Post-doc / Engineer position
Angiogenesis and Cancer Microenvironment Laboratory
Inserm U1029 – Bordeaux University
Prof. Andreas BIKFALVI

RESEARCH FIELDS

SARS-Cov-2, Vascular Tissue Engineering, 3D tissue analysis, Bio-imaging

PROJECT: Covid-19 and the vasculature: exploring endothelial cell (EC) and SARS-CoV-2 interactions using the *vesseloid* model and clinical validation

Context/environment: The U10209 Inserm unit is headed by Prof. Andreas Bikfalvi (https://www.u1029.u-bordeaux.fr/fr/accueil/). The core research of the team is rooted in the regulation of tumor angiogenesis and tumor cell invasion. From a recent collaboration with a physicists CNRS team (BiOf – Pierre Nassoy) at the UMR5298 laboratory at the Institut d'Optique d'Aquitaine (http://biof-lab.org/research/), we have engineered in vitro blood vessels, named vesseloids, by adapting a patented microfluidic technology developed by the BiOf team (Andrique et al. Science Advances 2019). The present project is funded by the ANR (call RA-covid-19) and includes a wider collaboration with CNRS UMR 5234 (Drs. H. Wodrich and ML. Andreola, experts in the study of host-pathogens interactions) and with the Bordeaux saint-André hospital (Prof. F; Bonnet)

Project summary: Although SARS-Cov-2 infected patients exhibit multi-organ pathological alterations, special attention is brought to lung. Our working hypothesis is that vasculature instead of lung should be investigated more closely. Concretely, in the framework of the project, we wish to exploit our conceptual and methodological advances of the vesseloid technology and to use vesseloids as a relevant model to elucidate the mechanism involved in the interaction of COVID-19 with the vasculature especially with regard to the COVID-19/ACE1/ACE2 interaction. We want (i) to provide clear experimental evidences that COVID-19 impacts the vasculature by using the artificial vessel configuration, (ii) decipher the mechanisms of this interaction with regard to ACE/angiotensin system and the effect of inhibitors, and (iii) unveil the ability of COVID-19 to directly initiate the transcriptomic program underlining cytokine release. This *in vitro/ex vivo* approach will be compared and reinforced by clinical data where markers of endothelial cell activation will be measured in patients using two different cohorts (exploration and validation).

Job description**:** The recruited candidate will be involved in the whole project by interacting with all partners. In the starting stages, he/she will prepare the vesseloids and study the interaction with virus-like-particles (prepared by Dr. Wodrich) and with SARS-Cov-2 by combining optical bio-imaging and state-of-the art cellular and molecular assays. The, he/she will compare the in vitro data with clinical data in collaboration with the CHU.

REQUIREMENTS

We are seeking a highly motivated Post-Doc or Research Engineer with strong experience in molecular and cell biology or related field. Experience in microfluidics, bio-imaging and are very appreciated. Flexibility, autonomy and ability to work in a highly multidisciplinary team and good interpersonal skills are essential.

Starting date: September/October 2020
Duration:1 year (renewable up to 3 years)
Salary: According to professional experience

Address your applications (CV + cover letter) by email to: Prof. Andreas BIKFALVI (andreas.bikfalvi@u-bordeaux.fr).

Reference:

A model of guided cell self-organization for rapid and spontaneous formation of functional vessels. Andrique L, Recher G, Alessandri K, Pujol N, Feyeux M, Bon P, Cognet L, Nassoy P, Bikfalvi A. Sci Adv. 2019 Jun 12;5(6):eaau6562. doi: 10.1126/sciadv.aau6562.