POSTDOCTORAL FELLOWSHIP

OPEN POSITION

DESCRIPTION

DELIVERY OF AN ANTIOXIDANT VIA A BIOACTIVE POLYMERIC MATERIAL

Objectives

The objective of this Postdoctoral Fellowship is the development of an original Drug Delivery System. This system will be based on a polymeric material derived from a natural biomolecule known for its antioxidant and antiproliferative properties towards cancer cells. The drug targeted under this project is gallic acid, a natural polyphenolic acid easily accessible in large quantities in free form or in the form of gallotannins from numerous plants, oak bark or co-products of the first order transformation of oak wood. The gallic acid will be functionalized with a polymerizable group *via* a pH-sensitive spacer. The produced monomer will be polymerized, then the polymer will be formulated into nanoparticles. Thanks to the pH-sensitive spacer, this drug delivery system will lead to the gradual and controlled release of gallic acid and will make it possible to propose an effective anticancer treatment.

Tasks

To formulate this original drug delivery system, the bioactive polymeric material will be achieved thanks to the knowledge of LCPM on controlled polymerizations, from a monomer derived from gallic acid designed by LERMAB. To do this, the first task (T1) consist to properly functionalize gallic acid without modifying its antioxidant properties and giving it a polymerizable function *via* a pH-sensitive spacer which will *in fine* release gallic acid *in vivo*. This new monomer will then be polymerized to produce the bioactive polymer (T2). Nanoparticles will be produced from the bioactive polymer (T3) and the antioxidant properties of this new polymeric material will be checked (T4). After biocompatibility assays, these nanoparticles will be incubated in contact with cancer cells (T5) i) to prove the sensitivity of the spacer between gallic acid and the polymeric backbone and ii) to determine the capacity of this new drug delivery system to release gallic acid.

Skills

Organic and Macromolecular Chemistries
Controlled polymerizations
Formulation and characterization of nanoparticles
In vitro assays

Scientific contacts:
SIX Jean-Luc, LCPM, jean-luc.six@univ-lorraine.fr
GERARDIN Christine, LERMAB, christine.gerardin@univ-lorraine.fr

POSTDOCTORAL FELLOWSHIP

OPEN POSITION

TERMS AND TENURE

This position will be based at LCPM (Laboratoire de Chimie-Physique Macromoléculaire, UMR 7375) and LERMAB (Laboratoire d'Etudes et de Recherches sur le MAtériau Bois, EA 4370), two laboratories of Lorraine Université d'Excellence (I-SITE label from the French call on excellence initiatives. The both laboratories are located at Nancy, France. The duration cannot exceed 18 months.

The target start date for the position is ***January/February 2019,*** with some flexibility on the exact start date.

HOW TO APPLY

Applications are only accepted through email. All document must be sent to jean-luc.six@univ-lorraine.fr , christine.gerardin@univ-lorraine.fr and aya.khanji@univ-lorraine.fr

Deadline for application is ***December 16, 2018***

JOB LOCATION

Nancy, Lorraine, France

REQUIREMENTS

Applicants are requested to submit the following materials:

- A cover letter applying for the position
- Full CV, including academic records and list of publications
- Statement of Research
- Two Letters of recommendations