

M/F Scientific Engineer in biomolecule engineering for the development of cellular biosensors

Short URL:

<https://bit.ly/2RFREC2>

General information

Reference : UMR5819-YOAROU-006
Workplace : GRENOBLE
Date of publication : Monday, May 10, 2021
Type of Contract : FTC Technical / Administrative
Contract Period : 22 months
Expected date of employment : 1 September 2021
Proportion of work : Full time
Remuneration : 2088-2206 euros gross approximately.
Desired level of education : 5-year university degree
Experience required : 1 to 4 years

Missions

The candidate will have to develop, characterize and validate a miniaturized device for monitoring the cellular response to inflammation. The KinCells project is a collaborative action funded by the Auvergne-Rhône-Alpes Region. KinCells is based on a consortium of three partners: the host laboratory (SyMMES in Grenoble, a joint research unit between the CNRS, the CEA and the Univ. Grenoble Alpes), and two companies from the Auvergne-Rhône-Alpes region: the Nanobiose company (project leader, based in Sainte-Hélène-du-Lac, Savoie) and the Eveon company (Montbonnot, Isère). The successful candidate will be mainly based at SyMMES in Grenoble, but will be required to carry out a significant part of the experimental work in the Nanobiose laboratories. The candidate will have to show organization, initiative and capacity of integration in different environments, but also have a capacity to synthesize and present work in progress to all the partners. The quality and efficiency of the candidate in fulfilling these missions will be essential to the success of the project.

Activities

The multidisciplinary aspect is a strong characteristic of the KinCells project. Thus, the main activities will concern :

- CELL CULTURE;
- ENGINEERING, HANDLING AND CONJUGATION OF PROBE MOLECULES (DNA aptamers and immunoglobulins): partial biochemical digestion, covalent modification, grafting on support, etc. as well as characterization of functionalized materials (e.g. by fluorescence optical microscopy);
- assessment of KINETIC CONSTANTS (k_{ON} , k_{OFF} , k_D) of the probes with respect to the targets, using Surface Plasmon Resonance (SPR) imaging;
- INTEGRATION OF THESE PROBE MOLECULES INTO THE KinCells MINIATURE DEVICE, by developing and qualifying solutions for surface chemistry on different materials (plastics, glass, gold, etc.);
- VALIDATION OF THE GRAFTING AND FUNCTIONALITY OF THE PROBES in the devices, and eventually the qualification of the samples (cell lines and/or human blood) on the BIO-SENSORS and INSTRUMENTS developed within the KinCells project;
- ANALYSIS OF THE EXPERIMENTS AND FORMAT OF THE DATA produced by each cell analysis.

Skills

The candidate must have expertise in BIOMOLECULES CONJUGATION (whatever they are), CELL CULTURE and SURFACE CHEMISTRY. Skills or experience Extra-cellular Vesicles handling or production will be highly appreciated.

The candidate must hold an ENGINEER DEGREE, PROFESSIONAL MASTER 2 or similar degree. This offer is not opened to PhD candidates.

The candidate must show a real willingness and ability to quickly grasp, in an autonomous way, the different aspects of these activities: covalent modification of proteins and nucleic acids, surface chemistry for the production of biochips, manipulation of microfluidic devices and cell culture, instrumentation and data analysis. The multidisciplinary aspect of the project is certainly enriching, but requires a REAL CURIOSITY AND AN INTEREST IN LEARNING NEW SCIENTIFIC FIELDS AND TECHNICAL SKILLS.

The objectives of this project require a high degree of rigor in the experimental implementation and data analysis.

The candidate will have to show a real APTITUDE FOR AUTONOMY, to show initiative as well as oral and editorial synthesis skills in FRENCH (language chosen for the exchanges within the consortium) and in

ENGLISH (used for the publication of manuscripts in peer-reviewed journals). This will also be essential with regard to the Auvergne-Rhône-Alpes Region, the funding agency.
It will be essential for all candidates to provide REFERENCES (AT LEAST 2) TO ATTEST OF THESE SKILLS.

Work Context

The KinCells project is the object of a new collaboration between an academic laboratory (the SyMMES, in Grenoble, <https://www.symmes.fr/>), and two industrial companies: the Nanobiose company (<https://www.nanobiose.com/>) and the Eveon company (<https://www.eveon.eu/en/>). The Nanobiose company is the project leader and will integrate the different elements developed by the partners. For this reason, the young researcher will develop the project partly in the premises of SyMMES in Grenoble, and partly in the premises of the company Nanobiose, in Savoie at 45 minutes of distance.

Constraints and risks

The KinCells project aims at developing surface chemistry for biomolecules. As such, the candidate will have to work in a chemistry laboratory.
This project also implies the manipulation of human blood samples (healthy) and thus the strict respect of the working rules fixed by the hosting partners. Mandatory training will be provided to the candidate, directly related to his experimental work (safety within the laboratory, chemical risk, biological and infectious risk, etc.). The host laboratory (SyMMES) is equipped with two Bio Safety Level 2 laboratories (one for the handling of pathogenic bacteria, and one for the handling of human blood samples), and has a CODECOH agreement for the use of human samples, which will be provided by the Etablissement Français du Sang, in Grenoble.
The candidate will have to move by him/herself and be able to carry out experiments either in the SyMMES facilities or in the Nanobiose facilities.