

## Postdoctoral Position in Neurobiology

A new position in Neurobiology is available at the “Institut de Biologie Valrose” (iBV) located in Nice, France. The Institute of Biology Valrose (<http://ibv.unice.fr/EN/index.php>) is one of France's premier life science research centers and offers an international scientific environment with 250 persons working in 20 research groups. The project will be carried out in the ATIP-Avenir/ FRM group “Biology of ion channels” to investigate the role of K<sub>2P</sub> potassium channels using new optogenetic approaches.

Maintenance of a negative resting membrane potential underlies the basis of neuronal excitability. This negative potential is generated by a potassium leak current mediated by K<sub>2P</sub> channels. K<sub>2P</sub> channels are notably involved in mood regulation and migraine. To address the role of the K<sub>2P</sub> channel, TREK1, we have developed a TREK1 channel that is controlled by light both in-vitro (TREKlight) and in-vivo (StarTREK mouse model). Regarding our StarTREK model, these mice have the same characteristics as wild-type mice but with the additional advantage that their TREK channels can be instantaneously and reversibly blocked with light with high temporal and spatial precision. Using this novel optogenetic technique in combination with single molecule fluorescence assays (SiMPull)—the project aims to address TREK1 channel's physiological (neuroexcitability, plasticity, 5HT secretion) and pathological (such as depression and migraine) functions and to determine which channels subtypes are, along with find new targets, involved in these aforementioned processes.

The candidate will work on two aspects:

- (i) At the fundamental level: the applicant will study the TREK channel function using light with StarTREK mice (TREK functions in neuroexcitability (AP duration and threshold) and plasticity).
- (ii) At the technical level: the applicant will develop, in collaboration, new optical tools to endow optical control of K<sub>2P</sub>s channels.

The ideal candidates will have a solid background in electrophysiology (slice-patching experience would be appreciated) and molecular biology and/or cell imaging and/or optogenetic.

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

Ref:

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.

Comoglio Y, Levitz J, Kienzler M, Lesage F, Isacoff EY and Sandoz G. *Specific regulation of TREK channels by phosphatidic acid due to direct association with Phospholipase D2*. Proc Natl Acad Sci U S A, 111: 13547-52

Marion E, Song OR, Christophe T, Babonneau J, Fenistein D, Eyer J, Letournel F, Henrion D, Clere N, Paille V, Guérineau NC, Saint André JP, Gersbach P, Altmann KH, Stinear TP, Comoglio Y,

Sandoz G, Preisser L, Delneste Y, Yeramian E, Marsollier L, Brodin P. *Mycobacterial toxin induces analgesia in buruli ulcer by targeting the Angiotensin pathways*. Cell. 157: 1565-76.

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.