2 years Postdoctoral Position in Neuroscience and Neurophysiology

Team 'Spinal Cord and Cerebrospinal fluid Interface (SpiCCI)' (N. Wanaverbecq)
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The project aims at deciphering, anatomically and functionally, the circuitry of a poorly known neuronal population present around the central canal (CC) of the **mammalian spinal cord** and in contact with the **cerebrospinal fluid** (CSF-cNs).

Spinal CSF-cNs are present in all vertebrate, they are bipolar neurons sitting under the ependymal cell layer, extend a single dendrite ending with a large protrusion in the CC and project an axon through the parenchyma[1–3]. They selectively express a 'Transient Receptor Potential' (TRP) isoform (PKD2L1) with a potential role as sensory receptor[1,4–7]. Recent studies in lower vertebrates point to a role as neuromodulator of motor activity for CSF-cNs[6,7] but this function remains to be demonstrated in mammals and will be one of the goal of the proposed project.

The **Host Team** (4 faculty members, 1 Technical assistant and 1 *PhD* student) was one of the first to characterize CSF-cN properties in the mouse and established as leader in the field with a long-standing expertise in cellular neurophysiology and imaging. By using a set of transgenic mouse models (Cre-Lox technology from PKD2L1-*Cre* mice) enabling the selective manipulation of CSF-cNs, our team develops a multidisciplinary **approach combining *in vitro* and *ex-vivo* electrophysiology with Ca^{2+} imaging, optogenetic as well as viral retrograde neuronal tracing**.

In its present form, the SpiCCI team (http://www.int.univ-amu.fr/SpiCCI,210) recently joined the **INT** a major neuroscience research center in Marseille with a highly interdisciplinary environment consisting of 11 research groups and state-of-the-art facilities in photonic imaging, molecular/cellular biology and virology as well as a core facility in IT and scientific computing (www.int.univ-amu.fr).

The **Project** is part of a recently awarded **international ANR grant** (300 k€ for 3 years) in collaboration with Dr Niccolo ZAMPIERI, group leader at the Max Delbrück Center in Berlin (Germany) and expert in targeted viral neuronal tracing approaches in spinal cord preparations. The principal objective of the project will be to characterize CSF-cN circuitry in the spinal cord, demonstrate its interaction with the spinal motor network and characterize the role of CSF-cNs in mammalian CNS.

We are looking for a motivated young research fellow interested in studying synaptic transmission and analysing functional circuitry and sensory integration in the spinal cord.

The successful **Candidate**, with some postdoctoral experience, will have a *PhD* in neuroscience and a proven expertise in cellular electrophysiology (slice patch-clamp recording) and imaging. She/He should have experience in small animal surgery (Animals Training Course). A background in molecular biology (transgenic mouse model, viral neuronal tracing techniques) as well as knowledge in programming and analysis software (*eg.* Python, Matlab, R statistic) would be a plus. The project will be conducted under Dr Wanaverbecq supervision, but the candidate should be autonomous and capable of conducting the assigned line of research.

The position is available from the **1st September 2018** and has **2 years of initial funding** (Salary depending on experience and based on University pay scheme), with the possibility for extension.

Applicants should send their CV, a cover letter detailing their research experience and interests, and contact details for at least 2 references to nicolas.wanaverbecq@univ-amu.fr. For **more details** contact Dr Wanaverbecq.

1. Orts-Del'Immagine, A. *et al. PloS One* **9,** e87748 (2014).
2. Djenoune, L. *et al. Front. Neuroanat.* **8,** 26 (2014).
3. Jalalvand, E *et al. J. Comp. Neurol.* **522,** 1753–1768 (2014).
4. Orts-Del'immagine, A. *et al. J. Physiol.* **590,** 3719–3741 (2012).
5. Orts-Del'Immagine, A. *et al. Neuropharmacology* **101,** 549–565 (2016).
6. Jalalvand, E. *et al. Curr. Biol. CB* **26,** 1346–1351 (2016).
7. Böhm, U. L. *et al. Nat. Commun.* **7,** 10866 (2016).