

Job description

Job title	Post-doctoral fellowship in Electrocardiology
Employment	Contract : 2 years Date of employment: from March 2018
Skill level	PhD or post-doc
Salary	Depending on qualifications, skills and experience (FTE)
Research Department	Institut Hospitalo-Universitaire LiryC (U1045)/IMB (U5251) Prof. Michel Haïssaguerre / Prof. JM Couveignes Supervisor : Yves Coudière
Research Environment	<p>Led by Professor Michel Haïssaguerre (Head of the Cardiology Department of Bordeaux University Hospital), the LiryC institute (The Institute of Rhythmology and Cardiac Modeling) is a multidisciplinary research institute dedicated to the study of cardiac electrical diseases. LIRYC currently hosts 120+ researchers with unique competencies and equipment to conduct State-of-the-art research on cardiac electrical diseases. It is highly multidisciplinary, as it comprises experts in applied mathematics, biophysical and statistical modelling, signal processing, imaging, electrophysiology, engineering, all focusing on the topic of electrical disorders of the heart. These diseases are characterized clinically, the Bordeaux Electrophysiology (EP) team being a long time world leader in the field, as well as in large animal models of various electrical disorders which are explored in vivo using MRI and EP mapping (contact and non-contact), and <i>ex vivo</i> from the working organ to the cell level (optical mapping, high field MRI, confocal microscopy, patch clamp).</p> <p>For this postdoctoral fellowship, you will be a member of the Inria Carmen project team and will be based at the premises of the IHU LIRYC, in order to be closer to the (pre-) clinical teams. Carmen is an Inria team that is involved in the LIRYC institute by offering the modeling and simulation component of the project.</p>
Core tasks	<p>This research position is part of the European research project “ECSTATIC” (ERC starting grant) led by Dr H. Cochet, started in February 2017 and funded by the European commission (http://cordis.europa.eu/project/rcn/206486_fr.html).</p> <p>The objective of this project is to develop a clinical tool for the diagnosis and therapy targeting of cardiac arrhythmias. LiryC is working to solve the inverse problem in electrocardiography and has a unique infrastructure for preclinical and clinical validation. Your role will be to develop specific resolution techniques for the inverse problem of electrocardiology that use data on the structure of cardiac tissues obtained by imaging methods.</p>

Main activities	You will need to design, implement, and evaluate numerical methods of inverse problem solving that integrate structural information. These techniques will have to be developed in Matlab language or other high level language, for a good integration with the existing tools at LiryC. For this you will have electrical and imaging data at your disposal, and LiryC expertise in this area. Your research activity should lead to scientific publications, conferences or international journals of a medical or clinical nature, or methodological type (applied mathematics, biomedical engineering ...)	
Associated activities	In particular, you will collaborate with LIRYC's imaging and signal processing researchers, along with radiologists and cardiologists from the Institute.	
Relational fields of the job	Internal Ability to work independently and in collaboration within the the (pre-) clinical teams of LiryC	External Interaction with the different actors of the research project (clinical, physicists, radiologists, cardiologists, mathematicians...)
Skills	<ul style="list-style-type: none"> - Knowledge of inverse problem methods for partial differential equations - Mastery of a high level Matlab language - Knowledge of cardiac electrophysiology - Evaluate methods used and results on biomedical data - Position yourself in relation to the state of the art, and communicate your results in a suitable way. - Carry out original research autonomously 	
Expertise	Ability to experimentally evaluate the developed methods.	
Self-management skills	Attracted by a top-level research and english-speaker environment. Strong autonomy and capacity of initiative to ensure the progress of the project. Ability to work independently and in collaboration.	
	Covering letter and resume (CV) to be sent up to <u>16/02/2018</u> to: recrutement@ihu-liryC.fr	