



JOB DESCRIPTION

Research Centre: The Vascular Biology & Therapeutics Group, School of Biotechnology

Post Title: Postdoctoral Researcher in the Stem Cell Biology

Level on Framework: Level 1

Post Duration: 12 months

Overview:

Dublin City University www.DCU.ie is a young, ambitious and vibrant University, with a mission 'to transform lives and societies through education, research, innovation and engagement'. Known as Ireland's 'University of Enterprise and Transformation', it is committed to the development of talent, and the discovery and translation of knowledge that advances society and the economy. DCU is the Sunday Times Irish University of the Year 2021.

The University is based on three academic campuses in the Glasnevin-Drumcondra region of north Dublin. It currently has more than 18,000 students enrolled across five faculties – Science and Health, DCU Business School, Computing and Engineering, Humanities and Social Sciences and DCU Institute of Education. DCU is committed to excellence across all its activities. This is demonstrated by its world-class research initiatives, its cutting-edge approach to teaching and learning, its focus on creating a transformative student experience, and its positive social and economic impact. This exceptional commitment on the part of its staff and students has led to DCU's ranking among the top 2% of universities globally. It also consistently features in the world's Top 100 Young Universities (currently in QS Top 70 Under 50, Times Higher Top 150 Under 100).

DCU is placed 84th in the world, in the Times Higher Education University Impact Rankings – measuring higher education institutions' contributions towards the UN Sustainable Development Goals. Over the past decade, DCU has also been the leading Irish university in the area of technology transfer, as reflected by licensing of intellectual property.

Background and Role:

The EVPRO project (Extracellular Vesicles Promoted Regenerative Osseointegration) aims to counteract the shortened lifetime and to reduce the risk of inflammation of hip revision prostheses. To this end, we are developing a novel bioinspired adaptive coating for hip revision endoprosthesis, which is able to control inflammation at the original anatomical location of the removed endoprosthesis and promote bone regeneration. We seek to achieve this by safe integration of human mesenchymal stem cell derived extracellular vesicles (MSC-EVs) into a smart biodegradable hydrogel which is absorbed into the micro pores of a TiO₂ coating on the surface of conventional titan endoprosthesis.

An EU funded post-doctoral position in cell and molecular biology is available to join the Vascular Biology and Therapeutics Group in the School of Biotechnology. The successful candidate will join the team to generate and characterise human mesenchymal stromal stem cell-derived extracellular vesicles (MSC-EVs) from cells grown in long-term cultures using hollow-fibre bioreactors (HFBRs).

Research Career Framework:

As part of this role the researcher will be required to participate in the DCU Research Career Framework (<http://dcu.ie/hr/ResearchersFramework/index.shtml>). This framework is designed to provide significant professional development opportunities to researchers and offer the best opportunities in terms of a wider career path.

DCU has a strong track record in attracting both Irish and European Union research funding under Horizon 2020 (and all previous Framework programmes), Marie Curie Actions and Erasmus. We offer a dynamic and internationally-focused environment in which you can advance your academic career.

Principle Duties and Responsibilities:

- Mesenchymal Stromal Stem cell culture
- Dynamic Hollow-fibre bioreactor culture of mammalian cells -
- Extraction and analysis of extracellular vesicles (EVs) from conditioned media.
- Dynamic light scattering (DLS) particle analysis, Amnis Cell Stream™ analysis and western blot/slot blot of EVs
- Integrative analysis (isolation, processing and photonic characterisation) of EVs and generation of datasets including key statistical analysis using Principal Component analysis (PCA), linear discriminant analysis (LDA) and supervised machine learning using WEKA platform.
- Create graphical representations of data for publications and presentations
- Communicate research efforts, including compiling reports, participation in the generation of manuscripts and presenting findings at group meetings, national and international conferences
- Take part in supervision of undergraduate and postgraduate students as required
- Provide assistance and support for team members and ongoing projects of the research lab

Minimum Criteria:

The successful candidate must hold a PhD in Cell Biology. In addition, it is desirable that the candidate has a subset of the following skills / experience:

- Experience with processing, analysis and visualisation of EV data.
- Ability to work individually and as part of a multidisciplinary team.
- Excellent organisational and problem solving skills and a proven ability to communicate effectively.
- Experience working on research projects; working closely with laboratory scientists and industrial partners

Candidates will be assessed on the following competencies:

- **Discipline knowledge and Research skills** – Demonstrates knowledge of a research discipline and the ability to conduct a specific programme of research within that discipline
- **Understanding the Research Environment** – Demonstrates an awareness of the research environment (for example funding bodies) and the ability to contribute to grant applications
- **Communicating Research** – Demonstrates the ability to communicate their research with their peers and the wider research community (for example presenting at conferences and publishing research in relevant journals) and the potential to teach and tutor students
- **Managing & Leadership skills** - Demonstrates the potential to manage a research project including the supervision of undergraduate students

Mandatory Training:

The post holder will be required to undertake the following mandatory compliance training: Orientation, Health and Safety and Intellectual Property and Data Protection training. Other training may need to be undertaken when required.