



TUS

Technological University of the Shannon:

Midlands Midwest

Ollscoil Teicneolaíochta na Sionainne:

Lár Tíre Iarthar Láir

POSTGRADUATE RESEARCH OPPORTUNITY

Project Title: Plasma medicine for the modulation of inflammation and cartilage damage in osteoarthritis

Short Project Description

Osteoarthritis is a common, debilitating joint disease characterised by pain and loss of joint function, and a leading cause of disability worldwide. Inflammation of the membrane lining the joint capsule is a key feature of the disease, with immune cells present within this lining playing a vital role in driving destructive processes leading to damage of the skeletal tissues such as cartilage and bone. Current gold standard treatment involves pain-relief medication to manage symptoms until a total joint replacement surgery is required. However, joint replacement implants have a limited lifespan, and there is currently no available treatment to prevent or slow-down disease progression. The medical application of physical plasma has gained increasing interest in recent years and opened avenues for the development of novel therapies. However, its therapeutic application for the treatment of osteoarthritis has not yet been explored. Therefore, this research will investigate the potential of plasma technology to improve inflammation and reduce cartilage damage, as a potential treatment to prevent or slow down the development of osteoarthritis.

This multidisciplinary project involves close collaboration between research groups at TUS Midwest (Moylish campus, Limerick) and enterprise partner TheraDep (Clonmel, Co. Tipperary), a medical device company specialising in surface coatings for life science applications. As part of this research, the candidate will undertake a research secondment period at TheraDep research laboratories in Clonmel. The outcomes of this project will enhance current understanding of the potential of plasma medicine to enhance healing and potentially facilitate the development of a new treatment for osteoarthritis to improve health and lower the socio-economic burden of the disease.

Duration of Project: 48 months

Funding Agency: TUS RISE Scholarship comprises of a monthly stipend, materials budget and postgraduate fee for the duration of the award only.

Type of Degree Offered: PhD

Minimum Qualifications

We are seeking a driven life science candidate with a strong interest in musculoskeletal tissue biology and immunology.

Applicants should have a primary Bachelor's degree in Biomolecular Life Sciences, Biomedical Sciences, Biology or related disciplines, with a minimum classification of 2.1 honours or equivalent.

Experience Necessary/Any Other Requirements:

- Self-motivated and detail-oriented.
- Adept at both independent and collaborative work.
- Ability to thrive in multidisciplinary environments.
- Excellent written and oral communication skills.



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AN tÚDARÁS um ARD-OIDEACHAS
HIGHER EDUCATION AUTHORITY

TU RISE is co-financed by the Government of Ireland and the European Union through the ERDF Southern, Eastern & Midland Regional Programme 2021-27 and the Northern & Western Regional Programme 2021-27



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- Extensive hands-on practical laboratory experience is required. Previous experience with mammalian cell culture, cell-based assays, flow cytometry, immunoassays or molecular techniques is an advantage.
- IELTS [International English Testing System] Applicants must have a minimum of 6.0 with no component score less than 6.0. **[will be taken from TUS Postgraduate Regulations]**

Research Supervisors: The candidate will be part of a multidisciplinary and multi-lab team, supervised by Dr Niamh Fahy (Lead supervisor; TUS Midwest), Dr Liam O' Neill (Co-supervisor; TheraDep), Dr Emma Murphy (Co-supervisor; Shannon ABC, TUS Midwest), Dr Declan Devine (Co-supervisor; TUS Midlands).

For further information, please contact Dr Niamh Fahy (niamh.fahy@tus.ie), Department of Applied Science and LIFE Biosciences and Research Institute, Moylish campus, TUS Midwest.

Closing date for receipt of completed application forms is 5pm on Tuesday, 4th June. Interviews will take place within subsequent weeks.

Download TUS RISE application form here:

<https://tus.ie/rdi/research/office/funded-research/>



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