POSTDOCTORAL FELLOWSHIP – UNIVERSITY OF BORDEAUX, FRANCE

BIOCOMPATIBLE SUPRAMOLECULAR HYDROGELS

Job offer

Addressing biocompatibility issues of implantable devices is an important aim for the research program of the Cluster AMADEus. In this context new biocompatible soft materials will be used to cover and protect advanced electrodes for in vivo applications. We are currently designing several functional supramolecular hydrogels, which aim at minimizing the inflammatory response and protect the electrodes. To achieve this goal, we will design and synthesize bioinspired amphiphiles featuring biocompatible chemical and rheological properties adapted to the final biomedical application.

There is a critical need for soft materials in the field of implantable devices, including electrodes. However, designing biocompatible hydrogel scaffolds encompassing both adequate mechanical and biological properties remains a key challenge for in vivo applications. Here we will use a bottom-up approach for synthesizing supramolecular gels to generate novel biomaterial candidates. In collaboration with the Biotis lab, we will evaluate the low molecular weight gels candidates in vivo in order to identify the candidate, which will decrease the foreign body reaction in mice and protect the enzymes associated to the electrodes. Low molecular weight gelators (LMWG) is a particular class of gel forming compounds. The glycosylated nucleoside lipids (GNLs) developed in the ChemBioPharm team of U1212 belongs to this family. These compounds show several interesting properties for in vivo applications, including non toxicity, chemical versatility, very low concentration of gelation, formation of nanostructured scaffolds, reservoir of active principles for a controlled drug delivery, etc. In this program we will develop hydrogels featuring biocompatibility properties. This research (ARNA-BIOTIS) will lead to biocompatible gels (characterization of supramolecular assemblies, sol-gel transition, electro-modulation of the rheological properties, protection of electrode etc).

Candidate's profile

PhD in chemistry, Know-How in biomaterials, physical-chemistry, supramolecular chemistry, biology, gels, drug delivery, taste for a multidisciplinary project and team-work. He/she shall achieve the synthesis of materials, their formulation and physico-chemical characterization. Basic know-how in biology is welcome. Specific skills in synthesis, DLS/SLS, TEM-AFM, rheology would be a plus.

Salary
2 300 €/month (neto)

Localisation: The candidate will be located at the INSERM U1212 laboratory at the University of Bordeaux, France. He/She will be working in strong collaboration with the CRPP, ISM and BIOTIS laboratories.

Application:

Applicants are invited to submit a complete CV, a motivation letter, a copy of PhD diploma, and references details at http://amadeus.labex.u-bordeaux.fr/en/Jobs/ job opportunity ref: 2019 AMADEus 071. Applications will be considered until the position is filled.

Contact:

Pr. Philippe Barthélémy: philippe.barthelemy@inserm.fr