DkIT | RESEARCH

Dundalk Institute of Technology

Research Ireland Pathways Programme 2026

DkIT Mentors

DUNDALK
INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA
DHÚN DEALGAN

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Research at DkIT is centred around 4 main thematic areas:

- ICT, Health and Aging
- Energy & Environment
- Creative Arts
- Humanities and Social Sciences

At present, the Institute hosts 6 research centres and 6 research group under these themes.

DkIT Research Centres are currently undergoing a process of redesignation which will enable the structuring of the Centres, the incorporation of new research strands and the creation of new Centres.

The information provided in this document is based on the Research Centres and Principal investigators who are best-aligned to the Host requirements of the Research Ireland Pathways Programme

Research Groups and Centres

Centre for Freshwater and Environmental Studies

The Centre for Freshwater and Environmental Studies (CFES) is an active and vibrant research centre within the School of Health and Science. CFES engages in inter- and multi-disciplinary research that investigates environmental issues and evaluates effective solutions across three main themes: (i) Water, Communities & Catchments, (ii) Agri-Environmental Management, and (iii) Environmental Education. CFES is currently involved in a number of large-scale projects that are addressing complex cross-disciplinary issues that have a regional, national, and international focus. CFES also undertakes educational and outreach activities, while providing relevant scientific information for government agencies, policymakers, communities and other interested parties. CFES research activities are embedded within the School of Health and Science and CFES PIs contribute to a range of undergraduate and postgraduate taught programmes across the school adding value and authenticity linking research and teaching.

CREDIT – Centre for Renewables at DkIT

Underpinning the CREDIT Technology Gateway at DkIT, CREDIT aims to enhance the efficiency, reliability, and scalability of systems and technologies, contributing to Ireland's transition towards a clean energy future. A focus is also placed on the circular economy by promoting the development of energy systems that minimise waste, optimise resource use, and contribute to a sustainable society. CREDIT's research programme also addresses critical environmental concerns, ensuring that these energy solutions are ecologically responsible and aligned with Irish & EU policy on sustainability and climate action.

Regulated Software Research Centre

The mission of the Regulated Software Research Centre (RSRC), as a world leader in the development of methods and tools to assist medical device manufacturers in their compliance with the regulatory requirements, relates to the development of medical device software, whether embedded within the device, standalone, or as part of a networked medical device while improving the efficiency of the medical device software development lifecycle. In recent years, this has included the safe, ethical and trustworthy incorporation of Artificial Intelligence (AI) methods and tools into the critical safety domain of medical device software. Our research is conducted in collaboration with industry partners, national agencies, the international standards community and other research centres. We are active in the development of international standards and technical reports related to medical device software development and IT networks. In addition, an educational programme provides training and graduates to address the current skills gap in the medical device software development domain in Ireland.

Smooth Muscle Research Centre

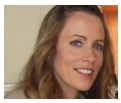
The Smooth Muscle Research Centre (SMRC) is committed to advancing our understanding of smooth muscle function in health and disease. Our research focuses on uncovering the fundamental mechanisms of contraction and relaxation, with a particular emphasis on the critical role of ion channels in cellular activity. By exploring innovative strategies to target these channels with novel therapeutics, we aim to improve health outcomes and address pressing medical challenges associated with smooth muscle disorders.

The Smooth Muscle Research Centre represents the largest group of researchers investigating regulation of smooth muscle function in Ireland and the UK. The SMRC has a global reputation for research excellence. We have strong collaborative links with academic labs nationally and internationally and have fostered close linkages with regional enterprises. It is our ambition to perform world class research with the potential to positively impact the lives of patients and support enterprise within the region. Research in the SMRC is divided into two core Aims. **Aim 1:** To elucidate the mechanisms involved in contraction and relaxation in smooth muscle cells in health and disease. **Aim**

2: To investigate roles of ion channels in health and disease and how they can be targeted with novel drugs.

Netwell-CASALA Research Centre

NetwellCASALA is dedicated to advancing research that enhances health, independence, and quality of life across the life-course and especially into older age. As part of the Institute of Connected Health and Wellbeing, we drive impactful research at the intersection of Human Computer Interaction, physical performance, and neurodiversity. Operating as a Living Lab, we work closely with individuals, communities and stakeholders to co-design and evaluate innovative, real-world solutions that empower people to live healthier, more connected lives. Through participatory research and user-centred innovation, we develop inclusive, technology-enabled interventions that respond to evolving health and social needs. Our interdisciplinary collaborations with academia, industry, healthcare, and policy partners ensure that our research translates into tangible impact, shaping the future of health, ageing, and digital wellbeing. Core Research themes include (1) Human Computer Interaction (HCI) for Healthy Ageing (2) Physical Activity, Performance, and Women's Health, (3) Neurodiversity Across the Life-course and our most recently developed theme (4) Health Behaviours and Beliefs.

	Dundalk Institute of Technology Mentors			
	Title	**Name**	**Dept/Centre/ Group**	**Area of expertise and interest**
	Dr	Suzanne Linnane	Centre for Freshwater & Environmental Studies **(Director)**	Director of the Centre for Freshwater and Environmental Studies and Theme Lead for 'Water, Communities and Catchments'. She is currently serving as the Education Sector representative on the Irish National Water Forum | An Fórum Uisce, a statutory body under the Water Services Act 2017 (). Much of her research work is based around source water protection, water policy and governance. Suzanne is passionate about Environmental Education and is co-founder and co-coordinator of the H2O Heroes School's outreach programme.
	Dr	Siobhan Jordan	Centre for Freshwater & Environmental Studies	Research interests include; (i) The passive remediation of mine sites and tailings ponds (ii) Soil conditioning, carbon sequestration and aggregation in tillage soils (ii) Alternative organic waste management systems with particular emphasis on the agricultural-based industries, (iv) Composting of agricultural residues, (v) Microplastic accumulation in agricultural soils.
	Dr	Caroline	Gilleran-Stephens	A STEM Educator, Sustainability Advocate, and Environmental Researcher dedicated to advancing sustainable futures through education, research, and community engagement. My work centres on environmental education, nature-based learning, sustainable land and water management, and empowering learners to become informed, active changemakers.
	Dr	Lubna Ahmed	Centre for Freshwater & Environmental Studies	Food innovation and food chemistry. • Valorisation of residual plant biomass & processing by-products. • Sustainable and cost-effective production process for the upcycling of food by-products into natural and healthy ingredients. • Food safety legislation. • New product development of fresh and processed food and beverage products. • Food Safety assessment

				• Analysis of physico-chemical properties of food products. • Extraction and purification (solid liquid extraction, pressurised liquid extraction, ultrasound assisted extraction, solid phase extraction)
	Dr	Sarah Murnaghan	Centre for Freshwater & Environmental Studies	Research interests include Water quality, lake and catchment management, environmental monitoring and assessment, bioremediation, circular economy, biochar, microplastics in the environment, ecosystem restoration, eutrophication, palaeolimnology, climate change.
	Dr	Fergal O'Rourke	CREDIT-Centre for Renewables **(Director)**	A chartered mechanical engineer with a strong background in the domain of renewable energy systems. Holding a BE (Hons) in Mechanical Engineering and a PhD in design optimisation and analysis of energy systems and technologies, his expertise lies in hydrodynamic performance prediction of turbines operating in unsteady conditions. Other areas of expertise include on- and off-shore renewable energy technology and performance modelling.
	Dr	Julie Doyle	NetwellCASALA **(Director)**	• Human computer interactions applied to the design of digital health and wellbeing technologies for older adults and related technology for carers and healthcare professionals. • Digital health technologies and Internet of Things. • Development of study designs for large-scale trials (e.g. proof of concept, pragmatic RCT, quasi-experimental); statistical analysis of research data. • Design of digital health technologies, universal design, designing for older adults and vulnerable populations, design of collaborative technologies for the health service. • Visualisation of sensor data sets. • Large scale evaluation of technology, including usability analysis, satisfaction, effectiveness, impact assessment; process evaluation. • Designing for and evaluating Health Behaviour Change.
	Prof	Fergal McCaffery	Regulated Software Research Centre **(Director)**	He is internationally recognised for his contributions to medical device software engineering. His research team have led the development of 5 International Standards/Technical reports for medical device software. He was the Leader for the development of IEC/TR 80002-3 for medical device software processes in collaboration with the ISO/IEC 62304 development team. He also was appointed to the Health Products Regulatory Authority Advisory Committee for Medical Devices. Research interests include: (I) International Medical Device Standards Development (ii) Agile Software Development and (iii) Medical Device Security and Safety
	Prof	Mark Hollywood	Smooth Muscle Research Centre	My research has, since my first post-doc in 1994, focused on ion channels and how they may be characterized and targeted to potentially treat disease. Over the last decade, my work has focused on trying to target large conductance Ca2+ activated K+ (BK) channels and resulted in the design, synthesis, and purification of a novel family of openers called the GoSlo-SR family. In addition, my lab has assessed the SAR of these compounds, identified residues which when mutated, abolished the effects of these compounds and demonstrated their potential mechanism of action. More recently, my research has uncovered an entirely new role for family of proteins called LINGO which act as regulatory subunits of BK channels (LINGO1 BK subunit paper,

				LINGO2 oxidation paper, LINGO chimera paper) and have been implicated in the development of Parkinson's Disease and Essential Tremor
	Prof	Gerard Sergeant	Smooth Muscle Research Centre	Research interest include; The role of Smooth Muscle in Health & Disease, in particular how smooth muscle dysfunction contributes to: 1) obstructive lung conditions such as asthma and chronic obstructive pulmonary disease (COPD); 2) Urinary tract disorders such as overactive bladder syndrome and stress urinary incontinence and male reproductive disorders including erectile dysfunction.
	Dr	Bernard (Ben) Drumm	Smooth Muscle Research Centre	Dr. Drumm has research interests in calcium signalling and ion channel signalling within smooth muscle cells and specialized cells of visceral organs in the urinary, reproductive and gastrointestinal tract. Using a combination of single cell and whole tissue calcium imaging, electrophysiology and isometric tension recordings, we seek to elucidate the cellular mechanisms that modulate smooth muscle contraction and relaxation in normal and pathophysiological conditions. Dr. Drumm is happy to mentor any area of research related to calcium signalling or ion channel regulation of smooth muscle in any tissue (visceral or vascular). Current specific areas of active investigation include: • Interactions of Pieo1 mechanically activated ion channels and prostanoids in urinary tract organs and how this is linked to urinary incontinence. • Control of myometrium contractions by store-operated calcium entry and how this may link to issues of uterine hyperexcitability. • Effects of novel modulators of calcium-activated chloride channels in gastrointestinal tissues to regulate motility. • Functional coupling between Orai calcium channels and large conductance potassium channels in urethral smooth muscle. • Sex differences in excitatory and inhibitor innervation of urinary tract smooth muscle.