



Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Annual Overview of Doctoral Health Research 2024

School of Medicine

December 2024





Annual Overview of Doctoral Health Research 2024
School of Medicine

We have future
leaders in clinical and
translational research
who will have a
significant impact on
the health of our nation

Prof Sarah Doyle

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Foreword by Director of Research

The School of Medicine is a research-led school with strong clinical-scientific academic partnerships, based largely on the hard work of our postgraduate students undertaking PhD and MD programmes that drive excellence in research in the school. However, the research is not sequestered in one bench, or even one laboratory. It is a complex collaboration across the entire campus between students and supervisors – a collaboration that includes early-career and established scientists and clinicians. While postgraduate research is exciting and often fulfilling, it can, at the best of times, be demanding. Postgraduate students face many challenges over their years of study, building critical skills in resilience, and demonstrating determination and a passion for creative learning, to meet these challenges. The research in the School of Medicine is embedded in clinical translation which inspires our postgraduate students to enhance our understanding of science and technology to the ultimate benefit of patients and professionals in the broader health system and the whole of society in Ireland.

As Director of Research for the School of Medicine, I continue to be amazed and extremely proud of the breadth and depth of excellence in research that is currently being undertaken by our postgraduate students and their supervisors in the school; this breadth of research is highlighted in this brochure. Indeed, our postgraduate students are involved in inspiring research that spans a wide variety of disciplines including, but not exclusively, cancer, infection/immunology, childhood health, neuroscience/immunology, population health/health policy and ageing. There is also a growing interest in inclusion health and research aligning with the UNs sustainable development goals. The multidisciplinary and collaborative nature of the research between scientists and clinicians in the School of Medicine may start with our postgraduate students but often leads to advances in basic science and translational research.

These advances shape our understanding of health and disease across the spectrum of disciplines at every stage of life and have the potential to impact not only today's patients but those of future generations. This year we have seen success in the Trinity Research Doctoral Group Awards, with PhD students from the School of Medicine working across school and faculty to address societal health challenges that need transdisciplinary expertise.

It is important to acknowledge that while postgraduate research can be very rewarding, it can also be frustrating, especially when positive results are not always obtained, or take a long time to come. However, it is important to realise the integrity of the process and that the null hypothesis also informs our knowledge. To complete their postgraduate programme, our students need to be inquisitive, highly motivated, skilled in communication/presentation, and have an ability to multitask. Above all, they need to possess a drive and a passion for their research and to enjoy their work.

In conclusion, I am confident that, amongst our current cohort of postgraduate students, we have future leaders in clinical and translational research who will have a significant impact on the health of our nation.

Prof Sarah Doyle





Foreword by Director of Postgraduate Learning and Teaching

As the Director of Postgraduate Teaching and Learning for the School of Medicine at Trinity College Dublin, this booklet is a celebration of the outstanding contributions of our postgraduate research students. Undertaking postgraduate research is both a demanding and transformative journey. It requires perseverance, intellectual curiosity, and a deep commitment to pushing the boundaries of knowledge. However, it also offers unparalleled opportunities for growth, discovery, and the satisfaction of contributing to meaningful advancements in healthcare and medicine.

The research showcased in this booklet highlights the remarkable breadth and depth of inquiry undertaken by our MSc., Ph.D., and M.D. students. Their work spans a wide array of topics, from innovative, novel cancer therapies and advancements in nanomedicine to pressing public health challenges such as health inequalities and the impacts of sedentary behaviour. Each project reflects a combination of academic rigor and an unwavering passion for improving human health, hallmarks of Trinity College's commitment to research excellence.

Our postgraduate researchers are motivated by diverse aspirations. Some are driven by an innate curiosity to explore and solve complex questions; others seek to gain specialized expertise and enhance their career prospects. For many, it is a blend of these goals that fuels their dedication. This combination of passion and practicality is essential for navigating the inevitable challenges of research, whether that be logistical obstacles, methodological complexities, or moments of self-doubt.

I am continually inspired by the diverse journeys of our postgraduate students. Among them are clinicians balancing demanding professional duties, parents juggling family responsibilities, international scholars embracing a new culture, and professionals returning to academia to pursue their research passions. This diversity enriches our School community, fostering a dynamic, inclusive, and supportive environment where all students can thrive.

At Trinity College, we pride ourselves on cultivating a nurturing atmosphere for postgraduate research. Our supervisors and staff are dedicated to mentoring and empowering students, helping them develop both the competence and confidence to excel in their fields. Together, we aim to train a new generation of researchers, scientists, and academic clinicians who will drive innovation and make a lasting impact in medicine and beyond.

To our postgraduate students: your determination, creativity, and resilience are an inspiration to us all. We look forward to witnessing your continued success and celebrating the transformative contributions you will make to science, medicine and society.

Dr Stephen Maher

Director of Postgraduate Teaching and Learning, Medicine
Trinity College Dublin





School of Medicine Academic Doctoral Mentors and Supervisors

School of Medicine

Academic PhD Supervisors

Anatomy

Daniel Johnston, Assistant Professor

Denis S. Barry, Assistant Professor

Melissa Conroy, Assistant Professor

Centre for Health Policy & Management

Irina Kinchin, Assistant Research Professor

Sara Burke, Associate Professor, Director of the Centre for Health Policy and Management

Steve Thomas, Edward Kennedy Chair of Health Policy and Management

Clinical Medicine

Adrielle Prina-Mello, Assistant Professor

Alan Irvine, Professor of Dermatology

Andrew Davies, Professor Consultant

Claire Healy, Research Assistant Professor

Clíona Ní Cheallaigh, Associate Professor Consultant

Colm Bergin, Clinical Professor

Ignacio Martín-Loeches, Clinical Senior Lecturer

Joseph Keane, Clinical Professor

Maria O'Sullivan, Associate Professor in Human Nutrition

Martin Barr, Clinical Senior Lecturer

Patrick Walsh, Associate Professor

Sarah L. Doyle, Associate Professor in Immunology

Sharee Basdeo, Research Assistant Professor

Stephen Finn, Associate Professor Consultant

Suzanne Cloonan, Associate Professor In Respiratory Biochemistry

Clinical Microbiology

Colm Bergin, Clinical Professor

Johannes Wagener, Associate Professor Consultant

Julie Renwick, Assistant Professor

Mark Alan Little, Professor Consultant

Michael Carty, Assistant Professor

Stephen G.J. Smith, Associate Professor

Tom Rogers, Adjunct Professor

Histopathology

Cara Martin, Assistant Professor

John James O'Leary, Professor Consultant, Head of Discipline

Mark Ward, Medical Scientist

Sharon O'Toole, Senior Research Fellow

Stephen P. Finn, Senior Lecturer Consultant

Immunology

Colm Bergin, Clinical Professor

Derek Doherty, Professor in Immunology, Head of Discipline

Niall P. Conlon, Clinical Professor

School of Medicine

Academic PhD Supervisors

Medical Gerontology

Cathal McCrory, Associate Professor in Life Course Development and Ageing

Daniel Ryan, Clinical Senior Lecturer in Medical Gerontology and Consultant Physician

Joseph Harbison, Associate Professor and Consultant Physician

Nollaig M. Bourke, Ussher Assistant Professor in Inflammaging

Paul McElwaine, Clinical Senior Lecturer, Román Romero-Ortuño, Professor in Medical Gerontology and Consultant Physician

Rose Anne Kenny, Regius Professor of Physic, Professor of Medical Gerontology and Consultant Physician

Seán Kennelly, Clinical Associate Professor and Consultant Physician

Tom Melvin, Associate Professor of Medical Device Regulatory Affairs

Molecular Rheumatology

Ursula Fearon, Professor of Molecular Rheumatology

Viviana Marzaioli, Research Assistant Professor

Neurology

Bahman Nasserolelami, Assistant Professor, Clinical Medicine

Colin Doherty, Professor Consultant

Dara Meldrum, Associate Professor

Deirdre Murray, Assistant Professor and Clinical Specialist Physiotherapist

Iracema Leroi, Associate Professor

Miriam Galvin, Associate Professor

Lara McManus, Research Assistant Professor

Orla Hardiman, Professor Consultant

Peter Bede, Professor in Neurology

Obstetrics & Gynaecology

Deirdre Murphy, Chair in Obstetrics

Occupational Therapy

Deirdre Connolly, Professor in Occupational Therapy

Geraldine Foley, Assistant Professor

Michelle Spirtos, Assistant Professor, Head of Discipline

Sarah Quinn, Assistant Professor

Tadhg Stapleton, Assistant Professor

Yvonne Codd, Assistant Professor

Paediatrics

Denise McDonald, Clinical Associate Professor

Eleanor Molloy, Professor of Paediatrics & Child Health

Pharmacology & Therapeutics

James Paul Spiers, Associate Professor

Laura McCullagh, Clinical Senior Lecturer

Margaret B. Lucitt, Assistant Professor

Michael Barry, Associate Professor

School of Medicine

Academic PhD Supervisors

Physiology

Aine Kelly, Associate Professor

Eric J. Downer, Assistant Professor

Eva Jimenez-Mateos, Assistant Professor

Kumlesh Kumar Dev, Professor in Neuroscience

Maeve Caldwell, Professor in Neuroscience

Marie-Victoire Guillot-Sestier, Assistant Professor

Mark Oliver Cunningham,
Professor of Neurophysiology of Epilepsy

Melissa J. Conroy, Senior Research Fellow

Mikel Egaña, Associate Professor

Norita Gildea, Assistant Professor

Roisin Mc Mackin, Assistant Professor, Physiology

Tamara Boto, Assistant Professor

Physiotherapy

Emer Barrett, Assistant Professor

Emer M. Guinan, Assistant Professor

Fiona Wilson, Associate Professor

John Gormley, Head of Discipline

Julie Broderick, Assistant Professor, Head of Discipline

Juliette M. Hussey, Professor of Physiotherapy

Sara Dockrell, Assistant Professor

Psychiatry

Aiden Corvin, Professor Consultant

Brendan Kelly, Professor Consultant

Declan M. McLoughlin, Research Professor of Psychiatry

Elizabeth A. Heron, Assistant Professor

Iracema Leroi, Associate Professor

Jane McGrath, Associate Professor Consultant

Shigeki Nakagome, Assistant Professor

Simon McCarthy-Jones, Associate Professor

Public Health & Primary Care

Ann Nolan, Assistant Professor in Social Policy

Catherine D. Darker, Associate Professor

Catherine Hayes, Professor of Public Health

Jo-Hanna Ivers, Associate Professor in Addiction

Lina Zgaga, Associate Professor

Susan Smith, Professor of General Practice

Radiation Therapy

Laure Marignol, Associate Professor

Michelle Leech, Associate Professor

Surgery

Connail McCrory, Clinical Professor

Jacintha N. O'Sullivan, Professor in Translational
Oncology / Surgery

Joanne Lysaght, Associate Professor

Kevin Conlon, Professor Consultant

Melissa J. Conroy, Assistant Professor

Niamh Lynam-Lennon, Research Assistant Professor

Stephen G. Maher, Associate Professor



A Selection of
Current Doctoral
Research Projects
in 2024



Investigating the applicability of cytokine-induced memory-like NK cell therapy for oesophageal adenocarcinoma



PhD Student: Joyce Barry

Supervisor: Dr. Melissa Conroy &

Professor Joanne Lysaght

Funder: Breakthrough Cancer Research

Overview of PhD Project:

Oesophageal adenocarcinoma (OAC) is a poor prognosis and obesity-associated cancer with a 5-year survival rate of less than 25%. Current response rates to chemo-radiotherapy are only ~30% and new therapeutics are urgently needed. This research project aims to develop a novel cell-based immunotherapeutic approach for OAC. Cell therapies face two main challenges in solid malignancies. 1) successful infiltration of the tumour and 2) eliciting potent anti-cancer activities within the immunosuppressive tumour microenvironment (TME). Our group have previously reported how obesity perpetuates these challenges in the context of OAC.

Firstly, our group have reported that natural killer (NK) cells and T cells are erroneously recruited to the visceral adipose tissue (VAT) at the expense of successful infiltration of the tumour and that NK cell infiltration of OAC tumour declines with increasing visceral obesity. Secondly, NK cells exhibit impaired function when exposed to the microenvironments of the VAT or tumour of OAC patients, and these TME-induced impairments are most pronounced in the condition of obesity.

Importantly, the group have identified a chemokine-targeted approach to therapeutically redirect NK cells away from the VAT and towards the chemotactic cues of OAC tumour. However, their immunosuppression within the obese OAC TME must still be addressed.

The emergent NK cell subset, cytokine-induced memory-like (CIML) NK cells, has demonstrated efficacy and persistence in solid malignancies and holds significant potential as the next generation of off-the-shelf cell therapies. They have been shown to mount greater cytotoxic responses against target cells *in vitro* and *in vivo* and persist after a single infusion. This project will explore the utility of CIML NK cells as a cellular therapy in OAC that can preferentially home to OAC tumour over VAT. Furthermore, we propose to examine whether this therapy can be manipulated to elicit robust tumour-killing activities within the immunosuppressive TME.

Long-term impact of project:

This project will explore the utility of a novel CIML NK cell therapy for OAC. Findings from this project will have the potential to inform new treatment options for OAC and ultimately improve outcomes for patients with this malignancy. This study also has potential for extended utility to other obesity-associated and poor prognosis cancers.

Quote:

“This research not only holds potential to improve outcomes for oesophageal cancer patients, but also holds promise to advance cancer immunotherapy across various cancer types”.

Temporal Changes in Disease Status in Autoimmune Disease

PhD Student: Arlena Carney

Supervisor: Professor Mark Little, Dr. Conor Finlay

Funder: Irish Research Council

Overview of PhD Project

As the prevalence of autoimmune diseases continue to increase, it becomes more evident that there is a need to improve our understanding of the changes occurring in the immune system over the disease cycle. My PhD project focuses on a prototypical autoimmune disease, ANCA-Associated Vasculitis (AAV), that follows a relapsing and remitting course. AAV is a systemic disease affecting the vasculature which commonly presents as complications in the lungs or kidneys. Currently, our understanding of why some patients relapse and some do not is incomplete. One of the major aims of my project is to characterise the immune cell milieu in AAV patients by high parameter spectral flow cytometry to identify critical differences that divide those destined for remission versus those who relapse. Another aim involves taking urine samples from remission patients and conducting a longitudinal follow-up to identify prospective urinary biomarkers of increasing disease activity. By using the urine as a proxy for the kidney, we hope to be able to better identify early, pre-clinical symptoms of relapse. The data generated during this PhD will be utilised by our European consortium, PARADISE, which seeks to develop a predictive algorithm for patient outcomes to inform clinical decision-making.

Long-term impact of Project

It is my hope that the knowledge elucidated from this project can be used to further understand the complex cycle of a rare autoimmune disease, be utilised to improve patient outcomes by tailoring immunosuppressive treatment to individual needs and contribute to building a robust predictive model for relapse in patients.

Quote

“I am grateful for the opportunity to contribute to such an important field and to be able to work towards improving quality of life for patients.”



The role of immunothrombosis in the control and pathogenesis of *Mycobacterium tuberculosis* infection

PhD Student name: Seán Donohue

Supervisor: Professor Joe Keane, Dr Gina Leisching

Funder: Royal City of Dublin Hospital Trust

Overview of PhD Project

Tuberculosis (TB) remains the biggest infectious killer globally. Caused by *Mycobacterium tuberculosis* (M.tb), its successful management is challenged by lengthy treatment, polypharmacy, and emergence of drug resistance. TB is commonly complicated by chronic lung damage and venous thromboembolism (VTE), yet we know very little about the pathways of clotting in TB that we could target as adjunctive therapy.

Immunothrombosis is a process of innate immunity characterised by local formation of microthrombi in response to pathogens, facilitating their recognition, containment, and elimination. But this may have a downside, and we saw with SARS-CoV-2 how it can become dysregulated, contributing to disease pathology. There are early data suggesting immunothrombosis contributes to the control and pathogenesis of M.tb infection and disease, and that clots play a role in the development of post-TB chronic lung disease. We also hypothesise that the burden of microthrombosis impairs drug delivery to the area of infection and may lead to the development of drug resistance. However, there remains a paucity of data in this area and the mechanisms by which this process may occur in TB are not fully understood.

Using established models of M.tb infection of human macrophages and various biomolecular research techniques, I aim to better define the links between the pathways of inflammation and coagulation after infection with *M. tuberculosis*, and to investigate if these links can be pharmacologically manipulated to identify targets for host-directed therapies.

Long term expected impact

Further insight into the process of immunothrombosis in TB may ultimately identify a suitable target for host-directed therapies, which may aid in reducing the burden of post-TB chronic lung disease and VTE, and result in better drug delivery with less emergent drug resistance. This could represent a significant advancement, offering a more effective approach to the clinical management of TB.

Quote

“COVID-19 demonstrated the importance of pneumonia immunothrombosis. We will apply those lessons to tuberculosis, which has re-emerged as the top infectious disease killer”.



Selection and engineering of bacteriophages for intracellular delivery to control Uropathogenic *Escherichia coli* (UPEC)

PhD Student: Feiyang Yu

Supervisor: Stephen Smith

Funding: TCD Provost's PhD Project Award

Overview of PhD Project

The urinary tract infections (UTIs) are among the most common bacterial infections encountered in clinical practice. Uropathogenic *E. coli* (UPEC) accounts for 80%-90% of UTIs. UPEC invades then replicates in human bladder cells leading to difficult removal from human body. The most common treatment for UTIs are antibiotics, however, the overuse of antibiotics has resulted in the global emergence of resistant bacteria. Phage therapy, which was discovered over 100 years ago is currently used to treat infections in other countries. Phage therapy offers an alternative treatment of bacterial infections in an era where antibiotic therapies are failing.

This study aims to identify and purify a phage capable of killing UPEC bacteria. We are employing advanced microscopy techniques to visualise phage killing of UPEC bacteria. Methods to genetically manipulate bacteriophage are being developed. These include the adaptation of both in vitro and in vivo transposition to alter the genomic material of the bacteriophage. In this thesis, the specific aim is to introduce genes for fluorescent probes such as GFP. By extension, this work could lay the platform for more extensive genetic manipulation of bacteriophages, such that they could carry a cargo gene that might potentiate bacteriolysis. Finally, initial work to develop a positive selection system for genetic manipulation of bacteriophage is being developed.

Long term expected impact

The outcomes of this project will provide important evidence on the potential for phage therapy as an alternative of antibiotic therapy as an alternative therapy to treat UTIs. This is vitally important as UTIs are one of the most common healthcare associated infections (HCAI), infecting over 4000 people annually in Ireland and accounting for 15% of all HCAs. UTIs can develop into bloodstream infections and cause significant mortality alongside the significant cost associated with treating these infections.

Quote

“Phage therapy has the potential to be a vital weapon in our armoury against the growing global challenge of antimicrobial resistance”.



Is Seeing Believing? Investigating and Addressing Confounders in Digital Pathology Data

PhD Student: Pierre Murchan

Supervisor: Professor Stephen Finn

Funding: Science Foundation Ireland

Overview of PhD Project

The foundational workflow of histopathology has remained largely consistent over the past century, centred around the use of light microscopy. In recent years, the application of artificial intelligence (AI) to histopathology data has ignited a motivation to digitise histopathology labs in hospitals across the world. Beyond routine applications, AI has shown promise in assessing the presence of molecular biomarkers and evaluating survival directly from histopathology images. However, ensuring the safe and equitable clinical translation of these methods will require thorough evaluation of AI model predictions.

In this research, we demonstrate how AI models can exploit technical artefacts in histopathology images, creating the illusion of learning clinically relevant biomarkers. This inflates model performance metrics and results in models that fail to generalise to real-world settings. To address this, we adapt genomics-inspired batch correction methods to mitigate these artefacts, enabling more realistic evaluations of model performance and improving generalisability.

Beyond technical batch effects, molecular alterations and clinical attributes can often confound each other, complicating efforts to establish causal relationships between histology and molecular biomarkers. This confounding can create disparities in model performance across patient subgroups, raising concerns about equity and robustness. In this research, we develop methods to disentangle these confounding factors with the aim of isolating histological phenotypes associated with specific molecular alterations, ultimately enhancing the interpretability and reliability of AI models in digital pathology.

Long term expected impact

The findings of this research challenge the notion that what AI-based digital pathology models see in images is inherently trustworthy. By identifying and addressing technical artefacts and confounding factors, we advance efforts to build robust and equitable AI models. These steps bring us closer to ensuring that seeing truly becomes believing in digital pathology.

Quote

“This research addresses critical challenges in digital pathology, paving the way for AI models that are both scientifically robust and clinically equitable”.



Understanding the factors shaping the implementation of the National Oral Health Policy through a workforce lens: a realist and health systems approach

PhD Student name: Paul Leavy

Supervisor: Professor Sara Burke, Professor Blánaid Daly and Dr. John Ford
Funder: Health Research Board (HRB) – SPHeRE Programme

Overview of PhD Project

Smile agus Sláinte - National Oral Health Policy (NOHP) (2019) proposes reform of publicly funded dental services to better serve population needs. Reforms include contracting care for children and adult medical card holders to independent, private general dental practitioners (GDPs) on behalf of the State.

The past decade has seen a decline in the number of GDPs participating in the HSE's Dental Treatment Services Scheme (DTSS) for adult medical card holders, with mass dissatisfaction owing to unfavourable terms and conditions of service reportedly accounting for many resignations. This has resulted in restricted access to care for many patients. Despite an increase in fees paid to GDPs in 2022, the number participating in the DTSS has continued to decline. Against this backdrop and the need to build capacity for reforms, the NOHP has been beset by implementation delays and a lack of meaningful data relating to the oral health workforce, in particular productivity and skill mix utilisation.

The current crisis is not unique to Ireland or dentistry but is symptomatic of wider health systems problems. In the context of change implementation, this PhD research seeks to uncover what the broader health systems drivers are, and to better understand how and why they are impacting on the Irish GDP workforce.

Long term expected impact

The oral health system is an under-researched subject in the Irish context. The PhD will provide system leaders with key evidence to inform the implementation of the National Oral Health Policy. This in turn will leverage GDP engagement resulting in better health outcomes.

Quote

“As a PhD researcher and clinician, I hope that my research can influence and inform positive system change for the good of the population.”



Development of an immunobiology platform to monitor immune reconstitution after allogeneic haematopoietic stem cell transplantation and CAR T cell therapy

PhD Student: Ellen Walsh

Supervisors: Professor Colm Bergin, Professor Derek Doherty, Professor Larry Bacon, Dr Cillian De Gascun

Funding: Irish Clinical Academic Training Programme (ICAT), Building Engagements in Health Research TCD

Overview of PhD Project

This project examines the immune response to vaccination with respiratory viral vaccines including Influenza, SARS CoV-2 and Respiratory Syncytial Virus (RSV) in patients who have undergone allogeneic stem cell transplant or CAR T-cell therapy for treatment of blood cancer. Patients who have received these therapies are at higher risk of morbidity and mortality from these infections than healthy populations. However, cancer patients are frequently excluded from clinical trials assessing vaccine efficacy, and immune responses in this patient cohort are not as well understood. Patients are administered these vaccinations as part of this study and followed up over a 6-month period to assess immune responses and clinical outcomes. This project particularly focuses on the cellular immune response to these vaccines which is poorly understood in this patient group. Serum and PBMC samples are taken pre-vaccination, and post-vaccination at days 14, 28, 60 and 180 and banked for analysis. This will allow us to assess how rapidly a response to vaccination is produced and how long the response lasts. Patients are also followed clinically for development of symptoms compatible with viral infection.

Long term expected impact

We hope to better understand the nature of the immune response to these vaccines in patients who have received these treatments, as well as the type of protection they provide. This project will inform national guidance on the administration and timing of these vaccines for haematology patients, particularly RSV vaccine which has recently been licensed for use.

Quote

“As a medical doctor, I am very grateful to have been given the opportunity to learn the skills of a research scientist in a supportive environment in the Trinity Translational Medicine Institute”.



A Concept Analysis of Frailty in China: Identifying Gaps and Cultural Influences

PhD Student: Haodong Wei

Supervisor: Professor Roman Romero-Ortuno

Funding: n/a

Overview of PhD Project

According to *China Development Report 2020 on Ageing Population*, by 2050, the number of older individuals in China (aged 65 and above) is projected to reach 380 million, or 30% of the population. Frailty, a concept related to chronological ageing but different from it, significantly impacts clinical services and healthcare policies. Therefore, exploring the concept of frailty is essential for modern Chinese society, where the use of this term started relatively late and there are deep-rooted influences of traditional Chinese medicine. Under the *Healthy China 2030 strategy*, China is keen to learn from healthcare system models from countries like US, UK, and Ireland. A foundational step in addressing frailty is evaluating its perception in China, especially in the biomedical literature.

Within the perception of frailty, there is a dynamic interaction between Chinese and Western values and perspectives regarding health in later life. For example, western standards for frailty seemingly do not apply well to older Chinese adults. Hence, cultural interpretations of ageing and frailty should be integrated into strategies aimed at addressing frailty within diverse ethnic groups.

This doctoral investigation addresses the cultural perception of frailty in China, beginning with a systematic analysis of frailty definitions in the Chinese biomedical literature over the past decade. Then, it explores the relationship between frailty perceptions and ageing, uncovering cultural influences on attitudes and behaviours towards older people. Additionally, a comparative analysis of frailty perceptions and ageing attitudes between Chinese populations in China and Ireland, and native Irish individuals will be conducted to highlight cross-cultural differences.

Long term expected impact

This investigation will provide new evidence into cultural perceptions of frailty in China and inform the development of culturally sensitive policies and practices. It will contribute to broadening our cross-cultural understanding of the concept of frailty and help shed light on common approaches for improving care for older people internationally.

Quote

“Being supervised in an esteemed team is an honour, and I’m excited to contribute to culturally informed healthcare solutions for ageing populations in China and worldwide”.



Differential pathogenic mechanisms drive stromal cell interactions and invasive pathways in RA and PsA

PhD Student: Orla Tynan

Supervisor: Prof Ursula Fearon

Funder: Arthritis Ireland and CARD

Overview of Project

Rheumatoid arthritis (RA) and Psoriatic arthritis (PsA) are common forms of inflammatory arthritis, chronic pain, and disability. We cannot predict who gets RA or PsA, who will get worse disease and what medicine will work. Common pathogenic features exist between the two diseases, however significant differences are observed at the clinical, immunological, cellular and molecular levels, in addition to differential responses to current targeted therapies. At a molecular single-cell level little is known about the distinct underlying mechanisms involved in driving this differential pathogenesis at the site of inflammation in the target tissue ‘the synovium’. This project focuses on one of the most prominent cell-types present in inflamed joint ‘the synovial fibroblasts (FLS)’, which play a key role in joint inflammation through immune-cell regulation, potent secretion of pro-inflammatory mediators and synovial invasion of adjacent cartilage and bone. Specifically, the project aims to (i) define FLS subtypes and function that are distinct in RA and PsA synovium, (ii) determine FLS-immune cell crosstalk and (iii) identify new targets for novel therapeutic strategies using clinically relevant ex-vivo models of RA/PsA disease.

Long term expected impact

Better understanding of the distinct mechanisms of disease in RA vs PsA at the single cell level in the target tissue will give significant insight into defining pathotypes, disease progression and potentially therapeutic response in patients with Inflammatory Arthritis. This will primarily have an impact for patient outcomes and quality-of-life, in addition to reducing healthcare cost.

Quote

“It is exciting to be working on patient focused research that I hope will guide the development of more targeted interventions and have real translational impact”.



Identifying Neurophysiological Biomarkers of Altered Sensorimotor Integration In ALS

PhD Student: Matthew Mitchell

Supervisor: Professors Orla Hardiman, Bahman Nasserolelami, and Richard Carson

Funding: Irish Research Council, Research Motor Neurone

Overview of PhD Project

Amotrophic Lateral Sclerosis (ALS) is a terminal neurological disease with widespread degeneration in frontotemporal, subcortical, and cerebellar areas manifesting in cognitive, motor, and behavioural domains. This considerable biological heterogeneity presents an extreme challenge for clinicians, treatment development, and translation of research. Considering several substantial advances made in recent years the view that a precision approach to ALS is needed based on disease-staging, phenotype, and genotype therapeutic interventions.

This precision approach will be facilitated by exploring quantitative biomarkers that enable insight into various pathological changes *in vivo*. Several technologies are beginning to show promise, one of which is electrophysiology whose temporal precision is unmatched and may be essential for uncovering functional changes that occur in ALS patients. My work employs electromyography (EMG) and electroencephalography (EEG) with focal vibration stimulation in young and age-matched controls to ALS patients. By pairing these modalities, we can separately assess the monoaminergic (5-HT, NA) drive in spinal motor neurones with EMG, and the integration of proprioceptive afferents in the cerebral cortex with EEG. I hope to provide novel insights about these two mechanisms and whether they play a role in the compensatory response to the disease by the central nervous system.

Long term expected impact

Since compensatory and adaptive processes are poorly characterised in ALS, my focus on putative neural mechanisms involved in the normal regulation and maintenance of sensorimotor system function will hopefully provide biomarkers tailored to show the residual compensatory function available for therapeutic intervention in ALS patients.

Quote

“There are currently no reports of the integration of proprioceptive afferents in ALS patients to date. It is exciting that we may be the first to show this”.



An Exploration of the Occupational (In)Justice Experiences of Asylum Seekers, Refugees and other Forcibly Displaced Populations within the Irish Context

PhD Student: Méabh Bonham Corcoran

Supervisor: Sarah Quinn and Dr Frédérique Vallières

Funder: Trinity Scholar

Overview of Project

The impact of forced migration and displacement is increasing on a global scale, with numbers of those seeking refugee status within Ireland's borders rising each year. For those entering Ireland as asylum seekers or refugees, the current system imposes restrictions on their ability to engage in meaningful and purposeful occupations, potentially resulting in experiences of occupational injustice. The role of activity and occupation in health and well-being is closely connected to community health and well-being, particularly through shared or collective occupations. This project aims to explore the experiences of occupational (in)justice among asylum seekers, refugees, and other forcibly displaced populations, as well as the potential for community groups to foster integration and inclusion.

The project comprises three interconnected studies: the first study, a scoping review, identified relevant community groups for inclusion in the subsequent studies; the second study is a qualitative exploration across time of participants' experiences with occupational (in)justice and community groups; and the third study uses a multiple case study design to examine the role of community gardens in supporting inclusion and integration for asylum seekers, refugees, and other forcibly displaced groups. The findings from these studies aim to provide valuable insights into how community engagement can mitigate the challenges faced by these populations, ultimately informing policies and practices that promote occupational justice and equitable access to resources.

Long term expected impact

This project aims to provide evidence for occupational therapists in community practice and inform policies on resources for integrating asylum seekers, refugees, and displaced populations. It explores potential occupational (in)justice experiences among these groups in Ireland and highlights grassroots initiatives that promote integration, emphasising how therapists can support these efforts.

Quote

“My goal is to capture my participants' lived realities by listening to their stories. I am deeply grateful and honoured to be entrusted with these experiences and to be part of this process”.



PLATYPus project: Preterm infant immunomodulation to Treat sepsis and brain injury Prevention

PhD Student name: Dr. Dearbhla Byrne
Supervisor: Professor Eleanor Molloy
Funder: SFI (Science Foundation Ireland) Frontiers for the Future Programme

Overview of Project

Preterm birth (< 37 weeks gestation) has a significant global impact, with approximately 13.4 million preterm births annually worldwide. It is the leading cause of death worldwide in children under five years of age. Preterm infants are particularly susceptible to sepsis and necrotising enterocolitis (NEC) compared to their term infant counterparts. Three million infants worldwide are affected by sepsis annually. Looking at preterm infants; approximately 20% of very low birth weight infants in the neonatal intensive care unit (NICU) will develop one or more systemic infection during their hospital stay. Necrotising enterocolitis (NEC) is a devastating disease involving inflammation and necrosis of the intestines, with mortality in very low birth weight infants as high as 30%. Our team have shown previously that the number of septic episodes in preterm infants is related to poor neurodevelopmental outcomes. Morbidity and mortality remain high in this population of infants despite advances in neonatal care worldwide.

Preterm infants have a dysregulated immune response to sepsis and NEC, the neonatal inflammatory response to infection is manifested by acute systemic inflammation leading to end organ damage, including perinatal brain injury. Mechanisms of hyperinflammation have been associated with adverse outcomes in animal models of sepsis and NEC. We aim to contribute towards a better understating of immunological responses to sepsis and NEC in preterm infants. By advancing our knowledge of immunological biomarkers we could help predict outcomes, improve early interventions, and guide treatment decisions. To investigate the potential for immunomodulatory therapies we are exploring

immunomodulatory treatments ex vivo (anakinra, melatonin and pentoxifylline).

Long-term expected impact

Developing immunological biomarkers and new treatments for sepsis in preterm infants could enable rapid bedside diagnosis and early intervention across diverse settings. Alongside immunomodulatory medications and improved family education, a standardized neonatal sepsis definition may lead to better long-term clinical and neurodevelopmental outcomes through consistent, collaborative care.

Quote

“The PLATYPus project aims to understand the preterm infant’s unique immune response to sepsis and necrotising enterocolitis (NEC); so, biomarkers and immunomodulatory therapies may be developed in the future”.



Health Technology Assessment of Pharmacologic Disease-Modifying Therapies for early-stage Alzheimer's Disease

PhD Student: Heather Eames
Supervisor: Dr Laura McCullagh and Professor Michael Barry

Overview of PhD Project

Dementia is an umbrella term used to define a category of diseases characterised by progressive loss of memory, cognitive skills, and physical function. Alzheimer's Disease (AD) is the leading cause of dementia, estimated to contribute up to 60% to 80% of total dementia cases globally. AD is best conceptualized as a biological and clinical continuum covering both the preclinical and clinical phases of AD. Current standard of care therapies provide symptomatic relief but do not slow the underlying progression of the neurodegeneration that characterises AD. The landscape of AD treatments has evolved rapidly in recent years. The emergence of novel disease modifying therapies (DMTs), which aim to target the pathological steps leading to AD, represent a potential for change in the treatment paradigm for AD. AD DMTs are associated with an uncertain evidence base and a high-cost, which is a challenge for health-policy decision makers. The aim of my PhD is to conduct a Health Technology Assessment (HTA) of novel AD DMTs that may receive regulatory approval within the next number of years. Those novel DMTs identified through international horizon scanning, and expert opinion, will inform a systematic literature review of published efficacy and safety evidence. The quality of this evidence will be interrogated and will inform network meta-analyses of comparative evidence. The evidence base generated will inform several packages including cost-effectiveness analyses, budget impact analyses and value of information analyses.

Long term expected impact

This research will demonstrate the benefit of HTA in evaluating the quality of evidence and in predicting the relative efficacy, safety and cost of novel AD DMTs over a lifetime horizon. This research will demonstrate how HTA can inform health-policy decision making both nationally and globally.

Quote

"I am so fortunate to conduct my PhD research surrounded by international experts in health technology assessment. I am excited to apply my learnings in my PhD research, and hope that it can provide meaningful data to support future decision making".



Electrophysiological markers of asymptomatic carriers of the C9orf72 repeat expansion and other ALS-associated genes

PhD Student: Narin Suleyman

Supervisor: Dr Roisin McMackin

Funders: ALS Association, Research Motor Neurone

Overview of PhD Project

Amyotrophic Lateral Sclerosis (ALS) is a fatal neurodegenerative disease characterized by motor, cognitive, and behavioural impairment. While ALS often occurs sporadically, mutations in over thirty genes, including *C9orf72*, *FUS*, and *TARDBP*, have been associated with familial ALS. Previous research using various neuroimaging modalities has identified cognitive and motor network dysfunction in people with ALS. However, it is unclear when and how network dysfunction emerges, whether it precedes the onset of clinical symptoms, and how it is affected by gene carrier status in those with familial ALS.

To address this problem, my PhD research harnesses electroencephalography (EEG) and transcranial magnetic stimulation (TMS) to identify differences in network connectivity between genetic carriers and non-carriers. Relatives of people with genetic ALS and matched healthy controls undergo task-based and resting state EEG to investigate cognitive networks; single and paired pulse TMS of the motor cortex to investigate motor networks; and a battery of clinical tests to examine cognitive and motor function. In close collaboration with geneticists at TCD, relatives are also tested for the presence and size of genetic mutations associated with ALS and asked to return for follow up visits to track potential changes over time. TMS, EEG, and clinical measures are then compared and combined to identify differences between healthy controls, carrier relatives, and non-carrier relatives. The aim is to produce a comprehensive picture of the effect of gene carrier status on asymptomatic relatives of people with genetic ALS.

Long term expected impact

This project will provide new insights into the early pathophysiology of familial ALS. It will also contribute to the development of biomarkers which may be used in the screening and risk stratification of gene carriers and as outcome measures in clinical trials, enabling earlier diagnosis and treatment.

Quote

“I’m excited to work on a project that allows me to generate data-driven insights into neurodegenerative disease, which traditional clinical methods alone cannot uncover”.



Developing exercise interventions after cancer in Oman

PhD Student: Saif AlShibli

Supervisor: Prof Juliette Hussey and Dr Louise Brennan

Funder: Ministry of Health-Oman

Overview of PhD Project

Every year, an increasing number of people survive cancer due to advances in diagnostics and therapeutics. Decreases in physical fitness and physical functioning are found in people living with and beyond cancer. These are due to both the impact of the disease itself and the side effects of cancer treatments. People living with and beyond cancer are also at increased risk of developing co-morbidities. Physiotherapy is focused on reducing the side effects of treatment, reducing post-operative morbidity, enhancing recovery, supporting a return to function, improving overall quality of life and encouraging an increase in physical activity and fitness long term as part of overall risk management. However, in many nations, including Oman, physiotherapy, and other forms of rehabilitation treatments for cancer survivors are not well established.

The primary aim of this PhD is to determine the requirements for developing physiotherapy and exercise interventions in Oman. Objectives of this thesis include to explore the status of physiotherapy services for patients with cancer in Oman, to identify barriers and limitations to the development of physiotherapy services for patients with cancer in Oman, to determine oncologists' knowledge of rehabilitation and willingness to refer patients to physiotherapy services, and to determine the awareness of exercise and cancer among patients and their families. In addition, this PhD thesis will provide recommendations to assist in the development of oncology physiotherapy services in Oman.

Long term expected impact

The research in this thesis along with the learnings from modules on the MSc in Cancer Survivorship will assist in the design, delivery and evaluation of cancer survivorship services in Oman.

Quote

“Building capacity in cancer survivorship internationally is an important focus of the Trinity St James’s Cancer Institute”.



A translational investigation of the anti-inflammatory and antidepressant effects of psychedelics in an inflammatory model of depression in rats and human peripheral blood mononuclear cells

PhD Student: Christopher Sheridan

Supervisor: Professor Andrew Harkin and Dr John R. Kelly

Funder: The Health and Research Board (HRB)

Overview of PhD Project

Depression is a leading cause of disability worldwide, associated with personal suffering, reduced quality of life, suicide, and an increased risk of medical comorbidities. Psychedelic therapy holds promise as an effective treatment strategy across a range of disorders with restricted patterns of thought and behaviour, including major depressive disorder (MDD). Exploratory studies show potential benefits of psilocybin therapy in the treatment of MDD in clinical trials, yet, the precise multi-modal mechanisms underlying the therapeutic effects of psychedelics have yet to be uncovered.

Depression is associated with an increase in peripheral and central inflammatory markers. Psychedelics, such as psilocybin and DMT, have been shown to have immune-modulatory and anti-inflammatory properties. These immunologic changes are likely to partly explain the long-lasting and rapid anti-depressant effects of psychedelics observed in clinical trials. This project is investigating the immunomodulatory effects of psychedelics in human peripheral blood mononuclear cells (PBMCs) taken from healthy controls and patients with depression alongside the establishment of an MDD biobank and in an immune-stimulated depression-like rodent model.

Long term expected impact

The data generated by this study will shed light on the molecular and cellular mechanisms which underpin the antidepressant and anti-inflammatory effects of psychedelics seen in clinical trials. This could aid in optimising how the trials are run, what candidates may benefit more from this therapy versus other therapies, and how this therapy could help individuals who suffer from depression and acute or chronic inflammatory illness.

Quote

“Immune-nervous system imbalances may contribute to psychiatric disorders. Immunomodulatory properties of psychedelics may enhance mental health by regulating this interaction, potentially explaining their therapeutic benefits”.



Substance use and treatment needs among sexual and gender minority populations: A secondary analysis of Irish health data

PhD Student name: Cathy Kelleher
Supervisor: Professor Jo-Hanna Ivers
Funder: Health Research Board

Overview of PhD Project

Sexual and gender minority (SGM) populations experience a range of health disparities and face barriers accessing healthcare suitable to their needs. SGM health disparities have been linked to stigma-related experiences that negatively impact on health and health behaviours, including substance use. International research shows SGM populations experience higher rates of substance use and substance use disorders compared to their non-SGM counterparts. Additionally, they experience inequitable access to substance use treatment (SUT) services and may have significant unmet treatment needs. For SGM persons seeking help, culturally competent treatment options are lacking, as are tailored interventions. As such, substance use is considered a major health challenge for SGM communities.

Informed by minority stress, social learning, and syndemics perspectives, this research aims to better understand disparities in problem substance use and treatment among SGM populations in Ireland, using existing health data. Ireland is one of the few countries with routine treatment data that includes SGM indicators. This research will examine variation in substance use and treatment characteristics based on the SGM status of cases accessing SUT services. The knowledge generated will have implications for measures to prevent, treat, and reduce the harms of substance use among SGM populations, both in Ireland and internationally.

Long term expected impact

This research will inform health policy and service planning to address the needs of SGM persons who use drugs. As well as advancing understanding in this area, it will highlight the value of routine data in identifying health disparities and addressing other important questions around SGM health.

Quote from student

“Equity in health requires health policy and interventions that address the needs of everyone. This project will provide evidence to drive inclusive and responsive policies and supports for SGM populations”.



Knowledge Support for Adolescent and Young Adult Survivors of Hodgkin's Lymphoma in Ireland (KAYA)

PhD Student: Maeve Kearney

Supervisors: Professor Michelle Leech & Professor Sara Faithfull

Funder: Trinity St. James's Cancer Institute Cancer Research Stimulus Awards (CREST Awards)

Overview of PhD Project

My PhD project aims to develop a knowledge resource, tailored for Adolescents and Young Adults (AYAs) aged 16-24 who have undergone radiotherapy (RT) for a Hodgkin's Lymphoma (HL) diagnosis. The PhD addresses a significant gap in age-appropriate, relevant information for this specific demographic, with the goal of better meeting their unique post-treatment information needs that will support their self-management ability during the survivorship period.

The specific objectives include identifying the unique information needs of individuals who received RT for HL during their AYA period and determining the optimal format and delivery method to make this information accessible and engaging. It also involves gathering insights from Healthcare Professionals (HCPs) who work closely with AYA cancer patients, leveraging their experiences to shape a resource that accurately addresses common questions and concerns.

The final objective is to create a knowledge resource co-designed with AYAs who have experienced cancer and treatment, using a nominal group technique. This resource will provide the knowledge needed to develop self-management skills during the survivorship period, ensuring it reflects the real experiences and needs of AYAs navigating life after treatment.

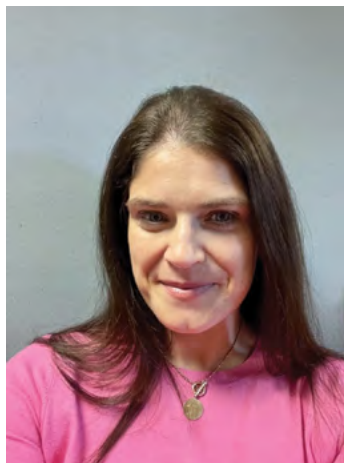
Through these three studies, this PhD will examine the experiences and perspectives of AYAs and Healthcare Professionals (HCPs) on information support and self-management during survivorship. The outcome will be a practical, co-created knowledge resource intervention aimed at improving information and ultimately self-management support for AYA survivors of HL.

Long term expected impact

My PhD aims to create a knowledge resource, for AYA Hodgkin's Lymphoma survivors to address identified information gaps. This resource will support self-management during survivorship which aligns with recently published national strategies. It will contribute to improved patient empowerment, promote self-management and ultimately advance survivorship care for AYAs who have experienced Hodgkin's Lymphoma - one of the most common cancers diagnosed in this cohort in Ireland.

Quote

“My goal is to empower AYA Hodgkin's Lymphoma survivors through a knowledge resource co-designed with them, addressing real information gaps and supporting self-management in survivorship”.



Asclepiades of Bithynia's Medical Molecular Theory and his Contribution to Evolving Understandings of Mental Illness

MD Student: Frank Brady

Supervisor: Professor Brendan Kelly

Funder: The Health and Research Board (HRB)

Overview of MD Project

Asclepiades of Bithynia (124-40 BC) was a Greek physician who practised and taught Greek medicine in Rome. This Doctorate in Medicine aims to outline the life and work of Asclepiades, especially his contributions to thinking about mental illness, based on primary material insofar as possible.

The thesis is based on review and discussion of relevant fragments of Asclepiades' work that survive and review of secondary literature, supplemented by relevant systematic literature searches (e.g., PubMed, Google Scholar, Brill, JSTOR, and the Loeb Classical Library). Asclepiades challenged the long-standing Hippocratic doctrine of the four humours and developed an approach to physical and mental illness that was humane, reasoned, and a forerunner of later developments in psychiatry. Asclepiades argued that the human body, like everything in the universe, comprised tiny, imperceptible particles, which he called *önkoi*, seamless masses in perpetual motion. In consequence, Yapijakis describes Asclepiades as 'the father of molecular medicine'.

Asclepiades held that good health was maintained by free, balanced motion of *önkoi* through theoretical pores, while disease resulted from blockage or impaction of *önkoi* passing through pores in various body parts (e.g., brain). Based on this idea, Asclepiades recommended releasing people with apparent mental illness from confinement, and using judicious combinations of diet, exercise, massage, bathing, and music to treat 'phrenitis' (delirium) and melancholia. He suggested that the physician act 'safely, swiftly and pleasantly' ('cito, tutu, jucunde') for both physical and mental illness.

Today, many of the values that inform mental health care, at least in theory, continue to echo Asclepiades' approach, ranging from multi-disciplinary individual care-planning to programmes aimed at reducing restraints and coercion in psychiatric settings. Contemporary iterations of these values tend to use the language of human rights, but the core moral ideas are highly consistent with Asclepiades' views: treating each person as a unique human who needs treatment, care, and support in the least restrictive fashion possible.

Continued next page.



Overall, Asclepiades belongs in the historical tradition of progressive medical approaches to mental illness, not least because he applied his principles for the treatment of physical illness to mental illness. His ideas about psychiatry set the scene for further evolution of attitudes to mental illness and its treatment over subsequent centuries. And, as Asclepiades counselled, it remains the case that the physician should act ‘safely, swiftly and pleasantly’ (‘cito, tutu, jucunde’) to alleviate both physical and mental illness, whenever possible.

Long-term impact of project


This project highlights the value of historical research in medicine. It also shows how moral principles underpinning medical practice endure, evolve, and re-emerge over time. It is hoped that this work will re-focus interest in medical history as a source of information and guidance today.

Quote

“Following my retirement from a very busy consultant maxillofacial surgical practice, I decided to pursue some long-standing academic interests. Initially I obtained an MSc Degree in Bioethics and Law from RCSI. During my 80th year, I enrolled as a postgrad student in Trinity with the aim of obtaining a Doctorate in Medicine Degree by thesis. This research project has proved to be extremely satisfying. I would encourage anyone with similar academic interests not to allow age to be a barrier when considering similar academic pursuits”.



Portrait bust of Asclepiades



Directory of Current
PhD Research
Projects 2023-2028 by
Discipline

Anatomy

PhD	Modeling Hair Follicle Breakdown in The Inflammatory Skin Disease
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PhD	The impact of ultrasound teaching in enhancing patient safety during TMJ nerve block procedures
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PhD	Interhemispheric integration in functional neurological disorders and the integration of neuroradiology into medical curricula
-----	--

PhD	Developing a tumour-homing Natural Killer cell therapy for obesity-associated cancer
-----	--

Clinical Medicine

PhD	Hyperthermia treatment applied to cancer
-----	--

PhD	3D model for safety assessment of nanobiomaterials
-----	--

PhD	Assessing Novel Bioengineered mRNA-loaded Extracellular Vesicles for the Treatment of Lung Cancer using Advanced In Vitro Models
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PhD	Extracellular vesicles as therapeutics in Lung cancer
-----	---

PhD	Defining the mechanism of action of non responsiveness among paediatric IBD patients
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PhD	Repurposing existing small molecular weight compounds for the treatment of IBD
-----	--

PhD	Exploiting Immunometabolism in Tuberculosis (EXTINCT)
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PhD	Immunothrombosis in Tuberculosis
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PhD	Identifying Macrophage Immune Defects In Susceptible Hosts – A Mycobacterium tuberculosis and HIV Co-infection Model
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PhD	Specialist palliative care in cancer survivorship
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PhD	Circadian rhythm disorders in advanced cancer
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PhD	Supporting physical function in community-dwelling older adults – a focus on health inequalities and underserved groups
-----	---

PhD	Defining the role of Th17 lineage cells in human pulmonary health and disease
-----	---

PhD	Antimicrobial Resistance in Ireland – a targeted molecular epidemiological assessment
-----	---

PhD	Defining immune phenotypes in septic patients to Immunological endotyping of critical illness to understand the sepsis-induced immune-paralysis state after severe sepsis in patients with cancer-related versus non-cancer-related sepsis
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PhD	Microcirculation in fluid resuscitation in sepsis
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PhD	Investigating the impact of immune senescence in Age-related Macular Degeneration
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PhD	Investigating the role of SARM1 in retinal degeneration
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PhD	Characterisation of TLR2 function in subretinal macular fibrosis
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PhD	Defining the consequence of innate immune training on protective versus pathogenic T cell responses in patients with Tuberculosis
-----	---

PhD	Investigating the importance of M. avium and Alveolar macrophage iron handling in the context of chronic lung disease
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PhD	The Fight for Iron at Mitochondria: Implications for Respiratory Infection and Disease
-----	--

PhD	The Use of Intracellular Iron Chelators to Alleviate Alveolar Macrophage Dysfunction in Chronic Obstructive Pulmonary Disease
-----	---

PhD	Iron and its Ferocious role in alveolar type II epithelial cell dysfunction in chronic lung diseases
-----	--

PhD	The interplay between alveolar macrophages and type II epithelial cells in COPD
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Clinical Microbiology

PhD	HPV Prevalence, seroprevalence, diversity, and HPV related cancer prevention in a HIV positive and HIV negative Men who have sex with Men (MSM) cohort
PhD	The impact of antifungal treatments on the killing activity of immune cells against <i>Aspergillus fumigatus</i>
PhD	Seeking Antisocial behaviour in Cystic Fibrosis Airway Microbiome
PhD	An Investigation into the Role of Pigs in the Epidemiology of Human <i>Clostridioides difficile</i> Infection
PhD	Bacteriophage therapy of <i>E. coli</i>
PhD	The extracellular glycome of Extraintestinal <i>E. coli</i>
PhD	ResistAMR: Farm-to-farmer, farm-to-air transfer of antimicrobial resistance during farming practices
PhD	Exploring Inflammatory Cell Death in Sepsis

Clinical Nephrology

PhD	Personalisation of relapse risk in autoimmune disease
PhD	Temporal Changes In Immune Status in Autoimmune Disease

Health Policy & Management

PhD	Evaluating the Preparedness of Irish Healthcare System for Alzheimer's Disease-Modifying Therapies
PhD	A policy analysis of universal healthcare in Ireland
PhD	Understanding the factors shaping the implementation of the National Oral Health Policy through a workforce lens: a realist and health systems approach
PhD	Costs of screening and diagnostic services and resource requirement for colorectal cancer screening in Ireland
PhD	Construction and Validation of a theoretical framework for evaluating employee engagement in Ireland

PhD	Exploring Job and Workplace Factors associated with Nurse Retention and Turnover in the Irish Healthcare System
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PhD	Exploring policy amenable factors across the medical device lifecycle impacting patient safety: a multi-method study'
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PhD	Examining the relationship between hospital cleaning staff, patient perceptions of cleanliness and patient
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Histopathology

PhD	Biomarkers for cervical cancer
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PhD	Identifying mechanisms of immune tolerance to Human Papilloma Virus (HPV) infection and the development of HPV-associated neoplasia
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PhD	Molecular Pathways in HPV-Associated Cervical Carcinoma
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PhD	Harnessing the power of the liquid biopsy in epithelial ovarian cancer
-----	--

PhD	Early Detection of Epithelial Ovarian Cancer using Next Generation Biopanning techniques
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PhD	Characterizing the Molecular Phenotype of CTCs in Central and Peripheral Metastases
-----	---

PhD	HRD in ovarian cancer
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PhD	Enhanced AI enabled digital pathology
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Immunology

PhD	Development of a bioanalytical platform to monitor immune reconstitution post allogeneic stem cell transplantation and post CAR-T therapy
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PhD	"The mechanisms of sexual dimorphism in allergic disease and chronic spontaneous urticaria"
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PhD	Understanding the immune response to influenza vaccination in patients with haematological malignancy
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Medical Gerontology

PhD	The impact of social inequality on ageing biology
PhD	Trajectories in Cognitive Ageing Relative to Social Isolation
PhD	The Male-Female Health-Survival Paradox
PhD	Analysis of clinical outcomes from a video-enabled nursing home education programme, and the subsequent derivation of topics for a nursing home staff education curriculum through assessment of ED attendance patterns and Delphi consensus discussion
PhD	An Evaluation of In-Hospital Stroke in Irish Acute Hospitals
PhD	Investigating factors associated with accelerated biological ageing in ANCA Associated Vasculitis
PhD	Investigating the role of the innate immune system in ageing-associated pathophysiology: implications for anti-viral immunity and COVID-19
PhD	The STRIDES Study: Standardising Technology for Rapid and Innovative Digital AI Evaluation of Gait Speed
PhD	The role of the skeletal muscle pump in the relationship between sarcopenia and orthostatic haemodynamics
PhD	Frailty in China
PhD	Using machine learning to model physiological reserve in older adults
PhD	Cerebral hemodynamics in older adults: relationship with ageing, disease and health behaviours
PhD	Clinical Utility of Cerebral Perfusion in Syncope and Falls
PhD	Assessing the influence of medications on falls and syncope
PhD	Physiological and Molecular Biomarkers of Renal and Cardiovascular Ageing

PhD	Nursing home residents in the Emergency Department (NuHR-ED): a review of resident characteristics and outcomes following Emergency Department Attendance and the impact of a Nursing Home Liaison Service
PhD	MD title: Frailty Identification and Transitions in an Aging Population with Intellectual Disability
PhD	Polypharmacy and potential inappropriate prescribing in community dwelling people living with dementia
PhD	Preventing Dementia: The Prevalence of Modifiable Risk Factors in People Attending Ireland's First Brain Health Clinic
PhD	VINCI-AD: An Investigation into the Safety, Tolerability and Efficacy of Transcutaneous Vagus Nerve Stimulation in Mild Cognitive Impairment
PhD	Using Systems Immunology to Characterise Variability in Anti-Viral and Vaccine-Induced Immune Responses in Older Nursing Home Residents: Towards Next-Generation Vaccine Design and Deployment Strategies
PhD	Regulation of Artificial Intelligence enabled Medical Devices: An Analysis of the Public Policy Objectives and the Practical Implementation of the Regulations for Medical Device Organisations

Molecular Rheumatology

PhD	Stromal cell subtypes define distinct pathogenesis in RA and PsA
PhD	Targeting metabolic pathways induces resolution of inflammation in Rheumatoid Arthritis
PhD	Differential pathogenic mechanisms drives stromal cell interactions and invasive pathways in RA & PsA
PhD	Molecular signatures that distinguish RA and PsA pathotypes - impact for disease progression and response
PhD	Monocyte development signature in Rheumatoid and Psoriatic Arthritis

Neurology

PhD ALS CREATE - Connected Rehabilitation-Enablement, Acceptability & Therapeutic Effectiveness

PhD Advancing the translation of circulating biomarkers for the management of chronic and rare neurological diseases

PhD Characterising the cognitive profile of presymptomatic neurodegenerative movement disorders and their endophenotypes

PhD Maximising the clinical utility of the Telemedicine in MND (TiM) patient-clinician remote monitoring and communication system

PhD Concussion and Brain Injury

PhD Assessment of motor unit properties in ALS using high density electromyography

PhD Towards comprehensive biomarkers of ALS: integrating EEG and EMG features for improved prognosis

PhD Blood brain barrier in chronic epilepsy and head injury

PhD The MRI correlates of clinical phenomena in Amyotrophic Lateral Sclerosis: a computational neuroimaging study

PhD Development and validation of digital outcome measures for sensitive assessment and remote monitoring of speech and swallow in ALS

PhD Identifying Neurophysiological Biomarkers of Altered Sensorimotor Integration in ALS: A multi-modal approach based on EEG, TMS, and peripheral stimulation

PhD Challenges in Care Provision in ALS: Health Care Professionals

PhD Mathematical Solutions for Mapping Structured Time-Series: Inference of Brain Neurophysiology Using Electroencephalography

PhD Social Cognition in Lewy Body Dementia

PhD Clinical Heterogeneity in Monogenic Neurodegenerative Diseases: an exploration of potential endophenotypes and genetic modifiers in patients and their relatives

PhD Fine-Grained Network-based Neurophysiological Biomarkers of Cognitive Decline in ALS

PhD Fine-Grained Neurophysiological Biomarkers of Resting-State and Motor Network Dysfunction in ALS

PhD Quantifying oscillatory motor unit firing in ALS

PhD Development of a specialist MDT clinic knowledge bank – people, processes and principles

PhD Ethnographic Assessment of Sports-Related Concussions: A Transdisciplinary Approach

Obstetrics & Gynaecology

PhD Second-line tests of fetal wellbeing in labour

Occupational Therapy

PhD Testing the Effectiveness of “Fatigue and Activity Management in Work” (FAME-W) Intervention for Individuals with Inflammatory Arthritis

PhD Use of link workers to provide social prescribing and health and social care coordination for people with complex multimorbidity in socially deprived areas

PhD The role of intermediaries in connecting community-dwelling adults to local physical activity and exercise

PhD Developing and Feasibility Testing of a Pragmatic, Patient-Centred Exercise Intervention During Chemotherapy: A Mixed-Methods Approach

PhD Patient and family caregiver dyad decision-making in specialist palliative care

PhD The impact of the Assisted Decision-Making (Capacity) (Amendment) Act 2022 on patient autonomy and shared decision-making in palliative care

PhD Ethical dimensions of shared decision-making in palliative care

PhD	Meaningful participation in education for Irish Traveller students: bridging the fields of occupational therapy and inclusive education	PhD	PLATYPUS: Preterm Inflammatory Hyperreactivity and response to pentoxifylline to understand necrotising enterocolitis and sepsis
PhD	Children and families living with cerebral palsy	PhD	CANARY: Childhood Allergy: Neutrophil Activity in Response to Peanuts
PhD	What are the trajectories to and outcomes of sensory processing difficulties in childhood	PhD	STARFISH: Sustained Inflammation in preterm infants and multiorgan dysfunction
PhD	Mobility assistance dogs and the impact on activity levels, gait patterns, balance and quality of life in children with cerebral palsy and neurological impairments	Pharmacology & Therapeutics	
PhD	Sleep and children with cerebral palsy	PhD	Health Technology Assessment of Disease Modifying Dementia Treatments for early Alzheimer's Disease
PhD	Analysing motion in children with cerebral palsy	PhD	The Impact of Health Technology Management in the Irish Healthcare Setting
PhD	An exploration of Occupational Therapy Practice with Children experiencing Complex Trauma	PhD	Role of PP2A in modulation brain microvascular endothelial cell function
PhD	Ireland – characteristics, lived experience, and personal priorities'	Physiology	
PhD	Living with post stroke cognitive impairment and re-engaging with work and other life participations: an exploratory qualitative study with younger stroke survivors	PhD	The brain-muscle loop: using exercise to target neuroinflammation
PhD	Impact of advanced driver assistance systems on older drivers	PhD	Developing inflammasome assays in MS
PhD	Parenting Matters with Arthritis: Developing and Testing a Parent-focused Intervention Programme to Support Parenting with Inflammatory Arthritis	PhD	Terpene/cannabinoid modulation of endosomal TLR signalling in immune cells
Paediatrics		PhD	Analyzing the role of microglia on the neurological outcomes after birth asphyxia
PhD	Children and Families living with Cerebral Palsy in Ireland - characteristics, lived experience and personal priorities.	PhD	Investigating sex differences in astrocytes and the adaptive immune system in Alzheimer's Disease
PhD	POLARIS: Persistent inflammation in traumatic brain injury in children	PhD	Glioblastoma multiforme (GBM) biology and neurotransmission: implications for therapeutic approaches".
PhD	Platypus: Preterm infant Immunomodulation to Treat sepsis and brain injury Prevention	PhD	Assessing the contribution of the AMPA receptor to physiological and pathophysiological brain rhythms in vitro'
PhD	FIREFLY project: follow up of inflammatory responses and multiorgan outcomes Following neonatal brain injury	PhD	Effects of early-life experiences on microcircuitry in avian forebrain areas involved in stress regulation'
		PhD	The effects of high-intensity interval vs moderate-intensity continuous training on cerebrovascular reactivity in men and women with type 2 diabetes

PhD	Examining dynamic cerebral autoregulation responses subsequent to exercise training in individuals with type two diabetes mellitus	PhD	Recruitment of adolescent girls into physical activity programmes: Evidence to inform recruitment strategies for policymakers and programme developers and policymakers
PhD	Combining Neuroimaging and Neurophysiological Analysis to Identify Comprehensive Biomarker Profiles for Amyotrophic Lateral Sclerosis and Huntington's Disease	PhD	A National Adolescent Idiopathic Scoliosis Physical Wellbeing Study
PhD	Characterising network dysfunction in ALS risk gene carriers - An electrophysiological approach	PhD	Barriers and facilitators to refugees, asylum seekers and people experiencing homelessness accessing non hospital based care
PhD	Contributors of discrete dopaminergic neurons to the modulation of memory strength	Psychiatry	
PhD	Deciphering the contribution of reactive astrocytes to Parkinson's disease	PhD	Longitudinal neuroimaging in children with ADHD
PhD	Apolipoprotein-E Genotype Influences Inflammation in Alzheimer's Disease	PhD	Genomic landscape of neonatal Escherichia coli associated sepsis in Ireland
Physiotherapy		PhD	Sexual Assault Treatment Unit (SATU) staff-delivered brief psychological intervention: delivery and evaluation of a new service component.
PhD	Heart rate recovery responses and Active Stand Protocols	PhD	A translational investigation of the anti-inflammatory and antidepressant effects of psychedelics in an inflammatory model of depression in rats and human peripheral blood mononuclear cells
PhD	Developing Lifestyle Interventions in Barretts Oesophagus	PhD	Admissions to St Patrick's Hospital 1900 to 1950: from bromides to convulsive therapies
PhD	The effects of nutritional intervention combined with exercise in the ReStOre II (Rehabilitation Strategies following Oesophago-gastric Cancer) program	PhD	Phenotype and Genotype Heterogeneity of Autism Spectrum Disorder (ASD)
PhD	An evaluation of physical function and frailty in non-geriatric vulnerable populations	PhD	Research readiness for dementia research in Irish long term care settings
PhD	Exploring physical activity in Maltese Children	PhD	Social cognition in Lewy body dementia
PhD	The Role of Intermediaries in Connecting Community Dwelling Adults to Local Physical Activity and Exercise Services	PhD	Implementation of disease modifying therapies for Alzheimer's in Ireland
PhD	Developing and Feasibility testing of a pragmatic, Patient-Centred Exercise Intervention During Chemotherapy: A Mixed-Methods Approach	PhD	Towards an understanding of the mechanism of action of methylphenidate in ADHD
PhD	Identifying requirements for cancer rehabilitation in Oman	PhD	Ancient and modern population genomics on the peopling of East Eurasia and the Americas
PhD	Bike fit for performance and safety in elite cycling		

PhD Hatred and social exclusion of adults attracted to children: Clinical and forensic implications

PhD Predicting who will respond to stimulant medication in ADHD: A precision medicine approach using neurally informed computational models

Public Health & Primary Care

PhD What evidence supports the use of art therapy in response to trauma-exposed refugee adolescents, aged 10 to 17 years

PhD Equity in Partnerships for Global Health

PhD Water and Sanitation in LMICs

PhD Evaluation of feasibility and health impacts of social prescribing in a general practice setting

PhD Substance Use and Treatment Needs Among Sexual and Gender Minority (SGM) Persons Accessing Substance Use Treatment Services: A secondary analysis of Irish health data

PhD Development, implementation and evaluation of a frontline workers toolkit and good practice guidelines for recovery capital

PhD Vitamin D and hair: a review of current methods and validation of a quantitation method to measure 25(OH)D3 from hair

PhD Sunshine genomics: a gene-environment interaction approach to the study of the genetic determinants of vitamin D status and skin cancer

PhD Ionising Radiation Justification

PhD Disinvestment Frameworks

Radiation Therapy

PhD Barriers to access in radiation oncology (BARO project)

PhD Modeling of toxicity in non-small cell lung cancer

PhD Extracellular vesicles in Non-Small-Cell Lung Cancer

PhD Interactive monitoring of paediatric outcome reporting for radiation and chemotherapies

PhD Knowledge Support for Adolescent and Young Adult Survivors of Hodgkin's Lymphoma in Ireland (KAYA)

Surgery

PhD Boosting oxygen diffusion in the radioresistant Oesophageal tumour microenvironment to improve radiation response.

PhD Examining effects of electroporation on the Barrett's tissue microenvironment, funded by Breakthrough Cancer Research

PhD Assessment of early onset GI cancers, role of immunometabolism

PhD "Enhancing immunotherapy in Oesophageal Adenocarcinoma through the modulation of immunometabolism with novel small molecule inhibitors Quininib and its analogues"

PhD Development of a Novel Prognostic Scoring System for Patients Presenting with Spinal Metastases to Predict

PhD Immunophenotyping of pancreatic cystic lesions

PhD Therapeutically remodelling the immune profile of 'cold' tumours in obesity-associated cancer

An anatomical model of a human heart, showing the major blood vessels (arteries and veins) in red and blue, and the heart muscle in yellow and white. The model is mounted on a metal rod. The background is blurred, showing other similar models in a laboratory or museum setting.

Postgraduate Fellowships, Scholarships and Awards

A range of fellowships, scholarships and awards are available to postgraduate students to support their research. These awards are made possible by bequests and gifts that have been generously donated to the School of Medicine and Trinity College Dublin.

A list of available fellowships, scholarships and awards is available below and in the College calendar.

-
- Adrian Stokes Memorial Fellowship

 - Derry and Phyllis Kelleher Travel Fellowship

 - Eithne Walls Fellowship

 - Dr Henry Hutchinson Stewart Scholarship in Psychiatry:

 - Postgraduate Travelling Scholarship in Medicine and Surgery

 - Sarah Purser Medical Research Fund

 - Technicon Research Fellowship

 - Yamanouchi Postgraduate Toxicology Fellowship

 - E.C. Smith Scholarship in Pathology

 - Trinity's Postgraduate Research Doctorate Awards 2025-26

 - Trinity Research Doctorate Award for a student of sanctuary for 2024-25
-

For more information on these awards please visit:

<https://www.tcd.ie/medicine/education/postgraduate/fellowships-open-to-application/>.

<https://www.tcd.ie/graduatestudies/awards/trda-pi/school-based.php>



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Fighting Blindness Ireland

FutureNeuro and S3 Connected Health

Health Research Board

Health Research Board (HRB) and RESTORE project

Higher Education Authority (HEA) (North-South Research Programme)

HRB Definitive Intervention and Feasibility Awards (DIFA)

HRB Structured Population and Health-Services Education Programme (SPHERE)

Irish Clinical Academic Training Programme (ICAT),

Infinitome Imaging Award

Irish Blood Transfusion Service

Irish Cancer Society (ICS)

Irish Research Council (IRC)

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Research Motor Neurone

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The Meath Foundation

Thierry Latran Foundation

Trinity College Dublin Provost PhD Project Award

Trinity St James Cancer Institute CREST Awards

Viatrix Ireland



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Published by:

Research Impact Officer
Research Directorate
School of Medicine
Trinity College Dublin
Trinity Biomedical Sciences Institute
152 - 160 Pearse St, Dublin 2
D02 R590, Ireland

Phone: +353 1 896 1000

Email: research.medicine@tcd.ie

Web: www.tcd.ie/medicine/research/

Twitter: @TrinityMed1

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