Post-doctoral Position

Besançon, FRANCE

Miniaturized biosensor for the qualification of advanced therapy medicinal products

Biosensor / microfluidics / Acoustic wave sensing / lab on a chip / BioMicrodevices

Host institution: Université de Bourgogne Franche Comté
Laboratory: FEMTO-ST Institute, MN2S Dept, Besançon, FRANCE
Starting date: September 2020. **Duration:** 23 months **Salary:** 2764€ gross salary/month

Positioning of the project

The treatment of chronic inflammatory diseases and cancer is on the cusp of a revolution related to the recent advances in cell engineering. Classic treatment by chemical drugs methods have been favored in recent years, some new drugs from the 'living' are starting to emerge. These advanced therapy medicinal products (ATMPs) have an exceptional application potential, but need to rethink the production of these new drugs. Their manufacture requires implementing complex technology in a highly controlled environment. This work is part of the Europe funded MiMédI project (MIcrotechnology for advanced therapy MEDIcinal products), started in November 2017 and for 4 years, and which involves 10 partners (6 companies, 3 academic partners and a transfer agency).

The post-doctoral work addresses the development of a miniaturized biosensor for the monitoring and detection of potential bacterial cell contamination in medicinal products. Specificity, sensitivity and rapid response are the three points to focus on in the proposed work. First step will be dedicated to design, including multiphysics simulation (waves properties in a complex liquid environment) of the device. Second step will concern fabrication (including clean room processes), strategies for miniaturization and experimental validation. The device will be tested in several conditions with biologists to validate its efficiency in the qualification of new medicinal products. The objective of the post-doctoral project is the compliance of a miniaturized biosensor for *off-line* qualification of biological fluids. At medium-term, this device is developed for being integrated in the biodrug production line and/or in a lab-on-chip for an *on-line* biodetection of dedicated species.
The candidate will be hosted at the BioMicroDevices Group, Micro-Nano Sciences and Systems Department of FEMTO-ST Institute (www.femto-st.fr) in collaboration with biochemists and biologists from MIMEDI consortium.
Expertise and skills in the BioMicroDevices Group: https://www.femto-st.fr/fr/Departements-de-recherche/MN2S/Groupes-de-recherche/biomicrodevices/Publications

Candidate profile

The candidate will benefit from the skills and experience of our laboratory in the field of microtechnology, acoustic devices, microfluidic, instrumentation, nanocharacterization, biochemistry and will operate in the clean-room facilities of FEMTO-ST. She/he will be involved in the design (FEM simulations), microfabrication of prototypes including the fluidic cell with acoustic transducer and in the experimental setup to control the microfluidic devices. The candidate should be qualified in applied physics or engineering sciences and with a strong interest for interdisciplinary environment and experiments. He/she should possess skills among MEMS, biosensors, acoustics, instrumentation and multiphysics simulation. Some knowledge on biomedical aspects will be appreciated.
She/he is expected to be highly autonomous and innovative, to have a strong motivation for experimental work, demonstrate ability to write, communicate in English and work in an interdisciplinary approach. She/he will also be responsible of all reporting and communication related to the work. French language is not required.

Application procedure:

To apply, send an email before June 15 2020 with detailed CV, 2 references and motivation letter to:
Thérèse Leblois (therese.leblois@femto-st.fr) / Céline Elie-Caille (celine.caille@femto-st.fr)

Links

http://projects.femto-st.fr/mimedi/
http://www.femto-st.fr/en/Research-departments/MN2S/Research-axes/BioMicroDevices-Team
http://teams.femto-st.fr/BioMicroDevices/en/