



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

Annual Overview of Doctoral Health Research 2023

School of Medicine





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PhD Interhemispheric integration in functional neurological disorders and the integration of neuroradiology into medical curricula. 38

PhD Modeling Hair Follicle Breakdown in The Inflammatory Skin Disease. 38

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PhD Identifying Macrophage Immune Defects In Susceptible Hosts – A Mycobacterium tuberculosis and HIV Co-infection Model.	38
PhD Characterisation of the Epithelial barrier in early life and in atopic dermatitis.	38
PhD Specialist palliative care in cancer survivorship.	38
PhD Circadian rhythm disorders in advanced cancer.	38
PhD Supporting physical function in community-dwelling older adults – a focus on health inequalities and underserved groups.	38
PhD Defining the role of Th17 lineage cells in human pulmonary health and disease.	38
PhD The interplay between alveolar macrophages and type II epithelial cells in COPD.	38
MD The pathogenesis of Hidradenitis Suppurativa.	38
MD Assessment of xerostomia management strategies in patients with advanced cancer.	38
MD Outcomes of Paediatric Inclusion Health.	38
MD Oral Symptom Assessment Scale (OSAS): Validity and Reliability.	38
MD To identify predictive biomarkers of non-infectious pulmonary complications post bone marrow transplantation.	38
MD The effects of Reslizumab Therapy in Severe Eosinophilic Asthma.	38
MD A study of Doppler Ultrasound in the diagnosis and monitoring of Giant Cell Arteritis (GCA).	38
MD The effects of corticosteroids on human macrophages infected with Mycobacterium tuberculosis.	38
MD A study on cardiac pacing and cognition.	38
MD HDL cholesterol efflux capacity (HDL-CEC), HDL lipoprotein function and lipidomic analysis in T1DM and risk of atherosclerosis.	38
MD Prevalence of and Interventions for Fatigue in Patients with Inflammatory Bowel Disease.	38
MD Hyperuricaemia as a marker of future metabolic and cardiovascular disease.	38
MD Assessment and Management of Pancreatic Cysts.	38
MD An Evaluation of Epilepsy and Driving in Ireland including Patient Impact, Understanding.	38

Clinical Microbiology	38
PhD An Investigation into the Role of Pigs in the Epidemiology of Human Clostridioides difficile Infection.	38
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.	38
PhD Bacteriophage therapy of E. coli.	38
PhD The extracellular glycome of Extraintestinal E. coli.	38
PhD Antisocial Behaviour in the Cystic Fibrosis Airway Microbiome.	38
PhD The impact of antifungal treatments on the killing activity of immune cells against Aspergillus fumigatus.	38
MD A study of Mycobacterium bovis infection.	38

Clinical Nephrology	38
PhD Investigation of Molluscum Contagiosum Virus inhibitor of both NFkB and IRF signalling MC009.	38
PhD Cross-disease Assessment of Phenotypic and Functional Granulocyte Heterogeneity.	38
PhD Personalisation of relapse risk in autoimmune disease.	38
PhD Metabolomic analysis of monocytes in ANCA Vasculitis.	38
PhD Investigation of Molluscum Contagiosum Virus inhibitor MC089 which targets IRF activation.	38
PhD Investigation of Molluscum Contagiosum Virus inhibitor MC008 which targets human DNA sensing.	38

Gastroenterology	38
MD A study of clinical scores, investigation and management of gastrointestinal bleeding.	38
MD An investigation of completion rates in capsule endoscopy.	38

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PhD Exploring Job and Workplace Factors associated with Nurse Retention and Turnover in the Irish Healthcare System.	39
PhD Power in the health policy process: A Case Study of Universal Healthcare in Ireland.	39
PhD Understanding the factors shaping the implementation of the National Oral Health Policy through a workforce lens: A realist and health systems approach.	39

PhD	Costs of screening and diagnostic services and resource requirement for colorectal cancer screening in Ireland.	39
PhD	Examining the relationship between hospital cleaning staff, patient perceptions of cleanliness and patient.	39
Histopathology		39
PhD	Harnessing the power of the liquid biopsy in epithelial ovarian cancer.	39
PhD	Biomarkers for cervical cancer.	39
PhD	Molecular Pathways in HPV-associated Cervical Carcinoma.	39
PhD	Identifying mechanisms of immune tolerance to Human Papilloma Virus (HPV) infection and the development of HPV-associated neoplasia.	39
PhD	HRD in ovarian cancer.	39
PhD	Characterizing the Molecular Phenotype of CTCs in Central and Peripheral Metastases.	39
PhD	Enhanced AI enabled digital pathology.	39
MD	A prospective case control study of concurrent Non-alcoholic fatty liver disease (NAFLD) and Inflammatory bowel disease (IBD).	39
MD	A multilayer investigation of the interaction between HPV, TLRs (4, 7, 9), MyD88 and endosomal trafficking in a panel of HPV positive and HPV negative cervical carcinoma cell lines and cervical tissue specimens.	39
MD	A pilot study to identify novel biomarkers of response, resistance and toxicity of Immune checkpoint inhibitors (ICI).	39
Immunology		39
PhD	Development of a bioanalytical platform to monitor immune reconstitution post allogeneic stem cell transplantation and post CAR-T therapy.	39
PhD	The mechanisms of sexual dimorphism in allergic disease and chronic spontaneous urticaria.	39
PhD	Understanding the immune response to influenza vaccination in patients with haematological malignancy.	39
MD	Non immunological risk factors associated with prior Staphylococcus aureus infection.	39
Infectious Diseases		39
MD	COVID-19 in Frontline Healthcare Workers : Epidemiology, Serology and Virology.	39
MD	COVID-19 in Irish Healthcare Workers; SARS-CoV-2 antibody prevalence, epidemiology of infection, antibody response to vaccination and effect on disease presentation.	39
MD	Cost-effectiveness analysis of panel testing for blood-borne virus infections.	39

Medical Gerontology		39
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.	39
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.	39
PhD	Polypharmacy and potential inappropriate prescribing in community dwelling people living with dementia.	39
PhD	Folate and Vitamin B12 in The Irish Longitudinal Study on Ageing cohort: Associations with cognitive function.	39
PhD	The role of the skeletal muscle pump in the relationship between sarcopenia and orthostatic haemodynamics.	39
PhD	VINCI-AD: An Investigation into the Safety, Tolerability and Efficacy of Transcutaneous Vagus Nerve Stimulation in Mild Cognitive Impairment.	39
PhD	Using machine learning to model physiological reserve in older adults.	39
PhD	Metabolic syndrome, chronic low-grade inflammation, accelerated ageing, cognitive impairment and frailty.	39
PhD	Investigating the role of the innate immune system in ageing-associated pathophysiology: implications for anti-viral immunity and COVID-19.	39
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.	39
PhD	Clinical Utility of Cerebral Perfusion in Syncope and Falls.	39
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.	39
MD	Investigation of the brain signatures of frailty in older adults.	39
MD	Exploring Novel Biomarkers of Neurocognitive Decline in Type-2 Diabetes (ENBIND)- a longitudinal perspective.	40
MD	Modifiable risk factors for dementia, awareness, and barriers to brain health behaviours.	40
MD	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.	40
MD	The neuroscience of frailty.	40
MD	Teaching of stroke medicine to undergraduate medical students.	40
MD	Investigation of Bone Health in TUDA and TILDA	40
MD	An investigation of the capability of the Reveal LINQ™ Falls Prediction Research System to identify early changes in physiological parameters as risk predictors of falls.	40
MD	Influence of frailty on hypertension management outcomes in TILDA.	40

MD	Nursing home residents attending the acute hospital before and during a pandemic: Clinical characteristics and outcomes, and impact of a specialist intervention team to manage care.	40
MD	Cardiovascular Autonomic Function and Response to Aortic Valve Replacement.	40
MD	The longitudinal impact of microstructural integrity of white matter hyperintensities.	40
MD	Prevalence and influence of modifiable risk factors for dementia on cognitive and gait performance in people with mild cognitive impairment attending a memory service.	40

Molecular Rheumatology 40

PhD	Stromal cell subtypes define distinct pathogenesis in RA and PsA.	40
PhD	Targeting metabolic pathways induces resolution of inflammation in Rheumatoid Arthritis.	40
PhD	Monocyte development signature in Rheumatoid and Psoriatic Arthritis.	40
PhD	Differential pathogenic mechanisms drives stromal cell interactions and invasive pathways in RA & PsA.	40
PhD	Molecular signatures that distinguish RA and PsA pathotypes - impact for disease progression and response.	40

Neurology 40

PhD	ALS CREATE - Connected Rehabilitation-Enablement, Acceptability & Therapeutic Effectiveness.	40
PhD	Advancing the translation of circulating biomarkers for the management of chronic and rare neurological diseases.	40
PhD	Characterising the cognitive profile of presymptomatic neurodegenerative movement disorders and their endophenotypes.	40
PhD	Maximising the clinical utility of the Telemedicine in MND (TiM) patient-clinician remote monitoring and communication system.	40
PhD	Concussion and Brain Injury.	40
PhD	Finding neurophysiological Biomarkers of cognitive network dysfunction across neurodegenerative diseases: differential diagnostics, novel re-phenotyping, and clinical trial design.	40
PhD	Development and validation of digital outcome measures for sensitive assessment and remote monitoring of speech and swallow in ALS.	40
PhD	Electroencephalographic Biomarkers for Tracking Cognitive Network Dysfunction in Amyotrophic Lateral Sclerosis.	40
PhD	Tuberous Sclerosis Complex (TSC) The Experience in Ireland.	40
PhD	Identifying Neurophysiological Biomarkers of Altered Sensorimotor Integration in ALS: A multi-modal approach based on EEG, TMS, and peripheral stimulation.	40
PhD	Challenges in Care Provision in ALS: Health Care Professionals.	40
PhD	Novel Non-invasive Assessment of the Spinal Cord Electrical Activity for Neurological Diagnosis.	40

PhD	Information flows in specialist MDT clinics.	40
PhD	Pin-Pointing the Weakest Link in Network Collapse in Amyotrophic Lateral Sclerosis: Multi-Modal Neurophysiological Biomarkers of Disrupted Cortical Connections for Patient Selection and Intervention.	40
PhD	Fine-Grained Network-based Neurophysiological Biomarkers of Cognitive Decline in ALS.	40
PhD	Mapping electroencephalographic changes in amyotrophic lateral sclerosis.	40
PhD	Fine-Grained Neurophysiological Biomarkers of Resting-State and Motor Network Dysfunction in ALS.	40

Obstetrics 40

PhD	Second-line tests of fetal wellbeing in labour.	40
MD	Lymph node status and coagulation biomarkers as predictors of venous thromboembolism in gynaecological cancer patients post surgery.	40

Occupational Therapy 41

PhD	The implementation of a collaborative peer learning 2:1 model of practice placement education within dietetics pre-registration training in Ireland.	41
PhD	Use of link workers to provide social prescribing and health and social care coordination for people with complex multimorbidity in socially deprived areas.	41
PhD	The experience of autistic women in navigating the world of work.	41
PhD	The process of discharging stroke survivors from physiotherapy stroke care: The physiotherapist perspective.	41
PhD	Using Rasch analysis to refine the psychometric properties of the Electronic Trinity Student Profile (eTSP; Nolan, 2011).	41
PhD	An exploration of the occupational (in)justices experienced by asylum seekers and refugees within the Irish context.	41
PhD	Support exchange between patients and family caregivers in palliative care.	41
PhD	The Development of a complex occupational therapy intervention for neonatal units in Ireland.	41
PhD	Testing the Effectiveness of “Fatigue and Activity Management in Work” (FAME-W) Intervention for Individuals with Inflammatory Arthritis.	41
PhD	An exploration of Occupational Therapy Practice with Children experiencing Complex Trauma.	41
PhD	An exploration of the mealtime experience for family carers of people with motor neurone disease.	41

Oncology 41

MD	An evaluation of the immune-metabolic signature of visceral obesity on tumour microenvironment in the setting of colorectal carcinoma.	41
MD	Evaluation of Clinical, Genomic and Tissue Microenvironment Secretion Profiles Associated with Ustekinumab Response in Inflammatory Bowel Disease Patients.	41

Ophthalmology 41

MD	A study of Leber Hereditary Optic Neuropathy (LHON).	41
MD	Automated deep learning in retinal images.	41

Paediatrics 41

PhD	PUFFIN: Point of care ultrasound for functional multi-organ evaluation in neonatal encephalopathy.	41
PhD	PANDA: Psychological And NeuroDevelopmental Assessment of Neonatal Encephalopathy.	41
PhD	CRADLE: Circadian Rhythm Alterations and outcomes in neonatal Encephalopathy.	41
PhD	POLARIS: Persistent inflammation in traumatic brain injury in children.	41
PhD	PLATYPUS: Preterm infant Immunomodulation to Treat sepsis and brain injury Prevention.	41
PhD	FIREFLY project: Follow up of Inflammatory Responses and multiorgan outcomes Following neonatal brain injury.	41
PhD	CANARY: Childhood Allergy: Neutrophil Activity in Response to Peanuts.	41
PhD	T Cell Phenotype in Neonatal Brain Injury and Followup in Childhood.	41
PhD	DREAM project: Down syndrome, neurodevelopment And Multiorgan outcome.	41
PhD	STARFISH: Sustained Inflammation in preterm infants and multiorgan dysfunction.	41

Pharmacology & Therapeutics 41

PhD	Role of PP2A in modulation brain microvascular endothelial cell function.	41
PhD	The Impact of Health Technology Management in the Irish Healthcare Setting.	41

Physiology 41

PhD	The involvement of the immune system in Parkinson's disease.	41
PhD	Analyzing the role of microglia on the neurological outcomes after birth asphyxia.	41
PhD	Developing inflammasome assays in MS.	41
PhD	Assessing the contribution of the AMPA receptor to physiological and pathophysiological brain rhythms in vitro.	41
PhD	Targeting endosomal TLR signalling and inflammasome activation with cannabinoids in immune cells with relevance to Multiple Sclerosis.	41

PhD	Combining Neuroimaging and Neurophysiological Analysis to Identify Comprehensive Biomarker Profiles for Amyotrophic Lateral Sclerosis and Huntington's Disease.	41
PhD	Effects of early-life experiences on microcircuitry in avian forebrain areas involved in stress regulation.	41
PhD	Decoding neuroinflammatory effects on neuronal circuits at the interface of dementia and delirium.	41
PhD	Investigating sex differences in the role of T cells in AD.	41
PhD	The brain-muscle loop: using exercise to target neuroinflammation.	42
PhD	The effects of antipsychotics on glial cells, neuroinflammation and demyelination.	42
PhD	Contributors of discrete dopaminergic neurons to the modulation of memory strength.	42
PhD	Investigating novel therapies for metachromatic leukodystrophy (MLD).	42
PhD	Terpene/cannabinoid modulation of endosomal TLR signalling in immune cells.	42
PhD	Sports Concussion and Brain Health: The need for Objective and Diagnostic Tools of Pathological Brain Indices.	42
PhD	Glioblastoma multiforme (GBM) biology and neurotransmission: Implications for therapeutic approaches.	42

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PhD	An Examination of Physical Activity, Cardiorespiratory Fitness and Cardio-metabolic Health through the Modern Hepatitis C Continuum.	42
PhD	Heart rate recovery responses and Active Stand Protocols.	42
PhD	The Role of Exercise Prehabilitation Prior to Oncological Resection.	42
PhD	The effects of nutritional intervention combined with exercise in the ReStOre II (Rehabilitation Strategies following Oesophago-gastric Cancer) program.	42
PhD	An evaluation of physical function and frailty in non-geriatric vulnerable populations.	42
PhD	Exploring physical activity in Maltese Children.	42
PhD	Back pain in adolescent sport.	42
PhD	Safety and optimal tackle outcomes in women's rugby.	42
PhD	Work-based assessment: Translating theory to practice in allied health professionals.	42
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PhD	Developing and Feasibility testing of a pragmatic, patient-centred exercise intervention during chemotherapy: A Mixed-Methods Approach.	42
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PhD	Bike fit for performance and safety in elite cycling.	42

PhD	Symptomatic hypermobility in children: A move towards improved care pathways and targeted treatment.	42
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PhD	Barriers and facilitators to refugees, asylum seekers and people experiencing homelessness accessing non hospital based care.	42

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PhD	Predicting who will respond to stimulant medication in ADHD: A precision medicine approach using neurally informed computational models.	42
PhD	Mental Capacity for Treatment Decisions in Psychiatric Inpatients.	42
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PhD	Towards an understanding of the mechanism of action of methylphenidate in ADHD.	42
PhD	Ancient and modern population genomics on the peopling of East Eurasia and the Americas.	42
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PhD	Shame and Child Sexual Abuse.	42
PhD	Implementation of disease modifying therapies for Alzheimer's in Ireland.	42
PhD	Predicting who will respond to stimulant medication in ADHD: A precision medicine approach using neurally informed computational models.	42
MD	Outcomes of inpatients detained under holding powers in an Irish Psychiatric Hospital – A Comparative Case-Control Study.	42
MD	Asclepiades' medical theory of “molecules” and “void spaces” as it relates to Mental Illness.	42
MD	An investigation of the prevalence rates of mental illness in older adults admitted to hospital in Ireland and assessment of current Old Age Liaison Psychiatry service provision.	42
MD	Impact of the Covid-19 pandemic on nursing home staff in Ireland.	42
MD	To characterise the effects of Anorexia Nervosa (AN) on biological ageing.	42

Public Health & Primary Care 43

PhD	Polypharmacy and potential inappropriate prescribing in community dwelling people living with dementia.	43
PhD	Equity in Partnerships for Global Health.	43
PhD	Water and Sanitation in LMICs.	43
PhD	Measurement of 25-hydroxyvitamin D in hair.	43
PhD	The role of gene-UVB interaction on 25-hydroxyvitamin D level and skin cancer.	43
MD	Mental Health Services and Homeless people in the Dublin Region: A cross sectional study.	43
MD	Exploring the physical, psychological and social effects of chemsex, enabling the development of a specialised service, and the integration of affiliated services in Ireland.	43

Radiation Therapy 43

PhD	Tumours have a sex: Impact on the response of bladder cancer to therapy.	43
PhD	The development, implementation and evaluation of frailty assessment in oncology.	43
PhD	Barriers to access in radiation oncology (BARO project).	43
PhD	Using radiomics to predict normal tissue toxicity in head and neck cancer.	43
PhD	Interactive monitoring of paediatric outcomes for radio and chemo therapies (IMPORT).	43
PhD	KAYAc- Knowledge of late effects of cancer therapy for adolescents and young adults.	43
PhD	Magnetic Resonance Imaging Radiomics - Towards the Personalisation of Radiation Therapy for Prostate Cancer.	43
PhD	Extracellular vesicles in Non-Small-Cell Lung Cancer.	43

Surgery 43

PhD	Therapeutically remodelling the immune profile of ‘cold’ tumours in obesity-associated cancer.	43
PhD	Investigation of the role of miRNA in the treatment resistance of gastro-oesophageal cancer.	43
PhD	Targeting metabolism for individualised rectal cancer treatment.	43
PhD	An Investigation of the Effect of Pulsed Radiofrequency treatment of the Dorsal Root Ganglion on Cerebrospinal fluid and peripheral venous blood cellular, proteomic and neuropeptide concentrations with clinical outcome correlation in patients with chronic lumbosacral radicular pain.	43
PhD	The Epidemiological, clinical and genetic aspects of chronic pancreatitis in Ireland.	43
PhD	Boosting oxygen diffusion in the radioresistant Oesophageal tumour microenvironment to improve radiation response.	43
PhD	Development of a Novel Prognostic Scoring System for Patients Presenting with Spinal Metastases to Predict.	43
PhD	Investigating the impact of body composition and nutritional intervention strategies in pancreatic cancer.	43
PhD	Immunophenotyping of pancreatic cystic lesions.	43

PhD	Therapeutically remodelling the immune profile of cold tumours in obesity associated cancer.	43
MD	To create, co-design, and evaluate a digital learning platform - Burkittpedia.	43
MD	Cellular and peptide components of both CSF and venous blood pre and post dorsal root ganglion pulsed radiofrequency treatment: Single-centre, randomized controlled trial.	43

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Foreword by Director of Research

The School of Medicine's research excellence is one of the factors that make Trinity the leading university in Ireland. The School's commitment to being a research-led school with strong clinical-scientific academic partnerships, is fundamentally supported by the hard work of our postgraduate students undertaking PhD and MD programmes.

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Research in the School of Medicine has traditionally been embedded in clinical translation which inspires our postgraduate students to enhance our understanding of science and technology to the ultimate benefit of patients, health professionals, and the whole of Irish society. This year's annual review of doctoral health research demonstrates the incredible depth and breadth of the wide-ranging topics that are being explored through research projects across the school. As Director of Research, I am extremely proud to see such variety and excellence in health-related research being undertaken by the postgraduate students and their supervisors in the School of Medicine. It is inspiring to see the School excelling in research spanning across the entire discovery research pipeline from basic and fundamental research through to pre-clinical and clinical research. The breadth of these doctoral projects is highlighted in this brochure, with topics covering neuroscience/psychiatry, infection/immunology, childhood/adolescent/lifespan health, autoimmunity and cancer.

Postgraduate students are often at the heart of multidisciplinary and collaborative research between scientists and clinicians in the School of Medicine, striving to contribute to advances that will shape our understanding of health and disease

across the spectrum of disciplines at every stage of life with potential to impact not only on today's patients but those of future generations. To complete their postgraduate programme, our students need to be inquisitive, highly motivated, skilled in communication and with an ability to multitask, but above all they need to possess a drive and a passion for their research, and to enjoy their work.

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

Dr. Sarah Doyle
Director of Research



Foreword by
Director of
Postgraduate
Learning and
Teaching

Revel in the beauty of the details. Each experiment, each word written, and each idea explored contributes to the tapestry of human knowledge.

Embarking on a postgraduate (PG) research degree whether it be a PhD or indeed an M.D. is no small feat, and people pursue it for a multitude of unique and novel reasons. As Director of Postgraduate Teaching & Learning within our School, I am struck by the variety of reasons that students tell me has contributed to their choice to join our School. A genuine love for science and medicine often motivates individuals to explore these fields further. This expertise can open up opportunities for advanced research, specialised clinical practice, or leadership roles in the industry. Many pursue PG degrees to enhance their career prospects, often opening doors regarding further clinical and research opportunities. Whether it's conducting clinical trials, studying rare diseases, or advancing medical technology, a higher degree can pave the way for impactful contributions. Some are drawn to science and medicine with a strong sense of social responsibility. Pursuing a PG degree enables them to contribute to public health, whether through research on infectious diseases, health policy, or community-based interventions. Some choose PG studies with a global health perspective, aspiring to make a positive impact on healthcare systems worldwide, addressing issues such as health inequities. The pursuit of a PhD or M.D. becomes a personal journey of lifelong learning and intellectual fulfilment.

Remember, your fellow researchers in your Disciplines, labs and clinics are not just colleagues; they are companions on this journey. Collaboration fuels innovation, and good science does not happen in isolation but rather through a vibrant community of thinkers, dreamers, and doers.

As you delve into your research, stay inspired by the bigger picture, but do not forget to revel in the beauty of the details. Each experiment, each word written, and each idea explored contributes to the tapestry of human knowledge.

The road ahead will be challenging, but the rewards are immeasurable. Cherish the “Aha!” moments, celebrate the small victories, and know that each setback is a stepping stone to success.

Professor Catherine Darker



School of Medicine
Academic Doctoral
Mentors and
Supervisors

Anatomy

Denis S. Barry, Assistant Professor

Clinical Medicine

Adriele Prina-Mello, Assistant Professor

Alan Irvine, Professor of Dermatology

Andrew Davies, Professor Consultant

Clíona Ní Cheallaigh, Associate Professor Consultant

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, Assoc Professor In Respiratory Biochemistry

Clinical Microbiology

Colm Bergin, Clinical Professor

Johannes Wagener, Associate Professor Consultant

Julie Renwick, Assistant Professor

Stephen G.J. Smith, Associate Professor

Tom Rogers, Adjunct Professor

Clinical Nephrology

Gareth Brady, Assistant Professor

Mark Alan Little, Professor Consultant

Histopathology

Cara Martin, Assistant Professor

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

Mark Ward, Medical Scientist

Prerna Tewari, Visiting Research Fellow

Sharon O'Toole, Senior Research Fellow

Stephen P. Finn, Senior Lecturer Consultant

Immunology

Derek Doherty, Professor in Immunology, Head of Discipline

Niall P. Conlon, Clinical Professor

Medical Gerontology

Cathal McCrory, Associate Professor in Life Course Development and Ageing

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

Kevin McCarroll, Clinical Senior Lecturer in Medical Gerontology and Consultant Physician

Nollaig M. Bourke, Ussher Assistant Professor in Inflammageing

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

Molecular Rheumatology

Ursula Fearon, Professor of Molecular Rheumatology

Viviana Marzaioli, Research Assistant Professor

Neurology

Bahman Nasserroleslami, Assistant Professor

Colin Doherty, Professor Consultant

Dara Meldrum, Associate Professor

Deirdre Murray, Assistant Professor and Clinical Specialist Physiotherapist

Miriam Galvin, Associate Professor

Niall P. Pender, Associate Professor in Neuropsychology

Orla Hardiman, Professor Consultant

Peter Bede, Professor in Neurology

Occupational Therapy

Clodagh Nolan, Assistant Professor

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

Obstetrics & Gynaecology

Deirdre Murphy, Chair in Obstetrics

Sharon O'Toole, Senior Research Fellow

Paediatrics

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

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

Roisin Mc Mackin, Assistant Professor, Physiology

Tamara Boto, Assistant Professor

Physiotherapy

Emer Barrett, Assistant Professor

Emer M. Guinan, Associate Professor

Fiona Wilson, Professor in Physiotherapy

John Gormley, Professor in Physiotherapy

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

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

Lina Zgaga, Associate Professor

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

Steve Thomas, Edward Kennedy Chair of Health Policy and Management

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, Senior Research Fellow

Niamh Lynam-Lennon, Research Assistant Professor

Stephen G. Maher, Associate Professor

A Selection of Current Doctoral Research Projects in 2023

Interhemispheric integration in functional neurological disorder and the enhancement of neuroradiology in medical curricula

PhD Student: Dearbhla Cullinane

Supervisor: Dr. Denis Barry

Funder: Trinity College Dublin, School of Medicine

Overview of Project:

Functional neurological disorders (FNDs) are classic neuropsychiatric disorders with unexplained symptoms, existing in the border between neurology and psychiatry. Relative to disorders such as Parkinson's disease, FND is associated with similar levels of disability with poorer mental health outcomes and represent one-third of patients in neurological outpatient clinics. In recent years, neuroimaging has indicated structural and functional changes in the brains of FND patients. Specifically, the corpus callosum - the white matter structure connecting the two cerebral hemispheres that integrates functional information involved in perception, attention and memory - is altered in patients with FND. However, this research remains in its early stages. Few findings have been replicated, there have been no samples > 100 patients, and even fewer studies have been linked to treatments. Furthermore, poor student and thus general practitioner understanding of the neural sciences has been linked to high neurology referral rates thus placing substantial burden on health care systems worldwide.

Using a mix methods design Dearbhla's research will address FND via two domains. The first objective is to build upon research examining corpus callosum function and structure using both behavioural and neuroimaging approaches. The second objective is to address student understanding of the neural sciences in Trinity College through the enhancement of radiology in neuroanatomical teaching.

Long-term impact of project:

Although FND is a clinical diagnosis with reliable features, many patients are reluctant to accept the diagnosis with physicians themselves bearing doubts on potential misdiagnoses. The identification of a positive neuroanatomical marker in addition to improving student understanding of the neural sciences could help limit unnecessary costs of multiple referrals thus promoting early diagnoses and allowing patients to engage in appropriate therapy.

PhD Candidate Quote :

"There is so little we know about Functional Neurological Disorders. I am excited to explore the neuroanatomical basis of FND and passionate in helping patients find appropriate treatment options".



Personalisation of Relapse Risk in Autoimmune disease

PhD Student: Angel Mary George

Supervisor: Professor Mark Little

Funding: D-real, Science Foundation Ireland

Overview of Project:

Antineutrophil cytoplasmic Associated vasculitis (AAV) is a rare autoimmune disease caused by the presence of Anti-neutrophil cytoplasm antibodies (ANCA) in blood. The unpredictable relapses, prolonged use of immunosuppressants and the infections associated with the use of immunosuppressants indicate the importance of predicting relapse among AAV patients.

The PARADISE study targets development of a clinical decision support tool that personalises immunosuppressive drug (ISD) therapy in autoimmune disease. Using ANCA vasculitis as the exemplar condition and leveraging off the Rare Kidney Disease registry and biobank, we will focus on deep phenotyping of the patient in remission. At this time point, we hypothesise that residual sub-clinical immune system activation renders the patient at high risk of subsequent relapse of the disease. Conversely, reversion of the immune system to a healthy resting state may indicate a very low flare risk. By applying statistical concepts and machine learning algorithms, we examine a wide range of clinical and personal data collected from the patients. This will enable us to forecast the likelihood of relapse. These will inform the physician about increasing ISDs or, indeed, discontinuing them altogether.

Long-term impact of Project:

We envisage that our assessment has the potential to reduce both relapse and ISD-associated infection, reduce healthcare costs, and increase the quality of life and build human capital in the area of research that is of significant relevance to Ireland

Quote:

“I believe that the application of statistical and machine learning concepts to the health data has the potential to uncover numerous findings. That enable us to draw practical and actionable conclusions, which can be applied in various healthcare settings.”



The Epidemiological Trends of Amyotrophic Lateral Sclerosis across Europe: A Collaborative, Machine-Learning-Based Approach to Precision Medicine

PhD Student: Robert McFarlane

Supervisor: Professor Orla Hardiman

Funding: Science Foundation Ireland

Overview of Project:

Amyotrophic Lateral Sclerosis (ALS) is a devastating neurodegenerative disease with complex aetiology and limited treatment options. Whilst great strides have been made in understanding certain aspects of the disease, translational treatment options remain elusive. We still do not truly understand what mediates genetic and environmental risk in the development of the disease and this is in spite of extensive patient information. Long running, human-based statistical modelling using high quality clinical datasets is what is needed to develop a greater understanding of ALS.

My work to date has shown that the incidence of ALS is increasing in Ireland. I have also found that the age of onset has increased over the past 30 years, while there has been no change in disease duration. My project will allow me to interrogate data from other long-established European datasets as part of the PRECISION-ALS consortium (www.precisionals.ie). I will look at the epidemiological trends of the disease across Europe over time, and will investigate how ancestry, genetics and other diagnostics alongside clinical information can alter or differentiate the genetic and environmental relationship. Using my background in clinical medicine and my interest in applied mathematics, I aim to deploy informed machine learning and deep learning techniques to gain useful insights into large European datasets that will inform clinical trials, health economics and the provision of care for people living with ALS.

Long-term impact of Project:

My work as part of this collaborative project will improve our insights into what is still an incompletely understood disorder. This will allow patients to be recruited more appropriately to clinical trials, health systems to plan more appropriately and provide a framework for the application of machine learning techniques to other neurodegenerative disorders.

Quote:

“Neurodegenerative disease is increasingly common; there is an urgent need to use and understand big data to elucidate aspects of the disease that cannot be deduced by clinical evaluation alone.”



The impact of antifungal treatments on the killing activity of immune cells against *Aspergillus fumigatus*

PhD Student: Sean Brazil

Supervisor: Johannes Wagener

Funding: Johannes Wagener start-up funds and industry

Overview of Project:

Fungal infections are a major threat to immunocompromised patients and typically require treatment with antifungals. Our research group studies the effects of antifungals on various fungal pathogens. My study focuses on *Aspergillus fumigatus*, an opportunistic hyphae-forming fungal pathogen and the major cause of invasive aspergillosis. We are using a novel assay to uncover potential synergistic and antagonistic effects between different antifungals. This assay uses a mitochondria-targeted green fluorescence protein (mito-GFP) to visualise the morphology and dynamic movement of the mitochondria to distinguish hyphae that are dead or alive. The assay also allows us to better understand the interactions between immune cells and the pathogen. The cell wall is a notable target of various antifungals. An altered cell wall changes the exposure of pathogen-associated molecular patterns (PAMPs) to the immune system. We aim to study the effects of such altered PAMP exposure on the interaction of *A. fumigatus* with immune cells. The imaging of the hyphae over time in the presence of various antifungals and/or immune cells could reveal how current antifungals can be used alone or in combination to best support the treatment and cure of patients with invasive fungal infections. Such research will allow for a better understanding of the synergistic effects between antifungals and the immune system.

Long-term impact of Project:

Invasive aspergillosis (IA) is a respiratory disease caused in 90% of the cases by *Aspergillus fumigatus*. Currently the death rate is high, treatment options are limited, and rising levels of antifungal drug resistance are becoming increasingly concerning.

Better understanding of antifungal drug interactions, including novel antifungals in clinical trials, will allow for better treatment options for patients suffering from IA and other fungal infections.

Quote:

“Better understanding of antifungal drug interactions, including novel antifungals in clinical trials, will allow for better treatment options for patients suffering from IA and other fungal infections.”



Harnessing the power of the liquid biopsy in epithelial ovarian cancer

PhD Student: Faye Lewis

Supervisor: Dr Sharon O'Toole,

Prof. John O'Leary, Dr. Mark Ward

**Funding: Higher Education Authority (HEA)
(North-South Research Programme)**

Overview of Project:

I am a second-year PhD student, in the All-Ireland Liquid Biopsies Consortium (CLuB), where we are synergistically evaluating all components of liquid biopsies (blood samples) for potential diagnostic, prognostic, and predictive markers using a pan-cancer approach. Enumeration of circulating tumour cells (CTCs) from liquid biopsies is FDA approved for prognostic monitoring in patients with breast, colorectal and prostate cancers. However, there remains a significant gap in our understanding, particularly in cancers with low CTC traffic, such as ovarian cancer (often referred to as the 'silent killer'). Therefore, my main focus is to chart and track patients with epithelial ovarian cancer (EOC) throughout their treatment and explore CTCs as biomarkers across five histological subtypes of this malignancy: high-grade serous, low-grade serous, endometrioid, mucinous, and clear-cell carcinoma. I hypothesise that the longitudinal characterisation and enumeration of CTCs combined with other liquid biopsy components being examined within CLuB such as extracellular vesicles and circulating tumour DNA may be prognostic and/or predictive tools in EOC. Furthermore, a critical aspect of my project will involve deciphering the mechanisms of haematogenous metastasis in vitro, as well as molecular profiling of CTCs from the different stages

of metastasis in EOC. Overall, I am very fortunate to be pursuing my PhD in a community that also allows me to extend my impact beyond the laboratory by engaging in advocacy and awareness initiatives with patients. These personal interactions are a constant reminder of the significance and purpose of my PhD research.

Long-term impact of Project:

The output of my project has the potential to enhance our understanding into recurrence patterns and treatment responses in patients with EOC, with direct applications in real-world clinical practice. The development of a comprehensive integrated 'liquid biopsy approach' in cancer metastasis offers a precision medicine solution for cancer patients on the island of Ireland.

Quote:

"Our patients are the heart of our research, constantly inspiring us to seek answers and solutions with dedicated commitment."



(in collaboration with the Cryobiology Laboratory at St. James's Hospital)

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

PhD Student: Hayley Foy-Stones
Supervisor: Nicola Gardiner, Derek Doherty, Tony McElligott, Tor Hervig
Funding: Irish Blood Transfusion Service

Overview of Project:

Allogeneic stem cell transplantation and adoptive transfer of autologous T cells engineered to express chimeric antigen receptors (CAR-T cells) are life-saving treatments for patients with refractory blood cancers. However, response rates remain low with ~30% of allogeneic stem cell recipients relapsing and ~50% suffering from graft-versus-host disease, and up to 50% of CAR-T patients relapsing. The aim of the present study is to identify prognostic biomarkers of responses to these treatments and ultimately to develop improved treatments. A biobank consisting of peripheral blood mononuclear cells (PBMC) and serum samples taken from patients undergoing both treatments at days 0, 7 and 14 days and at months 1, 3, 6 and 12 post-treatment has been established. At each time point, the PBMC are phenotypically analysed by flow cytometry, enumerating lymphocyte

and monocyte subsets and their differentiation, activation, and exhaustion status, while the serum samples are assayed for cytokine and analyte levels using multiplex ELISA. Persistence and exhaustion status of CAR-T cells is also being quantified. Preliminary results suggest that early reconstitution of specific subsets of innate T cells may be associated with a favourable response to allogeneic stem cell transplantation, while the expression of T cell exhaustion markers on CAR-T cells may predict a failure to respond to CAR-T cell therapy.

Long-term impact of Project:

This project will lead to the establishment and implementation of a flow cytometry-based platform for the routine monitoring of patient's post CAR-T cell therapy and post allogeneic stem cell transplantation. It is hoped that it will identify biomarkers that predict responses to these treatments. The data will be used to develop modifications to these therapies that will lead to improved results as well as novel cellular therapies.

Quote:

"Thrilled that I can pursue my passion for research whilst continuing to work as a Medical Scientist. I hope that my research will contribute to improving patient outcomes for blood cancer patients in the future"



Innate Immune Variation & Accelerated Biological Ageing: A Systems Analysis using Longitudinal Multi-Omics Data

PhD Student: Matt McElheron
Supervisor: Dr. Nollaig Bourke,
Dr. Aisling O'Halloran
Funding: Provost PhD Award

Overview of Project:

Ageing is the largest risk factor for the most prominent diseases in the world today, but “biologically” some people are ageing faster than others. The rate at which we accumulate age-related deficits varies greatly, even in people of the same age and with similar lifestyles. Something else which varies massively within and across older age groups is the immune system, normally the first line of defence against infectious and non-infectious disease.

My research asks how these two age-related phenomena overlap and contribute to one another? Why and when do age-related changes to the immune system occur in some people but not others? What is the interplay between these immune changes and our rate of biological ageing? Specifically, my work is particularly interested how epigenetic changes, viral infections, and other preventable risk factors may mediate age-related changes to our immune system and our health.

The objective is to identify patterns within immune, genetic, and clinical data which inform us about the processes of biological and related immune ageing. This requires computationally complex, data-driven approaches; including the development of novel bioinformatic and machine-learning frameworks, harnessing over 36 trillion datapoints from The Irish Longitudinal Study on Ageing (TILDA) alongside UK

and French Cohorts. The goal is to better understand the factors that lead to successful ageing and, ultimately, to help inform medical experts and policy on how best to improve the experience of ageing for older adults.

Long-term impact of Project:

Improving our understanding of when and how age-related changes to the immune system happen is crucial to bridging the gap between ageing and health. Ultimately, this research aims to provide evidence for healthcare professionals, enabling the improvement of lives and the experience of ageing in older adults across the population.

Quote:

“The school has provided a multi-disciplinary, positive, and fun platform within which a young researcher can explore their research interests, develop a collaborative network, and contribute to world-class translational research.”



Differential pathogenic mechanisms drive distinct stromal cell inflammatory responses in Rheumatoid and Psoriatic Arthritis

PhD Student: Orla Tynan

Supervisor: Professor Ursula Fearon

Funding: Arthritis Ireland

Overview of Project:

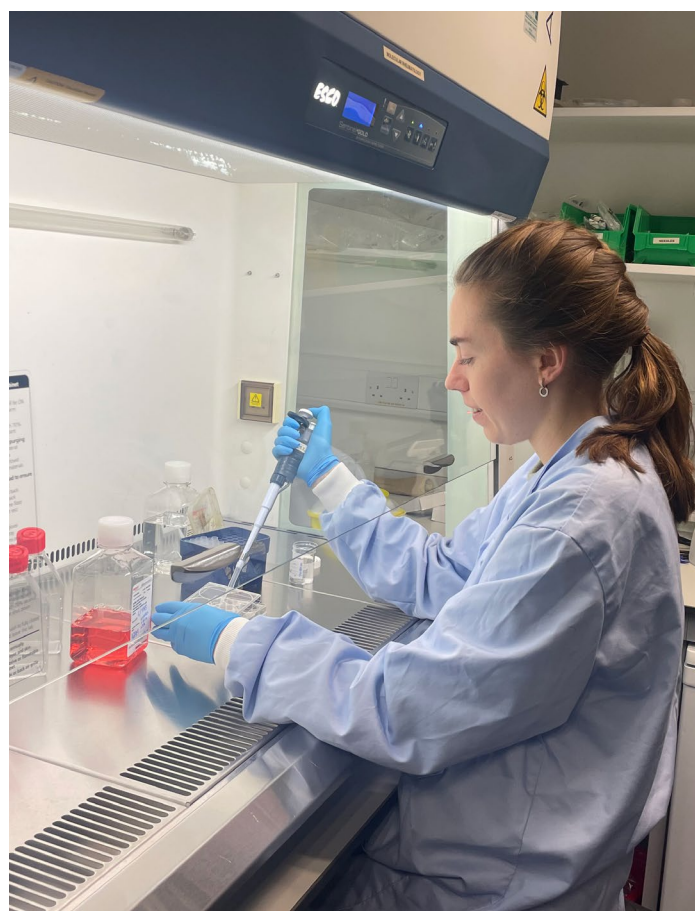
Inflammatory Arthritis (IA) is characterised by neoangiogenesis, leukocyte infiltration, the release of pro-inflammatory mediators and activation of synovial fibroblasts (FLS), which leads to joint destruction. Despite advances in treatment over the last 20 years, a significant proportion of patients have suboptimal responses or no response to treatment which leads to lifelong functional disability. Currently there are no cures. The two most common forms of IA are rheumatoid arthritis (RA) and psoriatic Arthritis (PsA). While common pathogenic features exist between these two diseases, significant differences are observed at the clinical, immunological, cellular, and molecular levels, in addition to therapeutic response. At a molecular single-cell level little is known about the distinct underlying mechanisms involved in driving these diseases in the target tissue. However, one of the key cell types involved are the FLS which mediate both immune and invasive mechanisms. We have demonstrated distinct differences in FLS populations between RA and PsA and have shown that key receptor-ligand interactions between immune and stromal cells synergistically drive distinct FLS function in RA and PsA. Therefore, in this project the PhD student is using novel experimental approaches using 2D/3D culture models using patient derived tissue/cells which closely reflect the in-vivo joint microenvironment to dissect the distinct molecular signatures of FLS subtypes from RA and PsA to define (i) differential pathogenic mechanisms, (ii) disease progression/response and (iii) identify new targets for novel therapeutic strategies.

Long-term impact of Project:

Currently, we cannot predict, (i) which patients will develop more severe/erosive disease, (ii) which patients will respond to a specific treatment at time of onset, and (iii) why RA and PsA responses to current targeted therapies differ. Thus, the current project focuses on identifying the cellular mechanisms at the site of inflammation (synovium) in order to identify new disease biomarkers and treat-to-target therapies to improve patient outcomes and reduce disease burden.

Quote:

“In this project I aim to identify distinct molecular signatures that will further define disease pathotypes, leading to better treatment strategies and response.”



Second-line tests of fetal wellbeing in labour

PhD Student: Dr Sahr Yambasu

Supervisor: Professor Deirdre Murphy

Funding: HRB Definitive Intervention and Feasibility Awards (DIFA) for year 1 (2022-2023)

Overview of Project:

In labour, the fetal heart rate (FHR) is monitored through intermittent auscultation or continuous electronic monitoring (i.e. cardiotocography, CTG). CTG in labour can be challenging to interpret. Second line tests of fetal wellbeing, such as fetal blood sampling (FBS) or digital fetal scalp stimulation (dFSS), provide additional information on the status of the fetus during labour. This research evaluates different second line tests of fetal wellbeing in labour.

A multi-centre randomised controlled trial (FIRSST Trial) was designed to compare FBS to dFSS in labouring women. The primary outcome was caesarean section in labour, while a range of secondary outcomes addressing maternal and neonatal wellbeing were also recorded. However, due to feasibility issues leading to the early closure of the trial, the focus shifted to examining detailed data from the cohort of 500 consented non-randomised patients to explore changes in the approach towards the assessment of fetal wellbeing in labour and reasons for the marked rise in caesarean section rates.

Furthermore, a comprehensive systematic review of studies (randomised and observational) is being performed to evaluate all types of second-line tests of fetal wellbeing in labour. Also, a national survey

of practice is examining the attitude and practices of Irish obstetricians in relation to second-line tests of fetal wellbeing in labour.

Long-term impact of project:

The inability to reliably assess fetal wellbeing in labour contributes to rising caesarean section rates and associated morbidity. An increased understanding of the effectiveness of different adjunct tests in assessing fetal wellbeing in labour will reduce caesarean section rates and lead to better maternal and neonatal outcomes.

Quote:

“This research, through the support of my supervisor, the maternity hospital staff and the women that participated in the trial, has the potential to bring about safer outcomes for labouring women and their babies.”



Mutual support between patients and family caregivers in palliative care

PhD Student: Rachel McCauley

Supervisor: Dr Geraldine Foley

Funding: Provost's Project Award

Overview of Project:

Palliative care is an approach to enhance quality of life and alleviate symptom distress for people with serious health-related suffering due to severe illness and especially for those near the end of life. Patients in palliative care often rely on family for caregiving. However, little is known about reciprocal dimensions of support provision between patients with advanced illness and family caregivers in palliative care and how their mutually supportive roles impact their decision-making in care.

Through qualitative methods, this innovative project is generating an explanatory framework to explain processes of mutual support between patients and family caregivers in palliative care, factors that facilitate and/or restrict supportive relations between the patient and caregiver, and how patient and caregiver mutual support impacts directly on decision-making for patient treatment and care. In-depth qualitative interviews on the topic have been undertaken with patients with advanced illness and caregivers recruited from a large regional specialist palliative care service and are being analysed using the grounded theory method. Extensive field notes, participant member checking, and analytical memos have supported the analysis. Some of the findings have already been published in leading journals in the field including Palliative Medicine and Journal of Pain and Symptom Management.



Long-term impact of project:

The findings will serve the basis for developing patient and caregiver dyadic interventions in palliative care to improve patient and caregiver relatedness in palliative care. From a healthcare policy perspective, the explanatory framework will allow for further development and/or expansion of decision-making models both within and beyond palliative care.

PhD Candidate Quote :

“Understanding how supportive behaviours between patients and caregivers impacts on treatment decision-making is needed to facilitate communication between patients and caregivers and optimise care outcomes for the patient and caregiver”.

STARFISH Project: Sustained inflammation in Preterm Infants and Multiorgan dysfunction correlated with long term outcomes

PhD Student: Dr. Philip Stewart

Supervisor: Professor Eleanor Molloy

Funding: Health Research Board (HRB)

Overview of Project:

The worldwide incidence of prematurity is increasing and it remains the principal cause of death in children under 5. It is linked with multiorgan injury, long term chronic and cognitive morbidity, and dysregulated inflammation. Dysregulated inflammatory responses occur in preterm sepsis and necrotising enterocolitis. We have shown that children with dysregulated immune response in early stages of life such as cerebral palsy and neonatal encephalopathy continue to have persistent inflammation later in life and have adverse developmental outcomes. There is an urgent need to map the future of preterm infants and investigate sustained inflammation to avoid complications in later childhood and adulthood.

We have previously characterized and investigated dysregulatory inflammatory responses in a cohort of over 100 preterm infants in the first few weeks of life and evaluated the role of gender and multi organ dysfunction and neurological outcome and developed tools for multiorgan dysfunction assessment and correlation with outcomes. We plan to follow up these highly phenotyped infants to test our hypothesis that early multi-organ and inflammatory dysfunction in preterm neonates may persist in later childhood and correlate with developmental outcome, sepsis, neuro imaging and multi organ function. STARFISH will investigate the association of perinatal inflammation with outcomes and create an inflammatory biomarker panel for prediction of outcomes.

Long-term impact of project:

Our goal is to understand the mechanism of sustained inflammation in preterm infants which can lead to furthering our knowledge of tertiary level of damage caused by inflammation and assist us in developing immunomodulatory therapies and predicting outcomes for families.

PhD Candidate Quote :

“Surviving premature infants are at risk of long-term issues, STARFISH hopes to identify and understand these mechanisms and whether we can predict or eventually modify preterm outcomes”.



Health Technology Management in Ireland

PhD Student: Rosealeen Barrett

Supervisor: Dr Laura McCullagh,

Prof Michael Barry

Overview of Project:

The HSE multi-disciplinary Medicines Management Programme (MMP) was established in 2013. The MMP has implemented a number of post-reimbursement Health Technology Management (HTM) initiatives which are aimed at enhancing evidence-based and cost-effective prescribing nationally. This research will investigate the impact of one such initiative, the Managed Access Protocols (MAPs), on the national expenditure and health outcomes associated with certain high-cost drugs.

Research to date has pertained to dupilumab. In 2021, the HSE approved the reimbursement of dupilumab for the treatment of atopic dermatitis, in adolescents and adults, subject to an MMP-led MAP. Under this MAP, only those patients with refractory, moderate-

to-severe atopic dermatitis are deemed eligible to receive the drug. This is a subgroup of the licensed population. The subgroup had been identified by the National Centre for Pharmacoeconomics (NCPE) during their Health Technology Assessment, as being the subgroup in which the drug was expected to be most effective and most cost effective, relative to standard of care, in Ireland.

For this research, data from MAP applications for dupilumab (which had been submitted by consultant dermatologists) for individual patients was analysed. Also, data from the HSE-Primary Care Reimbursement Service pharmacy claims database were analysed. The number of patients who received dupilumab during the study period was determined. Key characteristics of the eligible population were investigated. In total, 92% of submitted MAP applications were approved. All patients who received the drug (n=267) had severe, refractory atopic dermatitis.

Long-term impact of project:

This research will be of benefit to drug-reimbursement decision makers nationally and internationally. It will highlight the value of utilising HTM as a condition of reimbursement and make recommendations on how HTM initiatives could further develop. Research and evidence in HTM are evolving internationally; this work will contribute to this evidence base.

PhD Candidate Quote :

“This experience has afforded me the opportunity to research a topic which genuinely interests me. I hope the outputs of this research will make a significant contribution to the literature and will help inform drug reimbursement decisions.”



Combining Neuroimaging and Neurophysiological Analysis to Identify Comprehensive Biomarker Profiles for Amyotrophic Lateral Sclerosis and Huntington's Disease

PhD Student: Eva Woods

Supervisor: Dr. Roisin McMackin

Funding: Discipline of Physiology, Infnitome Imaging Award

Overview of Project:

Huntington's Disease (HD) and Amyotrophic Lateral Sclerosis (ALS) are terminal neurodegenerative diseases that cause devastating, highly heterogeneous, decline in movement, cognition and behaviour. To date, little-to-no treatments have been identified. In the case of both diseases, biomarkers which enable direct measurement of the disease's pathophysiology are lacking. In HD, this means that therapeutic intervention may occur too early or too late, resulting in failure. In ALS, this means that variation in how individuals are affected can't be accounted for, such that useful therapies may be missed. In both HD and ALS, drugs may also fail in clinical trials due to the inability to directly measure the effects of the drug on the disease.

This research project aims to tackle these issues by comparing and combining different neuroimaging and neurophysiological methods to identify HD and ALS biomarkers. Specifically the project has two main objectives:

- To identify early HD biomarkers. We will examine what abnormalities in the structure and function of cortical networks can be detected in people with premanifest HD, using MRI and transcranial magnetic stimulation (TMS). Then, we will determine if detected cortical network abnormalities in premanifest HD are suitable as diagnostic biomarkers, using discriminative analyses.
- To identify prognostic ALS biomarkers. We will examine if combining measurements of various known cortical network abnormalities in ALS, measured using TMS and EEG, can reveal prognostically distinct subphenotypes of ALS driven by different patterns of cortical pathophysiology.

Long-term impact of project:

Identifying these urgently needed biomarkers of HD and ALS can enable more accurately timed and targeted intervention with potential therapies, increasing the likelihood of slowing or halting these diseases. Furthermore, such biomarkers can enable more sensitive detection of useful treatments through their ability to stratify participants and directly measure biological effects.

PhD Candidate Quote :

"This is a really exciting project that looks at combining our tools for examining brain structure and function to form a more detailed understanding of how these diseases affect the brain and how we can treat them".



Recruitment of adolescent girls into physical activity programmes: Evidence to inform recruitment strategies for programme developers and policymakers

PhD Student: Tanya O'Brien

Supervisor: Dr Emer Barrett &

Professor Catherine Darker

**Funding: Irish Research Council and
Dublin City Sport & Wellbeing Partnership**

Overview of Project:

Physical activity is essential for youth physical and mental health and yet just 7% of Irish adolescent girls meet the World Health Organisation's guideline of 60 minutes of moderate-to-vigorous intensity physical activity per day. Worldwide, there is a recognised gender gap in adolescent physical activity participation, with girls' participation 7% lower than boys. Regular exercise yields numerous benefits, including improved self-esteem, academic performance, cardiovascular health, and muscular fitness, while also reducing the risks of anxiety, depression, diabetes, cardiovascular disease, and obesity.

Enhancing physical activity levels among teenage girls requires successful recruitment and retention in acceptable activity programs. While considerable attention has been given to retention strategies, recruitment of adolescent girls remains a substantial challenge that undermines the effectiveness of physical activity interventions. This research project seeks to answer the fundamental question: "How can we enhance the recruitment of adolescent girls into physical activity programmes?"

Our project aims to leverage existing research findings and expert consensus to create a set of recommended recruitment strategies tailored to this demographic.



Subsequently, we will evaluate the effectiveness of these recommended recruitment strategies in a non-randomised pilot study.

Long-term impact of project:

Findings from this research will guide recruitment strategies for both community physical activity providers and researchers focusing on adolescent girls. Through this work, we aim to boost enrolment in physical activity programmes and thereby increase physical activity levels in this vulnerable demographic.

PhD Candidate Quote :

"Physical activity and sport can make a huge impact on the lives of adolescent girls, as well as laying foundations for lifelong healthy habits. I am excited and grateful for the opportunity to research how to recruit more girls into physical activity programmes".

Mental Capacity for Treatment Decisions in Psychiatry Inpatients

PhD Student: Aoife Curley

Supervisor: Professor Brendan Kelly

Overview of Project:

This research examines how many people with mental illness admitted to four psychiatry units in Ireland have the mental capacity to make decisions about their treatment. It assesses mental capacity using a clinical tool (the MacArthur Competence Assessment Tool for Treatment) and using the legal criteria set out in the Assisted Decision-Making (Capacity) Act 2015 to see how well psychiatric inpatients understand the treatment choices they face and how well they can make decisions.

This research is especially timely since the Assisted Decision-Making (Capacity) Act 2015 commenced in April 2023, replacing the outdated wardship system in Ireland. The purpose of the 2015 Act is to assist persons in exercising their decision-making capacity using the new statutory framework. It

aims to reform the law for people whose capacity is in question and who need help making decisions now or in the future. The 2015 Act legislates for a formal change in how mental capacity is assessed and allows for supports for people to make specific decisions should their mental capacity be impaired.

This research provides the first assessment of the prevalence of mental incapacity for treatment decisions in psychiatric inpatients in Ireland and elucidates the relationships between mental capacity and key clinical and demographic factors. Uniquely, it compares assessments of mental capacity based on legal criteria with those based on clinical criteria, to establish the concordance, if any, between these two approaches to assessing mental capacity.

Long-term impact of project:

In terms of Irish capacity legislation, the Assisted Decision-Making Capacity Act 2015 is the most significant progression in over a century. While decision-making capacity is a legal concept, it has extensive implications in clinical practice. The 2015 Act has the potential to have huge impact not only for patients, but also for their families and healthcare professionals. As there have been no studies in Ireland assessing mental capacity in psychiatric inpatients in Ireland prior to this, this research will determine – for the first time - how many psychiatric inpatients lack capacity and will require supports legislated within the new Act. This has implications for both clinical practice and resourcing the new legislation, as well as lessons for other jurisdictions commencing similar legislative reforms.

PhD Candidate Quote :

“I hope this research helps advocate for resources to assist those who lack mental capacity make autonomous decisions.”



Construction and Validation of a theoretical framework for measuring health staff

PhD Student: Arianna Almirall Sanchez

Supervisor: Prof. Steve Thomas, Dr Pádraic

Fleming, Prof Richard Layte, Prof Emer McGowan

Funder: Health Research Board (HRB) and

RESTORE project

Overview of Project:

The health workforce is the motor of any health system. Understanding how to support a resilient and engaged workforce, particularly in contexts that are prone to shocks of various kinds (Covid19 pandemic, migration), is critical. Sufficiently staffed health services strengthen health system resilience. Despite the benefits of having an engaged workforce, there is no unique theoretical framework for evaluating employee engagement and measuring engagement is not straightforward. The hierarchy of effects framework utilised in Ireland for evaluating staff engagement is not tailored for the Irish Health System and it isn't a multidimensional instrument, thus it doesn't take into consideration the psychological needs or the individual characteristics of the Irish health staff. This PhD is assessing health staff engagement in Ireland by developing an engagement measurement framework and instrument tailored for the Irish Health System. It is using an explanatory sequential design where the outcomes generated during the first phase (scoping review, secondary data analysis and secondary data validation) will be deepened through the second phase (qualitative

analysis- focus groups) and integrated using a mixed-methods matrix (Pillar Integration Process). Data collected in two waves (2016, 2018) of the HSE staff engagement surveys are utilised for the analysis.

Long-term impact of project:

The outputs of this research will highlight the main constructs and dimensions associated with health staff engagement in Ireland and the causes/factors linked to the disengagement of many healthcare workers. This project will also provide a theoretical framework and instrument for measuring employee engagement tailored for the Irish context.

PhD Candidate Quote :

“As a researcher I realise the PhD has been a journey. I value the progressive /cumulative effect on the information I have learned, understood, practiced, and applied”.



Barriers to Access to Radiation Therapy Services: BARS

PhD Student: Claire Poole

Supervisor: Prof. Laure Marignol and Prof. Michelle Leech

Overview of Project:

The overall aim of Claire's project is to explore the barriers and facilitators to radiation therapy for optimal access to radiation therapy services by the cancer community. Radiation therapy (RT) is an effective option to control disease in approximately 50% of cancer patients. However, only 1 in 4 patients that require RT get access to it. The work will identify gaps in knowledge of radiation therapy in the cancer community, explore how this community perceives radiation therapy and seek to identify the key barriers that could contribute to the globally reported sub-optimal uptake of this life saving treatment.

To complete this exciting project Claire is working with general members of the public, current and former

radiation therapy patients, and their carers, as well as health care professionals. She is analysing data taken from the evaluation of an online 'MOOC entitled "An introduction' to Radiation Oncology: from diagnosis to survivorship (<https://www.futurelearn.com/courses/radiation-therapy>). This hugely successful course was funded by an EIT-health project grant obtained by Prof. Michelle Leech. Over 10,000 participants worldwide have enrolled on this free educational resource to date. To further aid her research work, Claire has secured funding from the Irish Cancer Society and TCD Ignite to set up the first Irish Radiation Therapy patient advocacy group.

Long-term impact of project:

This research will give insight into cancer patient perspective on radiation therapy as a cancer treatment with the aim identifying their needs and empowering their voice in health service research. In the long term, novel initiatives will be developed to improve patient access and experience needing radiation therapy.

PhD Candidate Quote :

"I hope that BARS will help anyone with a diagnosis of cancer access radiation therapy if this treatment can save their life, or improve their quality of life."



Boosting Oxygen Diffusion in the Radioresistant Oesophageal Tumour Microenvironment to Improve Radiation Response.

PhD Student: Maitiú Ó Murchú

Supervisor: Prof Jacintha O’Sullivan

Funder: Breakthrough Cancer Research

Overview of Project:

My PhD project, funded by Breakthrough Cancer Research, aims to develop novel oxygen-carrying perfluorocarbon nanoemulsions (PFC-NEs) with the aim of improving response to radiation in oesophageal adenocarcinoma (OAC) patients.

The objectives of this project are to formulate novel PFC-NEs, to evaluate their preclinical toxicity, and to characterise their functional biological effects in vitro using radiosensitive and radioresistant OAC cells and ex vivo using consented OAC patient samples from St James’ Hospital. To date, we have shown that these PFC-NEs function as a carrier of a large amount of oxygen, and that these formulations are not toxic using different in vitro and in vivo systems. Our current work is elucidating whether these formulations have potential to potentiate radiotherapy in OAC in terms of cell clonogenicity, DNA damage, DNA repair, metabolism, and inflammatory mediators. With these objectives, we aim to acquire a pre-clinical data package about the formulation, toxicity, and efficacy of these novel oxygen-carrying PFC-NEs, and their potential for clinical translation.

Knowing that only approximately 30% of OAC patients have a pathological complete response to neo-chemoradiotherapy and surgery, this project hopes to offer an additional treatment approach to OAC patients to improve their response to treatment.

Long-term impact of project:

This PhD project is unique as it is aiming to develop novel oxygen-carrying drug treatments for OAC patients with the hopes of improving their response to radiation treatment. This PhD project could support further development of these drugs with the hope of translating them to the clinical setting.

PhD Candidate Quote :

“This PhD project has provided me with a platform to gain significant research, communication, and project management skills to pursue a career in cancer research.”



Directory of active
MD and Doctoral
Research Projects
2023-2028

Anatomy

PhD Using evidence based medicine to investigate the impact of ultrasound teaching on medical training to enhance patient safety during nerve block procedures.

PhD Interhemispheric integration in functional neurological disorders and the integration of neuroradiology into medical curricula.

PhD Modeling Hair Follicle Breakdown in The Inflammatory Skin Disease.

Clinical Medicine

PhD 3D model for safety assessment of nanomaterials.

PhD Extracellular vesicles as therapeutics in lung cancer.

PhD Hyperthermia treatment applied to cancer.

PhD Exploiting Immunometabolism in Tuberculosis (EXTINCT).

PhD Identifying Macrophage Immune Defects In Susceptible Hosts – A Mycobacterium tuberculosis and HIV Co-infection Model.

PhD Characterisation of the Epithelial barrier in early life and in atopic dermatitis.

PhD Specialist palliative care in cancer survivorship.

PhD Circadian rhythm disorders in advanced cancer.

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 The interplay between alveolar macrophages and type II epithelial cells in COPD.

MD The pathogenesis of Hidradenitis Suppurativa.

MD Assessment of xerostomia management strategies in patients with advanced cancer.

MD Outcomes of Paediatric Inclusion Health.

MD Oral Symptom Assessment Scale (OSAS): Validity and Reliability.

MD To identify predictive biomarkers of non-infectious pulmonary complications post bone marrow transplantation.

MD The effects of Reslizumab Therapy in Severe Eosinophilic Asthma.

MD A study of Doppler Ultrasound in the diagnosis and monitoring of Giant Cell Arteritis (GCA).

MD The effects of corticosteroids on human macrophages infected with Mycobacterium tuberculosis.

MD A study on cardiac pacing and cognition.

MD HDL cholesterol efflux capacity (HDL-CEC), HDL lipoprotein function and lipidomic analysis in T1DM and risk of atherosclerosis.

MD Prevalence of and Interventions for Fatigue in Patients with Inflammatory Bowel Disease.

MD Hyperuricaemia as a marker of future metabolic and cardiovascular disease.

MD Assessment and Management of Pancreatic Cysts.

MD An Evaluation of Epilepsy and Driving in Ireland including Patient Impact, Understanding.

Clinical Microbiology

PhD An Investigation into the Role of Pigs in the Epidemiology of Human Clostridioides difficile Infection.

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 Bacteriophage therapy of E. coli.

PhD The extracellular glycome of Extraintestinal E. coli.

PhD Antisocial Behaviour in the Cystic Fibrosis Airway Microbiome.

PhD The impact of antifungal treatments on the killing activity of immune cells against Aspergillus fumigatus.

MD A study of Mycobacterium bovis infection.

Clinical Nephrology

PhD Investigation of Molluscum Contagiosum Virus inhibitor of both NFkB and IRF signalling MC009.

PhD Cross-disease Assessment of Phenotypic and Functional Granulocyte Heterogeneity.

PhD Personalisation of relapse risk in autoimmune disease.

PhD Metabolomic analysis of monocytes in ANCA Vasculitis.

PhD Investigation of Molluscum Contagiosum Virus inhibitor MC089 which targets IRF activation.

PhD Investigation of Molluscum Contagiosum Virus inhibitor MC008 which targets human DNA sensing.

Gastroenterology

MD A study of clinical scores, investigation and management of gastrointestinal bleeding.

MD An investigation of completion rates in capsule endoscopy.

Haematology

MD Determinants of Immune Reconstitution After Allogeneic Haematopoietic Stem Cell Transplantation Performed With Anti-T-Lymphocyte Globulin.

Health Policy & Management

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.

PhD Power in the health policy process: A Case Study 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 Examining the relationship between hospital cleaning staff, patient perceptions of cleanliness and patient.

Histopathology

PhD Harnessing the power of the liquid biopsy in epithelial ovarian cancer.

PhD Biomarkers for cervical cancer.

PhD Molecular Pathways in HPV-associated Cervical Carcinoma.

PhD Identifying mechanisms of immune tolerance to Human Papilloma Virus (HPV) infection and the development of HPV-associated neoplasia.

PhD HRD in ovarian cancer.

PhD Characterizing the Molecular Phenotype of CTCs in Central and Peripheral Metastases.

PhD Enhanced AI enabled digital pathology.

MD A prospective case control study of concurrent Non-alcoholic fatty liver disease (NAFLD) and Inflammatory bowel disease (IBD).

MD A multilayer investigation of the interaction between HPV, TLRs (4, 7, 9), MyD88 and endosomal trafficking in a panel of HPV positive and HPV negative cervical carcinoma cell lines and cervical tissue specimens.

MD A pilot study to identify novel biomarkers of response, resistance and toxicity of Immune checkpoint inhibitors (ICI).

Immunology

PhD Development of a bioanalytical platform to monitor immune reconstitution post allogeneic stem cell transplantation and post CAR-T therapy.

PhD The mechanisms of sexual dimorphism in allergic disease and chronic spontaneous urticaria.

PhD Understanding the immune response to influenza vaccination in patients with haematological malignancy.

MD Non immunological risk factors associated with prior Staphylococcus aureus infection.

Infectious Diseases

MD COVID-19 in Frontline Healthcare Workers : Epidemiology, Serology and Virology.

MD COVID-19 in Irish Healthcare Workers; SARS-CoV-2 antibody prevalence, epidemiology of infection, antibody response to vaccination and effect on disease presentation.

MD Cost-effectiveness analysis of panel testing for blood-borne virus infections.

Medical Gerontology

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 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 Polypharmacy and potential inappropriate prescribing in community dwelling people living with dementia.

PhD Folate and Vitamin B12 in The Irish Longitudinal Study on Ageing cohort: Associations with cognitive function.

PhD The role of the skeletal muscle pump in the relationship between sarcopenia and orthostatic haemodynamics.

PhD VINCI-AD: An Investigation into the Safety, Tolerability and Efficacy of Transcutaneous Vagus Nerve Stimulation in Mild Cognitive Impairment.

PhD Using machine learning to model physiological reserve in older adults.

PhD Metabolic syndrome, chronic low-grade inflammation, accelerated ageing, cognitive impairment and frailty.

PhD Investigating the role of the innate immune system in ageing-associated pathophysiology: implications for anti-viral immunity and COVID-19.

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 Clinical Utility of Cerebral Perfusion in Syncope and Falls.

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.

MD Investigation of the brain signatures of frailty in older adults.

MD Exploring Novel Biomarkers of Neurocognitive Decline in Type-2 Diabetes (ENBIND)- a longitudinal perspective.

MD Modifiable risk factors for dementia, awareness, and barriers to brain health behaviours.

MD 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.

MD The neuroscience of frailty.

MD Teaching of stroke medicine to undergraduate medical students.

MD Investigation of Bone Health in TUDA and TILDA.

MD An investigation of the capability of the Reveal LINQ™ Falls Prediction Research System to identify early changes in physiological parameters as risk predictors of falls.

MD Influence of frailty on hypertension management outcomes in TILDA.

MD Nursing home residents attending the acute hospital before and during a pandemic: Clinical characteristics and outcomes, and impact of a specialist intervention team to manage care.

MD Cardiovascular Autonomic Function and Response to Aortic Valve Replacement.

MD The longitudinal impact of microstructural integrity of white matter hyperintensities.

MD Prevalence and influence of modifiable risk factors for dementia on cognitive and gait performance in people with mild cognitive impairment attending a memory service.

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 Monocyte development signature in Rheumatoid and Psoriatic 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.

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 Finding neurophysiological Biomarkers of cognitive network dysfunction across neurodegenerative diseases: differential diagnostics, novel re-phenotyping, and clinical trial design.

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

PhD Electroencephalographic Biomarkers for Tracking Cognitive Network Dysfunction in Amyotrophic Lateral Sclerosis.

PhD Tuberous Sclerosis Complex (TSC) The Experience in Ireland.

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 Novel Non-invasive Assessment of the Spinal Cord Electrical Activity for Neurological Diagnosis.

PhD Information flows in specialist MDT clinics.

PhD Pin-Pointing the Weakest Link in Network Collapse in Amyotrophic Lateral Sclerosis: Multi-Modal Neurophysiological Biomarkers of Disrupted Cortical Connections for Patient Selection and Intervention.

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

PhD Mapping electroencephalographic changes in amyotrophic lateral sclerosis.

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

Obstetrics

PhD	Second-line tests of fetal wellbeing in labour.
MD	Lymph node status and coagulation biomarkers as predictors of venous thromboembolism in gynaecological cancer patients post surgery.

Occupational Therapy

PhD	The implementation of a collaborative peer learning 2:1 model of practice placement education within dietetics pre-registration training in Ireland.
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 experience of autistic women in navigating the world of work.
PhD	The process of discharging stroke survivors from physiotherapy stroke care: The physiotherapist perspective.
PhD	Using Rasch analysis to refine the psychometric properties of the Electronic Trinity Student Profile (eTSP; Nolan, 2011).
PhD	An exploration of the occupational (in)justices experienced by asylum seekers and refugees within the Irish context.
PhD	Support exchange between patients and family caregivers in palliative care.
PhD	The Development of a complex occupational therapy intervention for neonatal units in Ireland.
PhD	Testing the Effectiveness of “Fatigue and Activity Management in Work” (FAME-W) Intervention for Individuals with Inflammatory Arthritis.
PhD	An exploration of Occupational Therapy Practice with Children experiencing Complex Trauma.
PhD	An exploration of the mealtime experience for family carers of people with motor neurone disease.

Oncology

MD	An evaluation of the immune-metabolic signature of visceral obesity on tumour microenvironment in the setting of colorectal carcinoma.
MD	Evaluation of Clinical, Genomic and Tissue Microenvironment Secretion Profiles Associated with Ustekinumab Response in Inflammatory Bowel Disease Patients.

Ophthalmology

MD	A study of Leber Hereditary Optic Neuropathy (LHON).
MD	Automated deep learning in retinal images.

Paediatrics

PhD	PUFFIN: Point of care ultrasound for functional multi-organ evaluation in neonatal encephalopathy.
PhD	PANDA: Psychological And NeuroDevelopmental Assessment of Neonatal Encephalopathy.
PhD	CRADLE: Circadian Rhythm Alterations and outcomes in neonatal Encephalopathy.
PhD	POLARIS: Persistent inflammation in traumatic brain injury in children.
PhD	PLATYPUS: Preterm infant Immunomodulation to Treat sepsis and brain injury Prevention.
PhD	FIREFLY project: Follow up of Inflammatory Responses and multiorgan outcomes Following neonatal brain injury.
PhD	CANARY: Childhood Allergy: Neutrophil Activity in Response to Peanuts.
PhD	T Cell Phenotype in Neonatal Brain Injury and Followup in Childhood.
PhD	DREAM project: Down syndrome, neurodevelopment And Multiorgan outcome.
PhD	STARFISH: Sustained Inflammation in preterm infants and multiorgan dysfunction.

Pharmacology & Therapeutics

PhD	Role of PP2A in modulation brain microvascular endothelial cell function.
PhD	The Impact of Health Technology Management in the Irish Healthcare Setting.

Physiology

PhD	The involvement of the immune system in Parkinson's disease.
PhD	Analyzing the role of microglia on the neurological outcomes after birth asphyxia.
PhD	Developing inflammasome assays in MS.
PhD	Assessing the contribution of the AMPA receptor to physiological and pathophysiological brain rhythms in vitro.
PhD	Targeting endosomal TLR signalling and inflammasome activation with cannabinoids in immune cells with relevance to Multiple Sclerosis.
PhD	Combining Neuroimaging and Neurophysiological Analysis to Identify Comprehensive Biomarker Profiles for Amyotrophic Lateral Sclerosis and Huntington's Disease.
PhD	Effects of early-life experiences on microcircuitry in avian forebrain areas involved in stress regulation.
PhD	Decoding neuroinflammatory effects on neuronal circuits at the interface of dementia and delirium.

PhD	Investigating sex differences in the role of T cells in AD.
PhD	The brain-muscle loop: using exercise to target neuroinflammation.
PhD	The effects of antipsychotics on glial cells, neuroinflammation and demyelination.
PhD	Contributors of discrete dopaminergic neurons to the modulation of memory strength.
PhD	Investigating novel therapies for metachromatic leukodystrophy (MLD).
PhD	Terpene/cannabinoid modulation of endosomal TLR signalling in immune cells.
PhD	Sports Concussion and Brain Health: The need for Objective and Diagnostic Tools of Pathological Brain Indices.
PhD	Glioblastoma multiforme (GBM) biology and neurotransmission: Implications for therapeutic approaches.

Physiotherapy

PhD	Heart rate recovery responses and Active Stand Protocols.
PhD	The Role of Exercise Prehabilitation prior to Oncological Resection.
PhD	The effects of nutritional intervention combined with exercise in the ReStOre II (Rehabilitation Strategies following Oesophago-gastric Cancer) program.
PhD	An evaluation of physical function and frailty in non-geriatric vulnerable populations.
PhD	Exploring physical activity in Maltese Children.
PhD	Back pain in adolescent sport.
PhD	Safety and optimal tackle outcomes in women's rugby.
PhD	Work-based assessment: Translating theory to practice in allied health professionals.
PhD	Physical Activity, Physical Health and Clinical Bleeding Phenotype in Adults with Moderate and Severe Haemophilia in Ireland.
PhD	The Role of Intermediaries in Connecting Community Dwelling Adults to Local Physical Activity and Exercise Services.
PhD	Developing and Feasibility testing of a pragmatic, patient-centred exercise intervention during chemotherapy: A Mixed-Methods Approach.
PhD	Identifying requirements for cancer rehabilitation in Oman.
PhD	Bike fit for performance and safety in elite cycling.
PhD	Symptomatic hypermobility in children: A move towards improved care pathways and targeted treatment.

PhD	Recruitment of adolescent girls into physical activity programmes: Evidence to inform recruitment strategies for policymakers and programme developers and policymakers.
PhD	A National Adolescent Idiopathic Scoliosis Physical Wellbeing Study.
PhD	Barriers and facilitators to refugees, asylum seekers and people experiencing homelessness accessing non hospital based care.

Psychiatry

PhD	Genomic landscape of neonatal Escherichia coli associated sepsis in Ireland.
PhD	Predicting who will respond to stimulant medication in ADHD: A precision medicine approach using neurally informed computational models.
PhD	Mental Capacity for Treatment Decisions in Psychiatric Inpatients.
PhD	Coercion and Involuntary Care: A Study of Involuntary and Voluntary Psychiatry Inpatients in Dublin.
PhD	Research readiness for dementia research in Irish long term care settings.
PhD	Towards an understanding of the mechanism of action of methylphenidate in ADHD.
PhD	Ancient and modern population genomics on the peopling of East Eurasia and the Americas.
PhD	Admissions to St Patrick's Hospital 1900 to 1950: from bromides to convulsive therapies.
PhD	Longitudinal neuroimaging in children with ADHD.
PhD	Social cognition in Lewy body dementia.
PhD	Shame and Child Sexual Abuse.
PhD	Implementation of disease modifying therapies for Alzheimer's in Ireland.
PhD	Predicting who will respond to stimulant medication in ADHD: A precision medicine approach using neurally informed computational models.
MD	Outcomes of inpatients detained under holding powers in an Irish Psychiatric Hospital – A Comparative Case-Control Study.
MD	Asclepiades' medical theory of "molecules" and "void spaces" as it relates to Mental Illness.
MD	An investigation of the prevalence rates of mental illness in older adults admitted to hospital in Ireland and assessment of current Old Age Liaison Psychiatry service provision.
MD	Impact of the Covid-19 pandemic on nursing home staff in Ireland.
MD	To characterise the effects of Anorexia Nervosa (AN) on biological ageing.

Public Health & Primary Care

PhD	Polypharmacy and potential inappropriate prescribing in community dwelling people living with dementia.
PhD	Equity in Partnerships for Global Health.
PhD	Water and Sanitation in LMICs.
PhD	Measurement of 25-hydroxyvitamin D in hair.
PhD	The role of gene-UVB interaction on 25-hydroxyvitamin D level and skin cancer.
MD	Mental Health Services and Homeless people in the Dublin Region: A cross sectional study.
MD	Exploring the physical, psychological and social effects of chemsex, enabling the development of a specialised service, and the integration of affiliated services in Ireland.

Radiation Therapy

PhD	Tumours have a sex: Impact on the response of bladder cancer to therapy.
PhD	The development, implementation and evaluation of frailty assessment in oncology.
PhD	Barriers to access in radiation oncology (BARO project).
PhD	Using radiomics to predict normal tissue toxicity in head and neck cancer.
PhD	Interactive monitoring of paediatric outcomes for radio and chemo therapies (IMPORT).
PhD	KAYAc- Knowledge of late effects of cancer therapy for adolescents and young adults.
PhD	Magnetic Resonance Imaging Radiomics - Towards the Personalisation of Radiation Therapy for Prostate Cancer.
PhD	Extracellular vesicles in Non-Small-Cell Lung Cancer.

Surgery

PhD	Therapeutically remodelling the immune profile of 'cold' tumours in obesity-associated cancer.
PhD	Investigation of the role of miRNA in the treatment resistance of gastro-oesophageal cancer.
PhD	Targeting metabolism for individualised rectal cancer treatment.
PhD	An Investigation of the Effect of Pulsed Radiofrequency treatment of the Dorsal Root Ganglion on Cerebrospinal fluid and peripheral venous blood cellular, proteomic and neuropeptide concentrations with clinical outcome correlation in patients with chronic lumbosacral radicular pain.
PhD	The Epidemiological, clinical and genetic aspects of chronic pancreatitis in Ireland.

PhD	Boosting oxygen diffusion in the radioresistant Oesophageal tumour microenvironment to improve radiation response.
PhD	Development of a Novel Prognostic Scoring System for Patients Presenting with Spinal Metastases to Predict.
PhD	Investigating the impact of body composition and nutritional intervention strategies in pancreatic cancer.
PhD	Immunophenotyping of pancreatic cystic lesions.
PhD	Therapeutically remodelling the immune profile of cold tumours in obesity associated cancer.
MD	To create, co-design, and evaluate a digital learning platform - Burkittpedia.
MD	Cellular and peptide components of both CSF and venous blood pre and post dorsal root ganglion pulsed radiofrequency treatment: Single-centre, randomized controlled trial.

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Breakthrough Cancer Research

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D-real, Science Foundation Ireland

Dublin City Sport & Wellbeing Partnership

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)

Infinitome Imaging Award

Irish Blood Transfusion Service

Irish Cancer Society (ICS)

Irish Research Council (IRC)

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Phone: +353 1 896 1000
Email: research.medicine@tcd.ie
Web: www.tcd.ie/medicine/research/
Twitter: @TrinityMed1
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