

Summer Undergraduate Research Programme 2025

The Summer Undergraduate Research Programme (SURP) is part of the CREATE-DkIT project, which is co-funded by the Government of Ireland and the European Union through the ERDF Southern, Eastern & Midland Regional Programme 2021-27.

Project ID	SURP2501
Project Name	Calcium influx pathways of the female reproductive tract
Applicant	DkIT-Registered Only

Research Project's Aim and Objectives

The main objective of this project is to train an undergraduate student in methods and thought processes of conducting a novel, evidence-based physiology research project. We will investigate the myometrium, the smooth muscle lining of the female reproductive tract, the physiology of which is poorly understood. Investigating this area and addressing this gap could open the possibility of identifying new therapeutic targets to treat early onset labour or complications arising from myometrial over-excitability during pregnancy. In our project, we seek to address this gap with an undergraduate student using resources in the Smooth Muscle Research Centre (SMRC). This will allow us to gather preliminary data to form the basis of a larger funding application to continue the work, possibly as a PhD student scholarship (such as a Research Ireland postgraduate scholarship, to which the mentored student could apply during their 4th year of study at DkIT).

Normal contractions and relaxations of the myometrium are regulated by changes in intracellular calcium (Ca²⁺). In our project, we aim to establish pilot data that will provide proof of concept evidence that we can develop approaches to investigate Ca²⁺ entry pathways required for myometrium contractions. To accomplish this, we propose to train an undergraduate student in dissection and preparation of female mouse myometrium tissues in the SMRC. The student will be mentored to record contractions and relaxations of myometrium tissues using organ bath equipment. From these experiments, the student will be trained to regularly record myometrium activity and apply drugs that will block candidate pathways for Ca²⁺ entry in myometrium cells.

1. To train an undergraduate student in the methods of dissection, animal handling and solution preparation to enable them to prepare fresh myometrium tissues for experiments from mouse animal models.
2. To mentor the student to plan, conduct and troubleshoot organ bath experiments (isometric tension recording), which will enable the student to monitor contractions and relaxations of dissected myometrium tissues.
3. Facilitate full training of the student in proper statistical analysis of organ bath experiments, providing them with tools to effectively distinguish well conducted experimental data from sub-optimal recordings.

Profile of Student Needed

For this project, students will be based entirely within the laboratory of the Smooth Muscle Research Centre withing the Regional Development Centre at DkIT. We seek applications from registered DkIT undergraduate students who at the end of May 2025, will have completed their 3rd year in one of the following programmes:



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- Level 7 BSc Bioscience
- Level 7 BSc Pharmaceutical Science
- Level 8 BSc (Hons) Biopharmaceutical Science

The student should have a preferred overall GPA of >70%, at the end of their 3rd year (if May 2025 examination results are pending at the time of project application, the January 2025 examination results will be reviewed to predict overall GPA).

Students that have demonstrated technical proficiency, high marks (>70%), as well as enthusiasm for research in any of the following 3rd year modules would have a distinct advantage:

- Biotechnology
- Pharmaceutical Biotechnology
- Physiology & Pharmacology

In addition to the above requirements, the student should be on a trajectory to enter the 4th year of the Biopharmaceutical Science BSc (Hons) programme in September 2025 (students enrolled in the Level 7 Bioscience / Pharmaceutical Science programmes should demonstrate a commitment to register for the 4th year Biopharmaceutical Science Add On).

Location

Smooth Muscle Research Centre laboratory, Dundalk Institute of Technology

Informal Project Contact

If you have any questions about the project itself, please contact Bernard Drumm: bernard.drumm@dkit.ie

Conditions

Conditions of the programme:

- To be eligible, students must be starting their 3rd or 4th year of an undergraduate programme in Semester 1 of 2025/2026
- This project is open to Dkit-registered students only
- Successful students will receive a weekly scholarship of €200
- Awarded students must attend virtual and in-person training held over the 8-week period, including an in-person induction on July 1st
- Awarded students must present a poster at a research dissemination event in October 2025

How to Apply

Using the Project ID in the subject line, please email your current CV, along with a cover letter, to Elaine O'Neill, Research Support Officer at elaine.oneill@dkit.ie by **12pm, Monday May 12th 2025**.

Interviews will take place in the week of May 19th.



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