



JOB DESCRIPTION

Research Centre	School of Biotechnology
Post title	Postdoctoral Researcher in Immuno-oncology and the Microbiome
Level on Framework	Level 1
Post duration	Fixed Term Contract - 24 months

Dublin City University

Dublin City University (DCU) is a leading innovative European University. It is proud to be one of the world's leading Young Universities and is among the world's top 2% globally. DCU is known as Ireland's University of Impact, with a mission to 'transform lives and societies' and focuses on addressing global challenges in collaboration with key national and international partners and stakeholders.

DCU has over 20,000 students in five faculties spread across three academic campuses in the Glasnevin-Drumcondra area of North Dublin. Thanks to its innovative approach to teaching and learning, the University offers a 'transformative student experience' that helps to develop highly sought-after graduates. DCU is currently No. 1 in Ireland for Graduate Employment Rate, and for graduate income (CSO).

DCU is a research-intensive University and is home to a number of SFI-funded Research Centres. The University participates in a range of European and international research partnerships. DCU is also the leading Irish university in the area of technology transfer as reflected by licensing of intellectual property.

As a 'People First' institution, DCU is committed to Equality, Diversity and Inclusion - a University that helps staff and students to thrive. The University is a leader in terms of its work to increase access to education, and is placed in the world's Top 10 for reducing inequalities in the Times Higher Education Impact Rankings.

Background & Role

The School of Biotechnology at Dublin City University invites applications for a postdoctoral researcher role in Immuno-oncology and the Microbiome to work on the impact of bacteria on immune-mediated targeted therapy efficacy. The position is available from no later than the 1st September 2023.

This postdoctoral position is funded by the All Island Cancer Research Institute's HEA North South Research Programme, AICRISart. The position is based in Dublin City University and is a part of the

“Immune responses to intratumoural bacteria; Consequences and opportunities for immuno-oncology” project, which is a collaboration between Dublin City University, Royal College of Surgeons in Ireland, University College Cork and Queen’s University Belfast. The overall aim of the four-institution project is to develop focussed understanding of immune responses to intratumoural bacteria to enable therapeutic development of i) new Prognostic Biosignatures and Rational Therapeutic Interventions, and ii) bacteria themselves as immune-oncology therapeutics.

The specific aim of the DCU postdoctoral position will be to assess the impact of bacteria on targeted therapy efficacy and immune contexture in models of gastro-intestinal (GI) cancers and colorectal cancer (CRC). The presence of bacteria such as *Fusobacterium nucleatum* (FN) in the tumour microenvironment (TME) is associated with aggressive progression of gastric and oesophageal cancers potentially through suppression of anti-tumour immunity. However, some studies have reported that FN can enhance the therapeutic effect of PD-L1 blockade in CRC cancers. The immune system also plays a role in response to IgG monoclonal antibody (mAb) therapies used to treat gastric/oesophageal (GE) cancers (eg anti-HER2 mAb trastuzumab) and CRC (e.g. anti-EGFR mAb cetuximab) cancers. Therefore, the mechanisms by which these bacteria may contribute to the clinical efficacy of treatments such as immune checkpoint inhibitors and mAbs is not fully understood. In this study, CRC, gastric and oesophageal cancer cellular models will be used to investigate the impact of FN and other bacteria on the immune response to mAbs, and utilise GE cancer organoid models to faithfully recapitulate the interactions between tumour, host immunity and bacteria.

The project will utilize peripheral blood mononuclear cell (PBMC)-mediated antibody dependent cell mediated cytotoxicity (ADCC) assays induced by therapeutic mAbs and bacteria-conditioned media. The impact of bacteria products on immune/drug targets and cytokine profiles will be examined by flow cytometry and Luminex Multiplex assays. A TME immune-competent GE tumour organoid and bacteria platform will be developed using organoids that have been previously established in the lab. The platform will be used to investigate transcriptomic and metabolomic signatures of bacterial-mediated immune response. Secondments at AICRISart partner institutions will be supported to access essential expertise and training to allow completion of the project.

Principal Duties and Responsibilities

Reporting to their Principal Investigator the Postdoctoral Researcher will:

- Conduct a specified programme of research under the supervision and direction of the Principal Investigator, with a specific focus on the development of 2D and 3D cell-culture models of bacteria/tumour interaction.
- Engage in the dissemination of the results of the research in which the researcher is engaged with the assistance of and under the supervision of the Principal Investigator, with a specific focus on communication and co-operation with AICRISart PhD and postdoctoral researchers, along with preparation of presentations and material for national and international conferences.
- Supervise and assist undergraduate and postgraduate students working in this area with their research.
- Liaise with both internal and external stakeholders including industry and academic partners/collaborators.
- Carry out administrative work associated with the programme of research as necessary, including assisting the Principal Investigator in budgeting, programme reviews and manuscript/grant preparation.

Minimum Criteria

- Individuals should have a PhD in one of the following fields: cancer biology, immunology, microbiology or related disciplines.
- Experience in cell culture.
- Individuals should be able to demonstrate their ability to work in multidisciplinary and highly collaborative projects.

- Evidence of publication of research articles in the field of cancer biology, immunology, microbiology or related disciplines is also essential.

individuals 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.