

## PhD student Fellowship (M/F)

**Title of the project: FOLSMART - Folate-Target Nanodevies To Activated Macrophages For Rheumatoid Arthritis”**

**Internal Reference:** PR611902

We are recruiting a highly PhD student to join the Gene Regulation research group at the IBMC/i3S. The work will involve, among other tasks, the *in vitro* differentiation and activation of macrophages to investigate the gene regulatory mechanisms modelling the effect of a drug in order to predict treatment outcome in rheumatoid arthritis patients, and to assess *in vitro* the genotoxicity and toxicology of novel folate-based nanodevies.

**Requirements:** The candidate must be a PhD student with a MSc in Biotechnology or related areas and a BSc in Biochemistry, or related areas. We are looking for a highly motivated PhD student, with excellent practical knowledge on primary human macrophages, FACS, RNA biology, RNA-Seq and bioinformatics. The applicant must be willing to work as part of an interdisciplinary team.

**Work plan:** The successful applicant will be working within the H2020-funded FOLSMART project that brings together a multidisciplinary team of researchers from different EU Member States. The overall aim of FOLSMART is to bring to phase I clinical trials novel folate-based nanodevies for the treatment of rheumatoid arthritis (please see Abstract).

**Legislation and Salary:** The fellowship is regulated by current laws relating to the Statute of Science Research Fellows, namely Law 40/2004 of August 18, amended by DL 123/2019, from 28<sup>th</sup> August and the Regulation of Scientific Research Studentships of the IBMC. The monthly allowance is 1064 € (net and tax free, <http://alfa.fct.mctes.pt/apoios/bolsas/valores>).

**Location:** The work will be developed at the Gene Regulation laboratory of the IBMC, i3S, under the supervision of Alexandra Moreira.

**Duration:** 6 months, non-renewable, to start on January 1<sup>st</sup>, 2020.

**Selection method:** The candidates will be listed according to their CV, experience in RNA methodologies, motivation letter and the requirements of the call. If necessary, the pre-selected top candidates will be interviewed (interview 75% and CV 25%).

**Jury:**

President: Alexandra Moreira (DPhil);

Members: Alexandre do Carmo (DPhil) and Isabel Pereira-Castro (PhD).

Substitute: I José Bessa (PhD).

**Application deadline and submission forms:** The call will be open from 5<sup>th</sup> to 18<sup>th</sup> December 2019. Proposals must include CV, Master certificate and registration at the PhD program, motivation letter with indication of two referees. Applications must be done by online submission:

<http://www.ibmc.up.pt/gestaocandidaturas/index.php?codigo=PR611902>

**Form of notification of results:** The final results of the evaluation will be publicized in the IBMC Web site, through a list sorted by final score, and the selected applicant will be notified by email.

#### **Abstract and Plan of Work**

FOLSMART will bring to phase I clinical trials novel folate-based nanodevices (FBN) for the treatment of rheumatoid arthritis (RA). These nanodevices for folic acid (FA)-mediated targeting of activated macrophages showed improved clinical scores in a mouse model of RA when compared with methotrexate (MTX), a first-line drug therapy for the treatment of RA. In this way, FBN will be benchmarked against this drug.

Gene expression in PBMCs of mice treated with MTX-FBL revealed to have a different profile than in animals treated with free MTX or in non-treated mice. As specific mRNA signatures are correlated with distinct cell states and disease, for instance, activated immune cells tend to produce shorter mRNA isoforms than other cells, in this project mRNA isoforms produced by immune cells will be analyzed by RNA-Seq and 3'Seq.