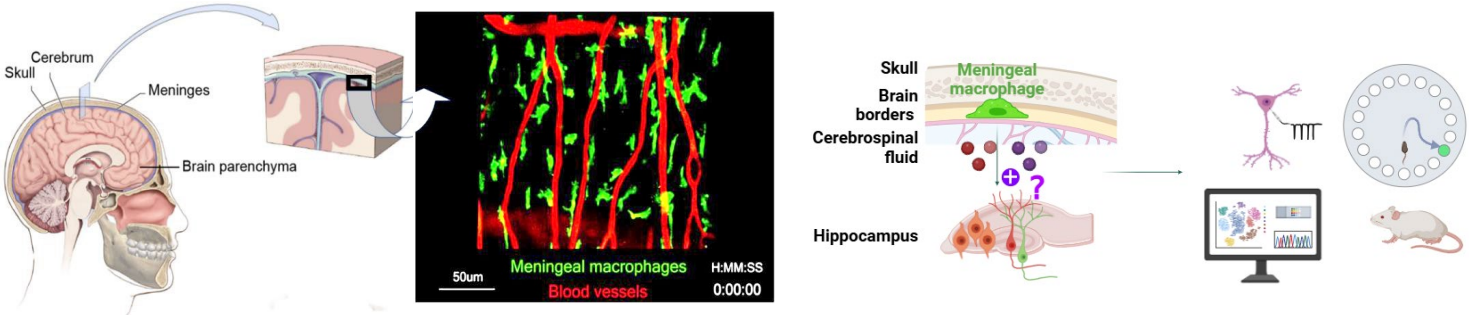

Figure 1. Location of the meninges at brain surface (left). Image extracted from an intravital movie of CX3CR1-GFP mouse showing a top-down view of meningeal macrophages (green) along the vasculature (red) (middle). Bone-in meningeal whole mounts showing the vast network of meningeal macrophages (identified by the mannose receptor CD206) covering the brain surface (middle). Hypothesis regarding the role of BAM and examples of experimental approaches to test them (right).

Even though meningeal macrophages represent promising candidates involved in CNS function and dysfunction due to their abundance and location, virtually nothing is known about their pro-neuronal properties. **The objective of this project is to understand how macrophages at the brain surface maintain neuronal functions.** We hypothesize that meningeal macrophages promote neuronal functions. To address these questions, we will combine several techniques, e.g. multiparametric single-cell transcriptomics, stereotactic injections, electrophysiology and/or behavioral approaches to analyze the pro-neuronal functions of meningeal macrophages in wild-type and transgenic mouse models, in steady-state and inflammatory conditions.

You will join a passionate, friendly and dynamic team, in an institute with state-of-the-art equipment, at the border of the Calanques national park in the south of France.

The candidate should have a **Master's degree in neuroscience** (for the research engineer position) or a **PhD in neuroscience** (for the post-doctoral position) and a strong background and interest in neuronal functions, at the molecular, cellular, circuit and/or behavioral levels. Prior experience in the field of neuroimmunology is not expected. Applications should be sent to rua@ciml.univ-mrs.fr.