



HR EXCELLENCE IN RESEARCH



TITLE OF POST: Post Doctoral Researcher in the Characterisation of Single Cells (Re-advertisement)

LOCATION: University of Limerick

REPORTS TO: Project Leader

CONTRACT TYPE: Specific Purpose

SALARY SCALE: €37,223 - €48,205 p.a. pro rata (maximum starting salary €40,661 p.a. pro rata)

JOB DESCRIPTION

QUALIFICATIONS:

- Doctoral degree (level 10 NFQ) (completed or at final stages of completion i.e. viva complete) in cellular and molecular biology or a related discipline (e.g. biochemistry, neuroscience, biomedical science, bioinformatics etc.).
- The Post Doctoral Researcher will also be an accomplished cell biologist with experience in cell culture, flow cytometry, histology, cell signalling, confocal microscopy and solid tissue preparation and be familiar with omics approaches to cell biology.
- The successful applicant should have a good understanding of cancer cell signalling networks and protein-protein interactions.

The successful applicant will be part of a large multidisciplinary research team of biomedical engineers, bioscientists, clinicians and industrial partners (BD Research Centre Ireland) who are focused on the architectural characterisation of tissue. The successful applicant will have specific responsibilities and will be a senior member of a core team that is funded by Enterprise Ireland.

The overall objective of this research project is focused on understanding how local tissue microenvironments can contribute to cell behaviour within colonic tumours. The specific aims of this research role are to contribute to the development of a tissue-preparation technology-platform, suitable for multiparameter analysis, which can retain architectural information of tissue at near cellular level. This tissue preparation platform will be integrated for downstream multiparameter analysis using BD Biosciences single cell analysis platforms.

Key objectives of this research position:

1. Contribute to the development a solid tissue preparation protocol, compatible with a tissue dissection platform under development in the group that allows for the isolation of array-position-indexed single cells for downstream analysis by flow cytometry and single cell transcriptomics sequencing.
2. Support biomechanical investigation of adjacent tissue sections.
3. Contribute to a single cell sequencing bioinformatics analysis pipeline on the data generated with BD biosciences single cell sequencing equipment.
4. Establish a 2D, spatially resolved, single cell sequencing expression profiles of targeted markers for (a) Porcine-colonic (b) Human-patient-derived colonic tumours.
5. Establish a 2D, spatially resolved targeted H&E and/or immunofluorescent labelled images of serially adjacent sections of the tissue through porcine colonic tissue and human colonic tumours.
6. Contribute to the integration of the original tissue-tumour in a spatially resolved 3D-volumetric reconstruction using data generated through single-cell sequencing, histology image profiles, biomechanical nanoindentation and single cell immuno-labelling.

For further information, please contact Dr Kieran McGourty kieran.mcgourty@ul.ie or Dr John Mulvihill john.mulvihill@ul.ie



DESCRIPTION:

Research

- Contribute to the research programme of the department under general guidance of a member of the academic staff or PI/project leader.
- Define research objectives and proposals for own (or joint) research in line with research strategy.
- Conduct individual and/or collaborative research projects in a variety of settings.
- Determine appropriate methodologies for research, with advice and support as appropriate.
- Assess research findings for the need/scope for further investigations/commercial exploitation.
- Translate knowledge of advances in the subject area into research activity.

Research Management

- Plan, co-ordinate and implement research project (this may include managing a small research team/co-ordinating other researcher activity).
- Manage own personal and research resources (including where required, laboratories, and specialist equipment) appropriately.
- Manage own research budget, if any, and keep records as directed and in line with funder/university policy as appropriate.

Income Generation/Funding

- May identify sources of funding and pursue the process of securing funds.
- May work with PI to contribute to proposals for developmental purposes.

Research Outputs - Write Up and Dissemination

- Write up results from own research activity.
- Contribute to the research project's dissemination, in whatever form (report, papers, chapters, book).
- Present information on research progress and outcomes e.g. to bodies supervising research; conferences, steering groups; other team members, as agreed with the PI/project leader.
- Where appropriate, work with PI to register patents to protect intellectual property.

Supervision

- May act as co-supervisor or be a member of a supervision panel.
- May participate in limited teaching hours for own development. The extent of this must not adversely impact the primary research role.
- May act as mentor to students on undergraduate placement.

Essential Criteria

The successful applicant will have:

- Doctoral degree (level 10 NFQ) (completed or at final stages of completion i.e. viva complete) in cellular and molecular biology or a related discipline (e.g. biochemistry, neuroscience, biomedical science, bioinformatics etc.)
- Experience with evidence by way of publication in the **at least one** of the following areas:
 - Handling DNA, RNA and protein
 - Cell signalling networks
 - Processing solid tissue
 - Single cell analysis
 - High throughput screening
 - Molecular biology



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- Omics' approaches to cell biology
- Strong publication track record with at least 1 senior authored publication in a top quartile journal.
- Demonstrate strong understanding of experimental design, controls and appropriate application of statistical methods.
- The Post Doctoral Researcher will also be an accomplished cell biologist with experience in approaches to cell biology, cell culture, flow cytometry, histology, cell signalling, confocal microscopy and solid tissue preparation.
- The successful applicant should have a good understanding of cancer cell signalling networks and protein-protein interactions.
- Effective problem solving and decision-making skills.
- Excellent teamwork skills and strong presentation skills.
- Adaptability, flexibility and creativity.
- Good leadership skills and the ability to think strategically in line with the requirements of the role.

Desirable Criteria

- Minimum three years' experience in cell biology.
- Experience of experimental design and characterisation with evidence of large dataset generation and analysis.
- Working knowledge of (Python, Matlab, R or equivalent programming languages commonly used for bioinformatics analysis and data science).
- Bioinformatics experience in analysing and integrating large datasets arising from multiple analytical techniques and/or familiarity with bioinformatically analysing single cell sequencing data.
- Working knowledge of omics approaches to cell biology, transfections, mutational analysis, use of siRNA/shRNA technology, etc.
- Proven ability to independently plan and organise experiments and projects.
- Experience working in a multi-disciplinary team

Please include the following information in your application:

- Full title of PhD thesis.
- Full list of publications including weblinks to publications.

Further Information for Candidates:

Recruitment Procedures used at the University of Limerick (UL)

The University of Limerick is committed to the Open, Transparent and Merit-Based Recruitment (OTM-R) of Researchers as detailed in our [Recruitment/Appointment Procedures for Research Staff](#).

The University of Limerick generally uses a three stage recruitment procedure: screening, shortlisting and interview.

Screening: Initially applications for an advertised position are screened to determine if applicants have met the 'Essential Criteria' as outlined in the advertised job description. Only candidates who meet the 'Essential Criteria' will progress beyond this stage.

Shortlisting: Depending on the number of applications remaining, it may not be possible to interview every candidate who has passed the screening process. Therefore, at this stage the Selection Board for this position may review the applications which have passed screening and will select a final shortlist of candidates who in their view were most closely aligned to the post as advertised.

Interview: Once a shortlist has been finalised, all applicants will be notified of the status of their application. The final shortlist of candidates will then be invited to interview. We aim to provide at least one week's notice to all candidates. The interview process may take the format of a standard interview and may also include a presentation – if so, you will be



provided with details of this in your invitation to interview letter. Candidates may interview in person or also via our Video Conferencing facilities.

General Recruitment Timelines

Please note that applications for all vacancies must be submitted online at www.ul.ie/hrvacancies in advance of 12 noon Irish Standard Time on the advertised closing date. We aim to complete the screening process within one week of the closing date, and the shortlisting process within a further week. Therefore we aim to be in touch with all candidates within one month of the closing date.

Please note these timelines may vary based on various factors including the number of applications received.

Benefits at the University of Limerick

Employees of the University of Limerick receive a variety of benefits including:

- Membership of the [Single Public Service Pension Scheme](#).
- Membership of the [Income Continuance Plan](#)
- The opportunity to join the University's [Additional Life Cover](#) plan.
- Coverage in the UL [Sick Leave Scheme](#).
- Flexible working practices such as the [Shorter Working Year Scheme](#).
- Preferential rates for [home, car, travel and health insurances](#).
- Employee wellness is a priority and a number of initiatives take place each year for the benefit of UL employees, see more at www.ul.ie/hr/be-well-ul.
- Preferential rates for access to the [UL Arena](#) swimming pool and fitness centre.
- Supported professional development under the [Further Study Policy](#).

Equal opportunities at the University of Limerick

The University of Limerick is an equal opportunities employer, is committed to selection on merit and to the developing and maintaining a positive working environment, in which all employees are treated with dignity & respect. In pursuit of this, it is the policy of the University to provide all employees with an environment, which is free from bullying, harassment or victimisation of any form. You can read more about this in the University's [Equality and Diversity Policy](#)

The UL strategic plan Broadening Horizons 2015-2019 clearly states that UL seeks to exemplify gender equality best practice in all aspects of its activities, reinforcing UL's position as the leading university in Ireland in terms of female representation in senior academic roles, 31% of women in UL are at full professorial level, compared to the national average of 19%.

UL is the proud holder of the prestigious Bronze Institution Athena SWAN Award, the first university in Ireland with Trinity College, Dublin to achieve the award. The AS charter recognises higher education institutions, academic departments, and research institutes that put in place initiatives to address gender inequality, including initiatives aimed at changing culture and attitudes. The UL strategy explicitly commits the institution to the Athena SWAN process. Further details available on www.ul.ie/hr/athena-swan-ul.

Development opportunities at the University of Limerick

A key objective of the University's Strategic Plan 2015-2019 is to support staff development. In the context of this objective the University is committed to progressive development programmes and opportunities to enable all employees to fully develop their potential. Further information is available [here](#). The University of Limerick is also has a '[Performance and Development Review System](#)' which employees may avail of.

Additional Links:

Link to Human Resources:

www.ul.ie/hr/

Link to the University of Limerick's

[Research Staff Role Profiles](#)

Link to the University of Limerick's Strategic Plan;

['Broadening Horizons'](#)

