

PhD position in Neurobiology - Postdoc application will also be considered

The Two-Pore-Domain Potassium channels in pain and migraine induction

Ion channels generate the electrical signals with which the nervous system senses the world, processes information, creates memories and controls behavior. The Two-Pore-Domain Potassium channels (K₂P), by regulating neuronal excitability, are involved in several physiological and pathophysiological paradigms such as mood regulation, pain and migraine induction. Therefore, they constitute attractive pharmacological targets providing motivation for developing a deeper understanding of their functions. The absence of specific pharmacology, as well as some biochemical intrinsic properties have made their study difficult. To overcome these problems, we have developed a novel scheme for optical remote control of native channels. Using these tools, combined with single molecule fluorescence and behavioral assays, the project aims to address K₂P channel's physiological and pathological function (migraine and pain induction) along with finding new drug targets.

The PhD candidate will be under the supervision of Dr Guillaume Sandoz (iBV, Nice, www.sandozlab.com). Post-docs are also welcome to apply. The Institute of Biology Valrose (<http://ibv.unice.fr/EN/index.php>) is a multidisciplinary institute, benefiting of an international scientific environment with over 200 researchers working in 27 different groups and localized in the city of Nice on the French Riviera.

The ideal candidates will have a solid background in electrophysiology and molecular biology and/or cell imaging and/or optogenetic.

Position: Contract with the French CNRS Institution.

Interested candidates should e-mail a letter of application, including a CV and the names and addresses of at least two references to: Guillaume Sandoz, sandoz@unice.fr

References:

-2021 Ávalos Prado P, Häfner S, Comoglio Y, Wdziekonski B, Duranton C, Attali B, Barhanin J and Sandoz G. *KCNE1 is an auxiliary subunit of two distinct ion channel superfamilies*. Cell. 184(2):534-544.

-2021 Verkest C, Häfner S, Ávalos Prado P, Baron A, Sandoz G. *Migraine and Two-Pore-Domain Potassium Channels*. Neuroscientist. 2020;1073858420940949.

-2019 Royal P, Andres-Bilbe A, Ávalos Prado P, Verkest C, Wdziekonski B, Schaub S, Baron A, Lesage F, Gasull X, Levitz J and Sandoz G. *Migraine-associated TRESK mutations increase neuronal excitability through alternative translation initiation and inhibition of TREK*. Neuron. 101(2):232-245.

-2019 Ávalos Prado P, Sandoz G. *TREK for High-Speed and High-Frequency Conduction through the Axon*. Neuron. 2019, 104(5):831-833

-2016 Levitz J*, Royal P*, Comoglio Y, Wdziekonski B, Schaub S, Clemens D, Isacoff EY and Sandoz G, *Heterodimerization within the TREK channel subfamily produces a diverse family of highly regulated potassium channels*, Proc Natl Acad Sci U S A, 12;113(15):4194-9.

-2012 Sandoz G, Levitz J, Kramer R & Isacoff E. *Optical control of endogenous proteins with a photo-switchable conditional subunit reveals a role for TREK1 in GABAB signaling*. Neuron, 74; 1005-14.