Contact (please copy both)
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Job Title
Microfluidic cell culture post-doctoral research fellow position at King's College London in collaboration with fast-growing startup (MicrofluidX)

Duration
18 months (fixed-term contract)

Location
Guys Hospital, King's College London (London Bridge)

Reports To
Prof. Ciro Chiappini, Lecturer in Nanomaterials and Biointerfaces

Project overview
Cell and gene therapies (CGTs) are fast-growing areas of medical development. With over 700 clinical trials in progress, some treatments (e.g. Kymriah, Yescarta) have already reached the market. This technology is at a critical juncture where advances are achieving clinical realisation, yet manufacturing remains a key challenge, hindering clinical development and patient accessibility. Three critical manufacturing hurdles remain: prohibitive costs of goods, low process stability and control, and lengthy scale-up from discovery to commercial stages.

In partnership with MicrofluidX and under the supervision of Prof. Ciro Chiappini, your role is to contribute to the design of a microfluidics-based bioprocessing platform, by carrying out cell culture operations in said chips (e.g., seeding, expansion, transduction, washing, harvest) with mammalian cells. You will gather in/post-process biological data such as population doubling, transduction rates, cell morphology, cell phenotyping and work with a multidisciplinary team to suggest design changes and process improvement. You will also run comparative studies (e.g. manual/conventional cell culture) to show the capabilities of MicrofluidX's platform over existing single-use and/or conventional technologies. With assistance from the Chiappini Lab and MicrofluidX engineering you will fabricate (e.g., soft lithography, micro-milling, stamping, bonding) the microfluidic chips and contribute to their design development.

This project is supported by a prestigious Collaborate to Innovate grant, awarded to King's College London and supported by MicrofluidX. There will be frequent (e.g., bi-

weekly) interactions with MicrofluidX's microfluidic engineer and biologist, in the form of problem-solving sessions, and on-the-ground training and support.

MicrofluidX is a rapidly expanding start-up company interested further developing in-house the outcome of this research.

About the Chiappini lab (chiappinilab.com)

Located at Guys Hospital in London Bridge, the Chiappini lab blends nanotechnology, bioengineering and cell biology to develop functional materials that direct cell behaviour, for applications in regenerative and precision medicine.

About MicrofluidX (microfluidx.co.uk)

MicrofluidX is an award-winning startup developing a break-through bioprocessing platform for the CGT market, based on microfluidic technology. Its platform allows ultra-low costs and scale-up of CGT from discovery to commercial stages, making these very potent treatments affordable for a wider number of patients, and reducing development times by several years. MicrofluidX is currently developing a system that will allow biologists to test dozens of cell culture conditions in parallel in an automated way. It literally replaces the Petri dish, the flask, the bag, the bioreactor, and the centrifuge all at once!

Responsibilities and Duties

- Design and carry out cell culture experiments in microfluidic chips: seeding, expansion, transduction, washing, concentration, sorting, sampling, harvest with mammalian T-cells (Jurkat cells, primary T-cells).
- Carry out of cell tests using microscopy and molecular biology to determine cell count, morphology, viability, phenotype, and other characteristics, as well as gathering of in-process data such as pH, T, C_{CO2}, etc.
- Design and carry out comparative cell culture experiments in conventional bioreactors (e.g. multi-wells, bags) to compare performance vis-à-vis microfluidic chips
- Analyse and present data internally (MicrofluidX / Chiappini Lab), as well as external audiences such as scientific conferences and publications
- Problem-solve with the team on system design, testing and validation

Qualifications

- PhD in Biology/Biophysics/Biochemistry with extensive experience in cell culture and analysis with mammalian cells, ideally Jurkat cells, other T-cells in Cat I and Cat II facilities
- Ideally experience with cell and gene therapy processes for T-cells
- Experience with cell culture in microfluidic devices is a plus

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Salary

£38,304 per annum inclusive of London allowance

Selection process

The selection process includes a panel interview, an assessment, and a presentation