

Département des
Sciences du vivant et
de la Santé

EA IMOTION,
Laboratoire d'Imagerie
Moléculaire et Thérapies
Innovantes en Oncologie

Affaire suivie par :
franck.couillaud@u-bordeaux.fr

T (33) 5 57 57 47 50
(33) 6 26 22 60 04

Bordeaux, May 4th, 2016

PhD grant in Bordeaux

Image-guided thermo-induced drug delivery

A doctoral research fellow is offered at Bordeaux University France Molecular Imaging and innovative therapies in oncology (IMOTION) laboratory. This position is funded for 3 years starting October, 1st 2016, by the LabEx TRAIL (Cluster of excellence, Translational research and Advanced Imaging laboratory).

Project

Thermotherapies are methods using local hyperthermia for therapeutic purposes. The ability to locally deliver a predetermined dose of thermal energy to the cancerous tissue could be also used for local delivery of therapeutic agents from heat-sensitive nano-vehicles. The present project aims to establish by *in vivo* imaging the proof of concept of thermo-induced local drug release using MR guided high intensity focused ultrasound (HIFU) as heating source (in collaboration with Dr. B. Quesson, IHU, Bordeaux).

To study the thermal response, biological models based on gene expression of imaging reporter (luciferase, fluorescent proteins) under transcriptional control of thermosensitive promoters (Hsp promoters) will be used. The same mouse model will be used to establish the proof of concept of HIFU-induced drug release from thermo-sensitive nano-vehicles containing a quenched fluorophore. They are currently synthesized by Dr. S. Mornet, ICMCB, Bordeaux. Thermo-induced drug release will be followed by fluorescence imaging.

Candidate profile

Biologist with excepted background in molecular biology, cell culture, biochemistry and animal physiology.

Open to translational research, multimodal imaging and innovative technologies.

The project implies animal handling and experiments on living mice.

Research environment

IMOTION (Molecular Imaging and Innovative Therapies in Oncology) is a new research unit at Bordeaux University. Our goal is to design original therapeutic strategies for the treatment of solid tumors and tumor microenvironment based on imaging and multifunctional contrast agents. We aim to develop innovative therapies, to establish the proof of concept *in vivo* on preclinical models and then to translate to the clinic.

The research program comprises (1) Image-guided thermotherapies including thermal ablations of tumor using MRgHIFU and magnetic hyperthermia for local drug release and (2) Addressing of therapeutic agents for diagnosis and therapy including specific contrast agent, nanoparticles, local drug release.

The doctoral fellow will be supervised by Dr Franck Couillaud, biologist in collaboration with Dr. Bruno QUESSON, physicists for MRgHIFU and Dr. Stephane Mornet chemist for nanoparticles synthesis.

Important Notice

As part of the regulation at Bordeaux University, candidate should be qualified by the "Doctoral School". Inscription deadline is May 25th, 2016 and participation to the Doctoral School Contest (July 5-7, 2016) is mandatory. See details on <http://www.edsvs.u-bordeaux2.fr/>

Contact

Please contact Franck Couillaud at franck.couillaud@u-bordeaux.fr