



European Research Council
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FRANCE



PhD Studentship: ion channel-based biosensors

Development of biosensors based on G Protein-Coupled Receptors linked to an ion channel for integration in nanoelectronic platforms

Subject. G Protein-Coupled Receptors (GPCRs) are membrane proteins involved in the communication between cells through circulating messengers (hormones, neurotransmitters) and also in sensing our environment (vision, smell, taste). They are essential to numerous physiological functions which are vital (cardiac, breathing,...) and behavioral (social and emotional relationships). We have developed an original biosensor based on the attachment of GPCRs to an ion channel and referred to Ion Channel-Coupled Receptors (ICCRs) (Moreau *et al.* Nature Nanotechnology 2008). Motions of the receptor induced by its activity (ligand binding, G protein activation) are translated by the ion channel into an electric current easily detectable by electrophysiological techniques. In the frame of a project funded by the [European Research Council \(ERC\)](#), the PhD student will develop this technology in collaboration with partners from the Seoul National University in order to design original biosensors in interface with nanoelectronic systems.

Location. The thesis will take place in the Channels group of the Institute for Structural Biology (IBS) (<http://www.ibs.fr/research/research-groups/channels-group-m-vivaudou/moreau-team/>) within the European Synchrotron campus. This project will benefit from the strong expertise of the team in protein engineering and structure-function studies of membrane proteins. The routine methods used in the host laboratory are molecular biology techniques and electrophysiological characterization of membrane proteins heterologously expressed in *Xenopus* oocytes. The PhD candidate will have specific access in the laboratory to a state-of-the-art robot for automatic recordings ([HiClamp](#)) and also to the numerous exceptional facilities shared between the members of the [Partnership for Structural Biology](#) (EMBL, ILL, IBS, UVHCI, ESRF). The candidate will develop her/his scientific skills in a stimulating and international environment in the "[capital of the French Alps](#)" at only 3hrs from Paris by fast-train and 1hr by bus from the Lyons international airport.

Profile. Excellent academic records. From Universities or Engineering Colleges with a Master degree (if French M2, grade B or higher) or equivalent. High motivation for basic and applied research. Experience or great interest in membrane proteins, molecular biology, electrophysiology, biochemistry or nanobiotechnology. The working language is English. Several meetings and collaborative work will be performed in South Korea. Enthusiasm, rigor, perseverance and team spirit will be essential for her/his personal and professional fulfilment in an international team.

Position. Contract with the French [CNRS](#) Institution for three years starting in October 2018. The salary is 1.757 €/month (gross income).

Application. Send CV, cover letter and 2 references to [christophe.moreau\(at\)ibs.fr](mailto:christophe.moreau(at)ibs.fr) with the subject: ERC_PhD2018.