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Postdoctoral position in Bordeaux Neurocampus

The Takahashi lab at the IINS institute is seeking a postdoctoral researcher for a project investigating “cellular mechanisms for attentional modulation of tactile processing”. The position is funded for 2.5 years (immediately available) by the ATIP-Avenir program, and further extension is possible. The IINS institute is embedded within the Bordeaux Neurocampus and offers a highly multidisciplinary, international research environment with teams active in fields ranging from molecular biology to behavioral and systems neuroscience.

Attention dynamically controls the gain of sensory responses in the cortex, which helps us detect relevant sensory information in space and time. As yet, little is known about the underlying neuronal processes. My team combines various techniques including *in vivo* two-photon imaging, electrophysiology, and opto-/chemo-genetics, with behavioral assay to find mechanistic explanations for how attention modulates tactile processing in the mouse somatosensory cortex. Specifically, we are interested in the integrative properties of dendrites of cortical pyramidal neurons. Our recent work shows that dendritic calcium channel activation modulates the animal’s perceptual threshold for detecting weak tactile stimuli (Takahashi et al., 2016; 2020). Through understanding the intrinsic mechanisms (e.g., cortical feedback, neuromodulation) that modulate dendritic integration in cortical neurons, we hope to decipher the cellular principles that mediate the sensory gain modulation in attentive states.

Related publications:

- **Takahashi N**, Moberg S, Zolnik TA, Catanese J, Sachdev RNS, Larkum ME, Jaeger D (2021) Thalamic input to motor cortex facilitates goal-directed action initiation. *Current Biology* 31:1-8
- Doron G, Shin J, **Takahashi N**, Drüke M, Bocklisch C, Skenderi S, de Mont L, Toumazou M, Ledderose J, Brecht M, Naud R, Larkum ME (2020) Perirhinal input to neocortical layer 1 controls learning. *Science* 370:eaaz3136
- **Takahashi N**, Ebner C, Sigl-Glöckner J, Moberg S, Nierwetberg S, Larkum ME (2020) Active dendritic currents gate descending cortical outputs in perception. *Nature Neuroscience* 23:1277-1285
- **Takahashi N**, Oertner TG, Hegemann P, Larkum ME (2016) Active cortical dendrites modulate perception. *Science* 354:1587-1590
- **Takahashi N**, Kitamura K, Matsuo N, Mayford M, Kano M, Matsuki N, Ikegaya Y (2012) Locally synchronized synaptic inputs. *Science* 335:353-356

Requirements:

Candidates should hold a PhD with a background in biological or computational neuroscience. Experience with *in vivo* imaging or electrophysiology is advantageous, but big enthusiasm for utilizing these techniques to tackle an important question is more valued. Programming skill in Matlab or Python is necessary.

To apply:

Applications should be sent to Naoya Takahashi (naoya.takahashi@u-bordeaux.fr) and should include a statement of research accomplishments and interests, a CV, and the contact information of 2-3 references. Applications will be accepted until the position is filled.

Contact:

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