



**Post Doctoral Researcher, Cell & Molecular Biology (Wound Healing)**  
**Level 1, DCU Career Framework**  
**Cell & Molecular Physiology Research Group**  
**School of Health & Human Performance**  
**Fixed Term Contract – 18 Months**

As part of this role the researcher will be required to participate in the DCU Research Career Framework. This framework is designed to provide significant professional development opportunities to Researchers and offer the best opportunities in terms of a wider career path

**Dublin City University** [www.dcu.ie](http://www.dcu.ie) is a research-intensive, globally-engaged, dynamic institution that is distinguished both by the quality and impact of its graduates and by its focus on the translation of knowledge into societal and economic benefit. Through its mission to transform lives and societies through education, research and innovation, DCU acts as an agent of social, cultural and economic progress. DCU is Ireland's fastest growing university, and now hosts more than 17,000 students across its three academic campuses: DCU Glasnevin Campus, DCU St Patrick's Campus and DCU All Hallows campus.

**School of Health & Human Performance**

The School of Health and Human Performance was founded in 1999 and has successfully grown and developed into a dynamic Centre for Teaching, Learning and Research. It offers four undergraduate degree programs to approximately 440 students, as well as post-graduate teaching and training across multidisciplinary research areas. As a School we are passionate and committed to providing the best possible learning and training environment for both undergraduates and postgraduates. The School prides itself not only on its excellence in teaching and learning, but also in research.

We currently offer post-graduate research programs in a number of Human Physiology, Cell & Molecular Biology, Genetics & Epigenetics, Clinical Exercise Medicine, Health, Physical Education and Injury related disciplines in state-of-the-art facilities.

**The Cell & Molecular Physiology Group**

Based in the School of Health & Human Performance, the group focuses on the cellular and molecular aspects of Cardiovascular Biology (*integrin signalling, cytoskeletal dynamics, cell signalling, transcriptomics, epigenetics and microRNA biology*), chronic Inflammation associated with aging (inflammaging), and skin biology. The research program also involves applied and translational research, focusing on the development of novel cellular and molecular diagnostics and prognostics, and organotypic model development for therapeutic evaluation at the clinical and preclinical stages, including the assessment of functional foods, nutraceuticals and active biologics. This work has contributed to various clinical trials and studies including sickle cell anaemia, CVD, inflammation, diabetic retinopathy and cancer. The group's research portfolio has expanded into the new area of cardiovascular epigenetics and the role of lifestyle (exercise and nutrition) on the cardiovascular compartment. Current projects also include international collaborations with the University of Angers, France in association with the French

(CNES) and European space agencies (ESA) on the effect of space flight on cardiovascular epigenetics, using platelets as a circulating biomarkers.

## Project Profile

In recent years, biomedical studies and clinical research have indicated that as we age, we become hypomagnesic, which contributes to chronic illness (inflammation, CVD, cancer etc). A major draw-back of current Mg supplementation approaches is in that the form of Mg is not readily bioavailable. Initial studies carried out in our lab demonstrated that a novel form of marine mineral complex, rich in magnesium, was extremely bio-available, non-cytotoxic, functional and beneficial to homeostasis. Data from four years of research has led to the development of a novel Burns dressing (Wallace, R, Kenealy, MR, Brady, A, Twomey, L, Duffy, E, Degryse, B, Caballero-Lima, D, Moyna, N, Custaud, MA, Meade-Murphy, G, Morrin, A, Murphy, R. 2020. Development of dynamic cell and organotypic skin models, for the investigation of a novel visco-elastic burns treatment using molecular and cellular approaches. Burns 2020, May 14, 2020. <https://doi.org/10.1016/j.burns.2020.04.036>) and future commercial opportunities for our industry partner, Oriel sea Salt and Marine Extracts.

Based on our findings and developments to date, we will now address areas required to bring this product to commercial success through an **Enterprise Ireland** funded programme, in collaboration with an industrial partner (Oriel), for a single specific product target- a new Smart Wound Healing Dressing which for the purposes of this study we call GRAFT (Gel Release Away Film Technology). The project will employ cell and molecular biology techniques as well as *in vitro* organotypic modelling of chronic wounds to address this challenge. We are now seeking to hire a Post-Doctoral Researcher to work with us on this project.

## Duties & Responsibilities

Reporting to his/her Principal Investigator (PI) the Postdoctoral Researcher will:

- Be responsible for conducting a specified programme of research under the supervision and direction of the PI
- Design and implement research protocols; design safety procedures; adapt new procedures, methods or instrumentation relative to research procedures.
- Oversee the establishment of organotypic models of *in vitro* human 3D dermal tissue with industry partners and collaborators, preparation of samples for cell and molecular analysis and protein quantification and characterisation, and equipment maintenance; quality control analysis of reagents.
- Collect, prepare and analyse research data; keep a detailed notebook summarizing experiments and recording research data; maintain computer database of research data; tabulate and display data for presentation in research conferences and for manuscript preparation; use graphics and statistical software to analyse and present data.
- Be responsible for supervising other personnel in the laboratory to coordinate research efforts for increased efficiency; participate in training of fellows, visiting scientists, students and volunteer workers as needed.
- Search pertinent scientific literature as needed and present at group or collaborator meetings.
- Assist with ordering and procurement of supplies and equipment and with general maintenance of laboratory.
- Support in identifying and developing future research and funding initiatives
- Engage in appropriate training and development opportunities as required by the PI, the School or Research Centre, or the University
- Engage in teaching and teaching support as assigned by the Head of School under the direction of the PI

- Be responsible for carrying out administrative work associated with the programme of research as necessary

## **Candidate Requirements**

### **Essential Criteria**

- A PhD in a basic science such as cell & molecular biology, genetics, protein biochemistry, or a closely related discipline
- Have sound comprehension of Human Health, Physiology and Biomedical Research, including research design and data analysis
- High level ability to communicate effectively in both written and verbal form as well as excellent social skills necessary for productive collaborations and teamwork
- Ability to bring initiative and imagination to independent work
- Proven organisational, and problem solving skills

### **Desirable Criteria**

- Experience or a keen interest in, microscopy

### **Mandatory Training**

The post holder will be required to undertake the following mandatory training: GDPR, Orientation and Compliance.

### **Candidates will be assessed on the following competencies:**

**Discipline knowledge and Research skills** – Demonstrates knowledge of their 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 stake-holders) and the ability to contribute to grant applications and funding initiatives

**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