Titre de l'annonce	Postdoctoral position in theoretical neuroscience
Ville	Marseille
Pays	France
Texte de l'offre	We are looking for a postdoctoral scholar to work at the interface between theoretical and experimental neuroscience in a cooperation between the groups of Christophe Bernard and Demian Battaglia at the Institute for Systems Neuroscience (INS) of Aix-Marseille University. The project will involve using information theoretical and machine learning tools and other computationally-intensive data analysis approaches on electrophysiological recordings of unit and LFP activity in rodents. In a recent series of works, we have been characterizing dynamics of "Information Processing states" and primitive processing operations of storage and sharing by individual hippocampal and cortical neurons in anesthesia, in both control and epileptic rodents (Clawson et al., Science Advances 2019; Pedreschi et al., Network Neuroscience 2020; Clawson et al., biorXiV 2021). We plan now to generalize these analyses to behavioral and very long sleep recordings, especially in relation to how circadian rhythms affect neural system function (Debsky et al., Science Advances 2020; Brancati et al., PNAS, in press) and performance. Indeed, although it is known that circadian rhythms drive all organ functions, including the brain, it is little known how the architecture of information processing by neuronal ensembles is affected by such rhythms. The ideal candidate will have a background in computational or theoretical neuroscience, physics or theoretical computer science. Familiarity with information theory concepts, previous experience in the analysis of large neuroscience datasets (e.g. multichannel recordings, unit or LFP data...) or the modelling of spiking neural circuits is a plus.

The candidate will work with researchers performing in vivo recordings in control and epileptic animals (Christophe Bernard, Pascale Quilichini...) and theoreticians (Demian Battaglia, Viktor Jirsa...) at the Institute of Systems Neuroscience in Marseille. Interactions are possible also with other French labs (e.g. University of Strasbourg) and with clinicians. If interested, the candidate will also be offered the possibility to learn in vivo electrophysiology.

Aix-Marseille University is a large, international university with a rich and diverse Neuroscience community, in the vibrant multicultural city of Marseille with magnificent natural surroundings and excellent high-speed train and flight connections to major cities in Europe.

The position has no mandatory teaching or administrative duties. Excellent (written and oral) communication skills in English are required. The maximum duration is three years.
Candidates should send a CV, a statement of research experience and interests, expected date of availability, and the contact information for three references to mailto:christophe.bernard@inserm.fr and mailto:demian.battaglia@univ-amu.fr

Application review will proceed until the position is filled.

References

- Clawson, W., Vicente, A.F., Ferraris, M., Bernard, C., Battaglia, D., Quilichini, P.P., 2019. *Computing hubs in the hippocampus and cortex*. Sci Adv 5, eaax4843. doi:10.1126/sciadv.aax4843

- Pedreschi, N., Bernard, C., Clawson, W., Quilichini, P., Barrat, A., Battaglia, D., 2020. *Dynamic core-periphery structure of information sharing networks in entorhinal cortex and hippocampus.* Netw Neurosci 4, 946-975. doi:10.1162/netn_a_00142

	Clawson, W., Madec, T., Ghestem, A., Quilichini, P.P., Battaglia, D., Bernard, C., 2021. *Disordered information processing dynamics in experimental epilepsy.* bioRxiv. doi:10.1101/2021.02.11.430768 Debski, K.J., et al.... , Bernard, C., 2020. *The circadian dynamics of the hippocampal transcriptome and proteome is altered in experimental temporal lobe epilepsy.* Sci Adv 6. doi:10.1126/sciadv.aat5979
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Type de contrat	ANR-NSF-NIH
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