

Programme grants - 2002

In 2002, 14 programme grants were awarded with a total value of almost €13 million. Nine were in Clinical and Biomedical Sciences, four were in Health Services Research, Public Health and Epidemiology and one was in Nursing and Midwifery research. A brief description of the research programmes is given below. A complete list of the programme grants awarded is also available as a pdf.

Clinical and Biomedical Sciences

Diabetes research: Functional and computational genomics approach to the identification of novel therapeutic targets in diabetic nephropathy

Principal investigator: Professor Hugh Brady (UCD, Dublin Molecular Medicine Centre and Mater Hospital Dublin)

Co-investigators: Professor Finian Martin (UCD) Dr Carmel Hensey (UCD)
Approximately 5% of the Irish population will develop diabetes. Among diabetic patients, approximately 33% will develop nephropathy (kidney disease), which may in turn require dialysis or transplantation. This means that diabetic nephropathy is now a significant cause of mortality and morbidity in Ireland. This research programme proposes a multi-disciplinary bench to bedside approach using the team's experience in genomics and cell and developmental biology. The overall aim is to understand the underlying mechanisms in diabetes and to identify new therapeutic targets.

Novel therapeutic targets in cancer and inflammation: Programme on cell regulation by cyclooxygenases

Principal investigator: Professor Desmond Fitzgerald (RCSI)

Co-investigators: John O'Brien (RCSI), Professor Fergus Shanahan (UCC); Professor Kevin Nolan (RCSI)
Non-steroidal anti-inflammatory drugs, frequently used in arthritis, are a major cause of morbidity and mortality. One of these, aspirin, which is widely used as a painkiller and anti thrombotic, can result in serious gastrointestinal complications. Recently, selective cyclooxygenase (COX) inhibitors have been introduced in an effort to avoid these complications but they have been associated with increased risk of cardiac disease. This programme aims to improve our understanding of the biology of COX s. This is relevant to many conditions such as inflammatory bowel disease, colon cancer and anthracycline-induced cardiotoxicity.

Invasive infections caused by staphylococci: Molecular basis of interactions between staphylococci and platelets

Principal investigator: Professor Timothy James Foster (TCD)

Co-investigators: Dr Dermot Cox (RCSI); Professor Desmond Fitzgerald (RCSI)
Invasive staphylococcal infection is associated with significant mortality and morbidity. Previously it was thought that infectious disease could be controlled by antibiotics. However, the development of resistance has compromised treatment. This is of particular concern to groups at high risk of infection such as renal dialysis patients, patients undergoing surgery and drug addicts. The programme aims to identify factors that are likely to be involved in the infection process and to develop new strategies to prevent infection that do not require antibiotics.

Lipoxins: Lipid-derived mediators that promote resolution of inflammation

Principal investigator: Dr Catherine Godson (Department of Medicine and Therapeutics, Conway Institute, UCD)

Co-investigators: Professor Hugh Brady (UCD); Professor Dermot Kelleher (TCD); Dr Cormac Taylor (UCD)

Inflammatory diseases such as arthritis, pneumonitis, glomerulonephritis and inflammatory bowel disease cause significant morbidity and mortality in the community and in the clinic. Current therapies for these conditions are either relatively ineffective or toxic. This programme aims to improve our understanding of inflammation and inflammatory conditions and will facilitate the development of novel therapeutic strategies with fewer adverse side effects.

Exploration of Therapeutic Intervention at the Genetic Level in Degenerative Diseases of the Retina

Principal investigator: Dr Peter Humphries (The Ocular Genetics Unit, TCD)

Co-investigators: Dr Jane Farrar (TCD); Dr Paul F Kenna (TCD); Professor Thomas G Cotter (UCC)

Degenerative diseases of the retina are a significant cause of blindness in young and middle aged people. The research in this programme aims to understand the underlying genetic defects and mechanisms that cause these diseases and to facilitate the development of novel genetic therapies.

Inflammation and infectious diseases: Toll-like receptors in human disease

Principal investigator: Professor Dermot Kelleher (Department of Clinical Medicine, St. James's Hospital, TCD)

Co-investigators: Professor Luke O'Neill (TCD); Dr Paul Moynagh (UCD); Professor Joseph Keane (St. James Hospital, TCD)

This programme aims to improve our understanding of inflammation and infectious diseases. It focuses on the development of new therapeutic targets for major global infectious diseases such as H. Pylori, which is associated with a spectrum of gastrointestinal diseases such as gastritis, peptic ulceration and gastric malignancies. The programme will also address tuberculosis, which is re-emerging as a major cause of mortality internationally, and aims to develop more effective vaccines and drug strategies to deal with this disease.

Cardiovascular disease: The platelet as a potential therapeutic paradigm

Principal investigator: Professor Dermot Kenny (Director, Clinical Research Centre, Beaumont Hospital, RCSI)

Co-investigators Dr Denis Shields (RCSI); Dr John O'Brien (RCSI); Dr Niamh Moran (RCSI)
In the past few decades, our understanding of the role of thrombosis in vascular disease has increased enormously. Anti platelet therapy has significantly influenced the therapy of vascular disease, but in many cases, only with limited success. Furthermore, a number of patients do not respond to aspirin. Why this happens is not understood and highlights our poor understanding of platelet biology. The aim of this programme is to better understand platelet biology, and in doing so, to identify new targets for the development of platelet specific, anti-thrombotic agents. This could significantly reduce the burden of vascular disease.

Cancer research: The DNA damage checkpoint and cancer

Principal investigator: Professor Noel Lowndes (Department of Biochemistry, NUI, Galway)

Co-investigators: Dr Terry Smith (NUI Galway)

Cancer is among the leading causes of illness and death in the western world. Globally, the cancer burden is set to double over the next 20 years and 75% of these patients will live in the developing world. Short of lifestyle changes and improved diet, there is little prospect of preventing many cancers and current treatments are relatively unspecific and blunt. Recent advances in science suggest the possibility of therapies 'tailor made' for specific tumours and genetic backgrounds. This programme aims to identify and validate components of the genetic pathway as potential targets for anti-cancer treatments and ultimately, to develop bioassays specific for these novel targets.

Inflammatory bowel disease: Host-bacterial interactions within the gut in health and disease

Principal investigator: Professor Fergus Shanahan (Department of Medicine Clinical Sciences Building Cork University Hospital)

Co-investigators: John Kevin Collins (UCC); Dr Gerald F. Fitzgerald (UCC); Dr Joe O'Connell (UCC)

This programme aims to provide a better understanding of host-bacterial interactions in the gut. This is relevant to a number of gastrointestinal disorders such as inflammatory bowel disease, colon cancer and enteric infections. These disorders are a significant burden for individuals and also on health care resources. Improved understanding of their causes should facilitate the development of novel therapeutic strategies.

Health Services Research, Public Health and Epidemiology

Ageing, health and healthcare: Maximising quality by refining the interface between the individual and the healthcare system

Principal investigator: Professor Hannah McGee (Health Services Research Centre, Department of Psychology, RCSI)

Co-investigators: Dr Tony Fahey (Economic and Social Research Institute); Dr Desmond O'Neill (TCD); Professor R W Stout (QUB)

Older people are the main users of health and social care services, but there is evidence of inequity with older people less likely to receive recommended services. Systematic planning is needed to meet future service needs, but to date there has been relatively little research in ageing in Ireland. This programme will survey older people living in the community in Ireland and Northern Ireland, providing valuable information on their health need and service experiences. The delivery of health services to older people in the two health systems will be compared. The findings should inform the future delivery of health and social services to this section of the population and improve our understanding of how positive ageing can be maintained.

Secondary prevention of heart disease in general practice; a randomised controlled trial with qualitative, economic and policy analyses of an intervention to produce improved and sustained outcomes

Principal investigator: Professor Andrew Murphy (Department of General Practice, Clinical Sciences Institute, NUI Galway)

Co-investigators: Dr Margaret Elizabeth Cupples (QUB); Dr Susan M Smith (UCD); Ms Molly Byrne (NUI, Galway)

Heart disease is the leading cause of death in men over 45 and in women over 65 throughout Europe. Ireland has one of the highest mortality rates of heart disease in the EU. There is strong evidence that secondary cardiac care reduces mortality and morbidity. The provision of secondary cardiac care was highlighted as a priority in the Cardiovascular Strategy Building Healthier Hearts but the best way of delivering this care in general practice has yet to be identified. This programme will contribute to the development of such an approach in a health care system without universal access to primary care or universal patient registration. It will be possible to generalise the findings to the management of other chronic diseases in the community, such as diabetes, and should contribute to the general debate on the organisation of the Irish health services.

The Provision and Use of Health Services

Principal investigator: Professor Brian Nolan (The Economic and Social Research Institute, Dublin)

Co-investigators: Dr Richard Layte (ESRI); Dr Colm Harmon (UCD); Dr Ciaran O'Neill (University of Ulster)

This programme is concerned with the provision and use of the health services, health inequalities and health and social gain. It aims to increase our understanding of the factors that produce marked differences across population groups in terms of the incidence of disease, disability and premature mortality. Three studies will be carried out. In the first, a study of GP visiting and prescribing will assess whether fees prevent some people without medical card cover from obtaining care, and whether incentives to GPs fail to promote the best care, including prescribing. The second study will focus on hospital care, specifically on access, incentives and efficiency. The third component will examine the relationship between health care use and 'need' and the implications for equity in the delivery of health care.

Water fluoridation and health: The benefits and risks of fluoride on the island of Ireland

Principal investigator: Professor Denis O'Mullane (Oral Health Services Research Centre, University Dental School and Hospital Cork)

Co-investigators: Professor Ivan J Perry (UCC); Dr Helen Whelton (UCC); Professor Frank Kee (QUB)

This research programme will address the benefits and risks of water fluoridation on the island of Ireland. In doing so, it will address the impact of water fluoridation in the Republic of Ireland on the oral health of adults and children. The fact that water fluoridation has been in place in Ireland for over 30 years, but has not been introduced to Northern Ireland, provides an opportunity to measure the health and social gain attributable to adding fluoride to water supplies and will serve to inform this very topical debate.

Nursing and Midwifery

Nursing decision making: An integrated programme of research to maximise the effectiveness of clinical nursing resources

Principal Investigator: Professor Anne Scott, School of Nursing, Dublin City University

Co-investigators: Professor Margaret Treacy, (UCD); Dr Abbey Hide (UCD); Professor Rosemary Crow (UCD)

A programme of research into nursing interventions and decision making will be carried out to articulate the nursing contribution to health and social care, with particular reference to nursing interventions and decision making at individual, interpersonal and organisational level. It will deliver a quantitative Nursing Minimum Data Set for Ireland that will describe patient problems, nursing activities, interventions and patient outcomes through the use of this data set in mental health and general nursing settings. It will also provide an insight into how organisational and interpersonal factors contribute to the nursing decision making process and will identify how effective clinical decision making can be promoted. Evidence will be provided to enable strategic decisions to be made at both local and national level regarding the appropriate and effective distribution of the nursing resource, in order to ensure positive patient outcomes and increase health and social gain.