

PhD subject (Funding Granted by the University of Bordeaux)

TrypanoFluidics: Variability of enzymatic response in population of Trypanosomes

Project description

Trypanosomes are parasites infecting mammals with severe therapeutic and economic consequences in African countries. While it is known that during trypanosome infection sudden changes of membrane proteins are responsible for the adaptation of the parasite to the immune system response, very little is known on the variability in trypanosome activity in the blood. One of the mechanism of action of the trypanosome is mediated by the release of Phospholipase in the blood stream causing damages to the red blood cell. We want to provide quantitative measurements of the activity of trypanosomes at the single cell level for a deeper understanding of the dynamics of the disease.

About the PIs

The project will take place at the **Centre de Recherches Paul Pascal (CRPP)** a unit of the CNRS on the University campus and at the **Métabolisme Energétique et Intermédiaire des Trypanosomes Africains (iMET laboratory)** of the University (UMR CNRS-5234) under the supervision of:

Jean-Christophe Baret – PR1 Univ. Bordeaux, CRPP, CNRS UPR 8641 (Team: Soft Micro Systems)

Loïc Rivière - MCU Univ. Bordeaux, Métabolisme Energétique et Intermédiaire des Trypanosomes Africains (iMET), UMR CNRS-5234, Université de Bordeaux (Team: Facteurs de Virulence chez les Trypanosomes Africains)

The team **Soft Micro Systems (SMS)** is a group established within the CRPP by the PI Jean-Christophe Baret in 2014. The team is made of ~10 people exclusively funded on third party funding. In the SMS group of Prof. Baret, microfluidic workstations are implemented for the controlled manipulation of droplets for applications in biotechnology and Synthetic Biology. All the equipment present in the group will be made available for the current project. The facility at the CRPP ensures the manufacturing and characterization of microfluidic devices using state of the art equipment (mask aligner, plasma oven, profilometre, etc), established by the PI at his arrival in Bordeaux in 2014.

The parasitology and biology side of the project will benefit from the infrastructures and equipment of the team of Loic Riviere. Protein purification and analysis is available in both teams, as well as confocal microscopes, flow cytometer and cell culture facilities.

About the Host Institution

The Host Institution is the **University of Bordeaux (UBx)**, France. UBx is a multidisciplinary university with about 50000 students and 6600 permanent staff and a top class education and research organization. At the national level, it is one of three “**Campus of Excellence**” awarded by the French government in 2016.

About the applicants

The University of Bordeaux promotes equal chance and gender equality on the workplace. Applicants should send their CV and a motivation letter to jean-christophe.baret@u-bordeaux.fr

The applicant should demonstrate his expertise in at least one of the fields: Microfluidics, Cell biology, Chemical biology, Physics of soft matter. Excellent communication (in English and possibly another language) and reporting skills are expected.

