



Leading Ireland's Research Revolution





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Introduction



Welcome to Dublin City University (DCU)

DCU is Ireland's youngest university, just 25 years old in November 2005. Our rapid growth and leadership has helped to transform many of the traditional practices and assumptions of higher education. In the early years of the 21st century, our ability to lead the way is more essential still as Ireland faces both great opportunities and great risks.

The Irish Government is taking the first steps in implementing its **Strategy for Science and Technology and Innovation 2006-2013** that describes the vision that by 2013 Ireland "will be internationally renowned for the excellence of its research, and will be to the forefront in generating and using new knowledge for economic and social progress, within an innovation driven culture". DCU fully intends to play its part in achieving the many ambitious aims within that national strategy.

DCU's own Strategy, *Leadership through Foresight 2006-2008*, reaffirms our determination to be radical and innovative, to drive economic and social development in Ireland and to secure the ability and the means to be among the international leaders in our priority areas.

Since its inception DCU has been '*designed to be different*' from the very applied nature of our undergraduate programmes, our INTeGrated TRAIning (INTRA) programme which provides industrial placements for all our undergraduates through to the level and extent of industrial research collaborations. Through the implementation of our current strategic plan we aim to distinguish ourselves through our engagement with external agencies, business and industry in building internationally competitive research teams, which will succeed in converting the results of high quality basic research into significant social and economic impacts.

This university covers an enormous range of disciplines from the humanities, engineering, management and computing to health and the natural sciences. Here we provide you with glimpses of DCU the organisation, its people and research programmes. I hope this brochure gives you a taste of the exciting and groundbreaking research being conducted at DCU and that it will encourage you to find out more and to become associated with DCU in some formal way.

A handwritten signature in black ink, appearing to read 'Eugene Kennedy', written in a cursive style.

Professor Eugene Kennedy
Vice-President for Research

DCU at a Glance



Location

DCU is located on an 85-acre campus situated midway between Dublin airport (approx 5 miles) and Dublin city centre.

National Research Centres and Institutes

- National Centre for Sensor Research (NCSR)
- National Centre for Plasma Science and Technology (NCPST)
- National Institute for Cellular Biotechnology (NICB)
- Research Institute for Communications and Network Engineering (RINCE)
- Biomedical Diagnostics Institute (BDI)

University Research Centres

- Centre for Bioanalytical Sciences (CBAS)
- Adaptive Information Cluster (AIC)
- Centre for International Studies (CIS)
- International Centre for Neurotherapeutics (ICNT)
- Centre for the Advancement of Science Teaching and Learning (CASTeL)
- Vascular Health Research Centre (VHRC)
- Materials Processing Research Centre (MPRC)
- Centre for Translation and Textual Studies (CTTS)
- Centre for Digital Video Processing (CDVP)
- Centre for Society, Information and Media (SIM)
- The Learning, Innovation and Knowledge (LiNK) Research Centre
- National Centre for Language Technology (NCLT)

Student population*

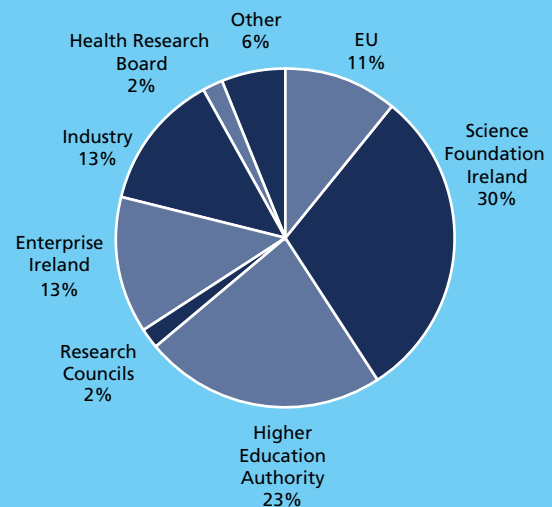
Undergraduates: 5,700
 Taught postgraduates: 1,860
 Research Postgraduates: 500
 Non Award: 450
 Total: 8,510

Staff*

Academic: 399
 Non-Academic: 520
 Research: 125
 Total: 1,044

* based on 2006/2007 data

Research Income by Source 2005



Research and the Academic Themes

DCU is the first university in the world to base our strategic development on the introduction of interdisciplinary Academic Themes, reflecting our strengths, national priorities and our understanding of future needs and opportunities which are set to drive our interdisciplinary research and learning strategies. The themes promote cross-faculty initiatives, acting as a resource both to drive major projects and as a link between the wider community and research at DCU. Under its most recent strategic plan, *Leadership through Foresight*, DCU's strategic academic focus has increasingly been framed around these interdisciplinary strategic themes and their respective Theme Leaders:

- Business and Innovation
- Internationalisation, Interculturalism, Social Development
- Science, Discovery and Technological Innovation
- Information Technology and the Knowledge Society
- Education and Learning
- Life Sciences and Health in Society

Such an approach is both pioneering and distinctive, marking DCU as a progressive and talented research university.

Each of these themes has a distinct research agenda exemplified by the following research projects:

- **The Business and Innovation Theme** initiated "Advancing Research Team Innovation Climate" (ARTIC), led by Dr. Finian Buckley of the Learning, Innovation and Knowledge (LiNK) Research Centre, based in DCU Business School. The purpose of ARTIC is to identify and manage the critical factors that impact on research team development and which are central to performance effectiveness.

The insights gained from this research will be used to structure a plan that will help achieve individual development, team development and effectiveness in research settings.

- The **Internationalisation, Interculturalism and Social Development Theme** has been developing the Intercultural Workplace Programme (IWP). This builds on pre-existing research in various Schools and Faculties to address proactively the issue of migration and social integration in contemporary Ireland. Already it has generated a number of research projects in partnership with the corporate sector and with civil society organisations. It has launched an online journal, the *Irish Migration, Race and Social Transformation Review*, with an editorial board drawn from all Irish universities.
- The **Science, Discovery and Technological Innovation Theme** is promoting the National Digital Research Centre (NDRC) project. The NDRC will focus on the innovation and commercialisation of research in the digital media space; its specific focus will be on the convergence of Information and Communications Technology (ICT) with artistic and specialist content from other disciplines. To support projects like the NDRC, the Theme is promoting a pilot graduate student internship scheme, which primarily aims to bridge, or significantly reduce, the gap between research experience and workplace demands, while simultaneously meeting the needs of the emergent corporate research sector.

DCU will continue to review and refresh its Academic Themes, which are focused on key current and emerging strengths of the University.

DCU Research

There are four faculties at DCU, each focusing on key areas of research. While some research is exclusive to a particular faculty, other research calls for the expertise of other faculties, institutions and/or organisations, creating an interdisciplinary, national and sometimes international approach.



Science and Health

Science and Health research is carried out at the schools and research centres that form the DCU Faculty of Science and Health. It comprises six schools (Biotechnology, Chemical Sciences, Health and Human Performance, Mathematical Sciences, Nursing and Physical Sciences), and multiple research centres.

The Faculty of Science and Health is committed to nothing less than the creation of a “translational highway” — making basic research advances and translating them into clinical practice and into industrial application. Our research portfolio is built on a clear social purpose that motivates the building of communities of researchers around large, important goals. These aim to eliminate the disparate and fragmented approaches to health and industry oriented research. This bold vision brings together biologists, chemists, physicists, mathematicians and engineers, as well as sports scientists, nurses and health care professionals to tackle challenging problems in fresh, high impact ways. Specifically, our goal is to create a more efficient and productive system of biomedical and health delivery research, and to develop more rapid translation from laboratory bench to patients and back.

Research Centres

There are six core research centres:

- National Institute for Cellular Biotechnology (NICB)
- National Centre for Sensor Research (NCSR)
- National Centre for Plasma Science and Technology (NCPST)
- Centre for the Advancement of Science Teaching and Learning (CASTeL)
- Centre for Bioanalytical Sciences (CBAS)
- Biomedical Diagnostics Institute (BDI)
- International Centre for Neurotherapeutics (ICNT)



National Institute for Cellular Biotechnology (NICB)



The NICB is dedicated to research on the cellular and molecular basis of life processes. There is a particular emphasis on applying this knowledge to better diagnose and treat cancer, diabetes and microbial diseases. Research in biocomputing, chemical synthesis and analysis with biological applications, and the interaction of biosciences with the broader society is also ongoing.

The NICB programme on Cancer Biology and Drug Resistance is focused on “translational” cancer research, which attempts to link fundamental laboratory work to applied clinical investigations. Activities in the programme include laboratory screening, drug and compound testing, cancer marker analysis and clinical

trial evaluation of therapy. Through the NICB, DCU was the first university in Ireland to take a translational lab-based research project to clinical trial. The NICB, in collaboration with researchers in five Irish cancer hospitals, is involved in the examination of the onset and progression of tumours at the molecular level. The aim of this research is to identify molecular markers present in the blood which are indicative of the presence of a cancer and how that cancer is progressing. This would mean that a standard blood test would allow the clinician to make early diagnosis of cancer even before the onset of symptoms, as well as being able to carry out quick, frequent assessments of a patient’s progress in a non-stressful way.

A number of technological platforms offer exciting interdisciplinary challenges, including computer modelling research and functional genomics programmes. The centre has a strong history of collaboration with industry, with NICB and Wyeth establishing a four-year research project in the production of biopharmaceuticals. Wyeth and DCU each contribute significant scientific resources and expertise to the collaboration, which is investigating the molecular basis of advantageous characteristics of Wyeth’s proprietary production cell lines and process technology.

Professor Martin Clynes

PROFILE

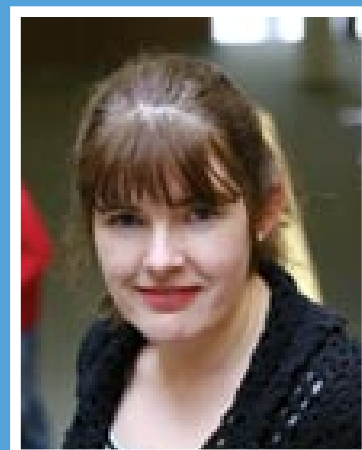


Professor Martin Clynes is Professor of Biotechnology at DCU, and Director of the National Institute for Cellular Biotechnology. He graduated in Biochemistry in 1972, and obtained his PhD in 1976. After a period of postdoctoral cancer research for the Medical Research Council, and work on biopharmaceutical R&D in the biotech industry, he joined the newly-established NIHE Dublin (now DCU) as lecturer in Cell Biology in 1981. He has been involved in a wide range of basic and applied research projects, mostly related to cancer research and animal cell biotechnology. Over the past 15 years he has attracted over €55m in research funding to DCU. His research group has expertise in cell biology, molecular biology, monoclonal antibody technology, proteomics and in vitro toxicology, and is involved in a number of clinical collaborations, mainly in the cancer area.

Professor Clynes is well published and has a proven track record in bringing the results of basic research to practical application: he founded the successful DCU-owned biotechnology company Archport Ltd; and he took a basic discovery on in vitro blocking of cancer drug efflux pumps from basic discovery in cell culture, through in vivo testing, patenting, publication, and eventual successful Phase I clinical trials. (Phase II trials are currently being planned). He has successful experience of patenting in both U.S. and European patent offices, and he has been involved in collaborative research with Irish, U.S, German, Dutch, and U.K. companies for many years.

Dr Tia Keyes

PROFILE



Dr Tia Keyes is senior lecturer in physical chemistry in the School of Chemical Sciences. She joined DCU in September 2002, having previously held a lectureship in physical chemistry at Dublin Institute of Technology, where she was a founder member of the FOCAS Institute. Dr. Keyes is a member of the National Centre for Sensor Research and the SFI funded Biomedical Diagnostics Institute. She was awarded the President's Research Award in 2006.

At the heart of her research is molecular spectroscopy and photophysics – the interaction of light with matter – particularly the development of novel molecules in which colour and light emitting properties are precisely and predictably controlled through a fundamental understanding of their electronic behaviour. Such materials have recently been applied to electrochromic displays, which can be controlled synthetically to provide electrically switchable colours in the visible region, or in regions beyond human perception. The development of multicomponent materials for sensing and exploiting luminescence and Raman signals is an important element of her work. Her long standing goal is to develop supramolecular nanoelectronic materials. Molecular hosts such as cyclodextrin which are appended with light emitting and surface binding molecules have been produced, which provide a means of self assembling multiple components into interfacial structures. These can be addressed through light and electricity for next generation electronics and solar energy conversion.

National Centre for Sensor Research (NCSR)

The National Centre for Sensor Research is a large-scale, multidisciplinary research centre focused on the science and applications of chemical sensors and biosensors. Our core research capabilities include:

- Bio-molecular interactions and molecular recognition
- Separations science
- Optical and electrochemical techniques
- Microsystems
- Sensor networks

Bio-molecular interactions and molecular recognition. Our aim is to develop novel antibody, enzyme and DNA based biosensors, and this is supported by our formidable track record in immunoanalysis and drug analysis/metabolism. Integral to our work on bio-molecular interactions and molecular recognition is our expertise in surface and interface science. Other aspects of our work include the investigation and detection of protein interactions, and the applications of recombinant DNA technology in immunodiagnosics.

Separations science. This includes development of novel materials for extraction and enrichment of analytes, and the development of novel separation systems. The methods developed are applied to a range of applications, particularly analysis of pharmaceutical agents and biological samples.

Optical, electrochemical and electro-chemiluminescence transduction techniques.

We have successfully developed a suite of generic enhancement technologies that enable us to lower limits of detection considerably. This is relevant to the biomedical field, where the achievement of reliable analytical diagnostic measurements is very challenging.

Microsystems

Microsystems are key to incorporating photonic and electrochemical sensors into small, cheap and effective detection devices.

Sensor networks. Our emphasis is on wireless networks across a network of devices, applied to a wide variety of fields (general environmental, water quality, diagnostics, food safety).

Our research activities involve significant interaction and collaboration with other academic institutions, in Ireland and further afield, and many industrial partners. Through our interactions with industrial partners we have commercialised a number of NCSR technologies, thus allowing society as a whole to benefit from the advances made in our labs.

National Centre for Plasma Science and Technology (NCPST)

The National Centre for Plasma Science and Technology is a platform that underpins numerous technological applications (e.g. nanotechnology and advanced coatings) and global industries (e.g. semiconductor manufacturing, medical devices and lighting). Our core research capabilities include:

- Measurement and modelling
- Materials, photonics and nanotechnology
- Plasma Astrophysics
- Energy

Measurement and modelling: Plasma processes are highly complex, non-linear, and are difficult to control and characterise. They require complex models, advanced sensors and diagnostic techniques for the most demanding applications. To date we have worked on processes used in the fabrication of ultra miniaturised electronic and photonic devices, laser processing and micromachining, and surface coatings for biomedical and mechanical applications.

Materials, photonics and nanotechnology: The main emphasis is on the study and control of the interaction of light with matter, and on the ways in which such interactions are affected by extreme dimensionality

in space and time. The work involves the growth, characterisation, processing and utilisation of photonic and opto-electronic materials and nanostructures. It also studies the generation and utilisation of laser-produced plasmas and their properties in the visible, UV, VUV and x-ray, including spatial mapping and time-resolved behaviour.

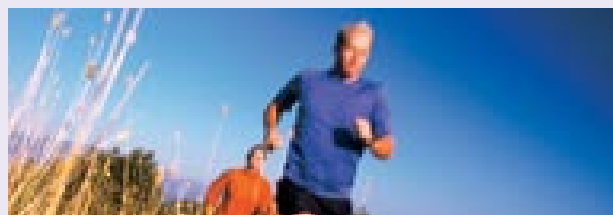
Plasma Astrophysics: The key activities of this programme are in the area of galaxy and star formation and evolution, and high-energy astrophysics. The work in our centre is primarily modelling, simulation and computational astrophysics. The group collaborates widely both nationally and internationally and observational data is obtained through numerous international collaborations.

Energy: The NCPST energy research programme focuses on the development of fusion power through participation in the international ITER programme. We are both leader and coordinator of the Irish Fusion Association, and our primary technical contribution is in the area of plasma heating system modelling and design.

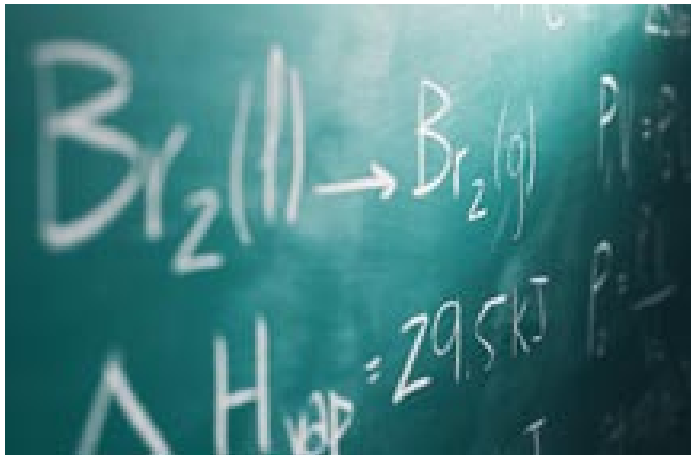
NCPST's mission is to be a world class centre for plasma-related research, a national centre for education, training and industrial support, and a national centre that translates research into social and economic benefit. Furthermore, we are committed to strong relationships with industrial partners supporting indigenous enterprise.

How does exercise improve our health?

Dr. Donal O'Gorman's research focus on how exercise can help us understand more about metabolic diseases such as obesity and Type 2 diabetes. When muscle contracts, there is an increase in intracellular calcium that is related to the force and frequency of contraction. The calcium signalling pathway is thought to regulate the expression of genes involved in glucose transport, fat oxidation and mitochondrial biogenesis. If we understand how muscle cells regulate energy use, there are very important implications for diabetes treatments, including drug development and exercise guidelines. One of the current projects studies the impact of contractile



force on gene expression following exercise. Young, untrained subjects exercise on two separate days, until they use 400 kcal at either 50% or 80% of their maximal ability. Muscle biopsy samples are taken from the leg prior to exercise and at time points up to 19hrs post exercise. The expression of key genes involved in metabolic regulation is then determined using real time PCR. The results of this study will help provide a greater understanding of the role of muscle contraction in physiological regulation of gene expression.



Centre for the Advancement of Science Teaching and Learning (CASTeL)

CASTeL is a centre for research in science and mathematics education, as well as science outreach across all age groups. Our overall research objective is to identify optimal settings and practices which foster, firstly, a positive attitude to mathematics and science learning, and secondly, a habit of ongoing inquiry and lifelong learning. Our research prioritises five key areas:

- Activity-based learning methodologies and strategies in science and mathematics, at all levels of education
- Teacher education strategies and structures that draw on the best educational research, from psychology to the use of technology in education, for teachers at all levels
- Improving assessment in science and mathematics to drive good practice and positive outcomes
- Analysis of research in cognitive science and related disciplines and the implications for science and mathematics teaching and learning:
- Promoting resources and events which engage and inform people on science and mathematics.

Ultimately, the Centre aims to make significant contributions to pedagogical development in higher education.

Professor Ian Marison

PROFILE



Professor Ian Marison was appointed to the post of Professor of Bioprocess Engineering and Head of the School of Biotechnology in September 2005. Prior to this appointment he was employed at the Laboratory of Chemical and Biological Engineering of the Swiss Federal Institute of Technology (EPFL). He was co-founder of Inotech Encapsulation AG, now Inotech Biotechnologies Ltd.

As his research activities are in integrated bioprocessing, a major part of his work involves the development of animal and microbial cell bioprocesses.

These lead to the production of small molecules and biologically active compounds (e.g. bioethanol, antibiotics, carotenoids) and a wide variety of recombinant proteins (e.g. monoclonal antibodies, avidine, EPO, antimicrobial peptides). The key to these processes is the development of online monitoring and control systems, based on spectroscopic techniques (FTIR, Raman, optical, fluorescence and capacitance) and combined with gas analysis and calorimetry. This enables online formulation of mass and energy balances which describe the process. In this way, online control systems may be developed to create high cell density, high productivity processes. These may then be combined with novel cell separation and downstream processing techniques, for continuous cell removal or recycle (perfusion cultures), in-situ product recovery (ISPR) and to overcome product inhibition. Recent work has branched into the area of environmental engineering through the discovery of cationic peptides and nanocapsules. An extension of this work has yielded novel biofiltration units based on biomass.

Professor Brian MacCraith

PROFILE



Professor Brian MacCraith was founding Director of the National Centre for Sensor Research at DCU in 1999, and remained so until 2005, when he became Director of the Biomedical Diagnostic Institute, one of the Science Foundation Ireland funded Centres for Science Engineering and Technology. He has also been Centre Director of the Optronics Ireland Programme in Advanced Technology (Photonics) at DCU since 1996.

He has an international reputation in the field of optical chemical sensors and biosensors, and his principal research outputs have been in the areas of Fluorescence enhancement (biochips & multi-analyte sensors), Plasmonics, Evanescent wave sensors, Sol-gel-derived sensor materials and platforms, Planar waveguide sensor platforms and Oxygen & carbon dioxide sensing.

As a Visiting Scientist at the Naval Research Laboratory in Washington DC, his work led to a US Patent on multi-analyte immunosensors and a publication award from the US Navy. In 1999, a combined colour and turbidity sensor (ClearCense), developed under his direction at DCU, was commercialised by Siemens for application in the water industry. Professor MacCraith was elected as a fellow of the Institute of Physics in 2001, and he was awarded a Personal Chair in Physics at DCU in 2004. Also in 2004, a project led by him was awarded significant funding to develop a major programme on biomedical diagnostics. In 2005, a spin-off company (Gas Sensor Solutions), based on technology he developed, won the Liavan Mallin INVENT Award for innovation.

Professor Dermot Diamond

PROFILE



Professor Dermot Diamond obtained a BSc, MSc and PhD from Queen's University, Belfast.

The doctoral research, carried out under the supervision of Professor Gyula Svehla, involved constructing chemical sensors based on PVC membranes doped with molecular receptors. In 1986, he published the first paper describing the remarkable characteristics of sodium sensors based on calixarene tetraesters, which are now recognised world-wide as the best receptors for making sodium sensors. They are employed extensively in hospital analysers for routine blood sodium measurements.

He moved to DCU in 1987 and, in 1995, became Director of DCU's Biomedical and Environmental Sensor Technology. From 2002 to 2004, he was the first Vice President for Research at DCU. As a fellow of the Royal Society of Chemistry (RSC), he was awarded the inaugural RSC silver medal for sensor research, and a DSc by Queen's University Belfast.

He is currently director of both the 'Adaptive Information Cluster' and the 'Centre for Bioanalytical Sciences'. These large research initiatives bring together numerous researchers to work on a common vision, and to explore new concepts that emerge at the boundaries of conventional divisions. Current research will impact on sectors ranging across biopharma, personal health, the food industry and environmental monitoring.

Centre for Bioanalytical Sciences (CBAS)

The Centre for Bioanalytical Sciences is a biopharmaceutical research collaboration between pharmaceutical multinational Bristol-Myers Squibb Company (through its Irish subsidiary, Swords Laboratories), Dublin City University and the National University of Ireland, Galway. The centre is funded jointly between Swords Laboratories and the Industrial Development Agency (Ireland).

Our vision is to establish a Centre for Bioanalytical Sciences (CBAS) that will become a National Resource for researchers working in fundamental cell biology and the biopharmaceutical industry sector. Here we will develop the new sciences and techniques needed

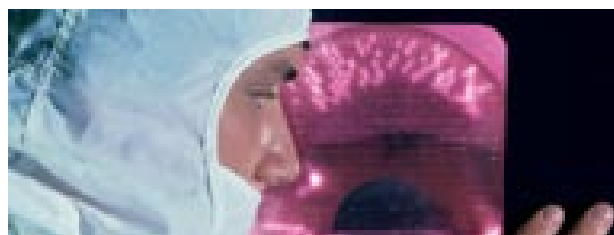
to understand the dynamics of bioreactions, involving, for example, the selective generation of specific therapeutic agents in the complex environment that exists in large-scale bioprocess reactors. The Centre aims to develop new technologies and methods for biopharmaceutical products and processes that will lead to efficiencies in the biopharma production line at BMS, and other relevant companies. The research focus is on analytical methods for rapid screening of a wide variety of biomaterials associated with the biofermentation processes, with particular emphasis on large molecules, such as glycoproteins.

The establishment of this centre will provide unique training opportunities for students and scientists, and will act as a catalyst for large-scale industry-university joint research activities in the biopharma sector.

Biomedical Diagnostics Institute (BDI)

The BDI, which is based primarily at Dublin City University and is a Science Foundation Ireland Centre for Science, Engineering and Technology (CSET), carries out cutting-edge research programmes which focus on the development of next-generation biomedical diagnostic devices. These will be used in Point of Care applications, as well as for self-test, home use. The Institute specialises in creating miniaturised systems in which the presence of low concentrations of target markers can be detected in small volumes of biological samples such as blood, saliva and sweat. A key and unique feature of the BDI is the integration of the scientific and engineering disciplines, which is required for the development of these microfluidic diagnostic devices. The Institute focuses on two key research programmes:

- **Fundamental research** (Core Research Projects) addressing the generic issues (e.g. biorecognition; transduction, microfluidics) that underpin the development of novel diagnostic devices

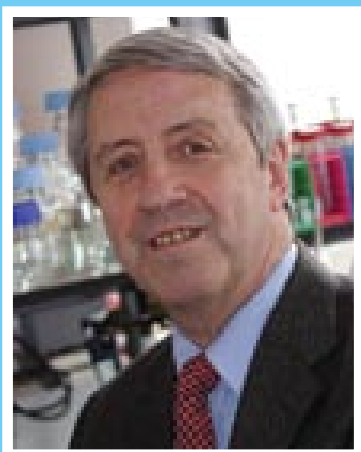


- **Application-focused research** (Integration Projects), typically informed by the commercial vision of the Institute's industry partners, addresses significant unmet or emerging market needs. When BDI's combination of clinical context, fundamental and applied science is combined with the industrial skills in design and fabrication, the resulting fully integrated environment will nurture and accelerate the development of next-generation devices.

The BDI works alongside six industrial partners (Becton Dickinson and Company, Hospira Inc., Inverness Medical Innovations Inc., Analog Devices Inc., Åmic AB and Enfer Technology Ltd), and four academic institutions (Dublin City University, National University of Ireland, Galway; Royal College of Surgeons in Ireland, including the Clinical Research Centre at Beaumont Hospital, Dublin, The Tyndall National Institute (TNI) at University College, Cork).

Professor J. Oliver Dolly

PROFILE



After training in Biochemistry in Ireland and the UK, Professor Oliver Dolly worked as a postdoctoral fellow with Eric Barnard FRS, in the first molecular identification of nicotinic receptors in muscle. Solving the structures of these receptor proteins unveiled a basis for the excitatory response of effector cells to acetylcholine, and led to diagnostic assays and means of monitoring treatments for myasthenia gravis.

In 1977 he joined the faculty of Imperial College London to embark on the greater challenge of elucidating the molecular mechanism of the quantal release of transmitters from nerve endings. His team identified the 3 SNARE proteins, essential for Ca^{2+} -evoked transmitter release by neuro-exocytosis, by the use of botulinum toxins, which are exquisitely-specific inhibitors able to proteolytically cleave and disable SNAP-25, syntaxin or synaptobrevin. Early observations by the team established the multistep mechanism of action of A-botulinum toxin which explains the selectivity, potency and long-lasting inhibition of acetylcholine release, and underlies its extremely successful clinical applications worldwide for treating numerous disorders due to hyper-activity of different skeletal and smooth muscles.

Subsequently Professor Dolly's team found that dendrotoxin (a polypeptide from mamba snake venom), used to enhance transmitter release, could inhibit certain neuronal K^{+} currents and, thus served as a probe to identify and structurally define a new subfamily of voltage-activated K^{+} channels. Having obtained these channel proteins, it is now feasible to search for drugs to perturb their K^{+} currents and, thereby, normalise synaptic transmission in some diseased states.

It seemed important to exploit these new findings medically. Hence, In 2003, he moved back to Ireland to establish the International Centre for Neurotherapeutics (ICNT) at Dublin City University, with a full-time research professorship funded by Science Foundation Ireland. Current research at the ICNT aims to improve and extend neurotherapies based on targeted inactivation of SNAREs, as well as to design therapeutics acting on K^{+} channels to control cell excitability.



International Centre for Neurotherapeutics (ICNT)

Multi-disciplinary research at the International Centre for Neurotherapeutics focuses on the biochemical mechanisms of communication in the nervous system; particularly identifying and structurally characterising the proteins responsible for the fundamental process of quantal release of transmitters, and its indirect regulation by voltage-sensitive K^{+} channels. The two core aims are to decipher the molecular basis of abnormalities in synaptic transmission, and to use the findings to develop novel treatments for associated disease symptoms.

Our basic research on the selective and potent inhibition of transmitter release by botulinum neurotoxins has underpinned their successful and worldwide clinical use in treating a number of human illnesses (dystonias, spasticity, autonomic neuronal abnormalities of secretory glands, over-active bladder (e.g. in spina bifida and multiple sclerosis) and gastrointestinal tract. Current efforts are devoted to developing second generation homologues and tailoring their functional properties for novel therapies. We are also investigating molecular triggers for nerve sprouting, as well as deciphering individual steps of exocytosis. Furthermore, the ICNT is focusing on deciphering K^{+} channels' primary structures and characterising the genetic defects in these proteins.



CosmoGrid

*(Dr. Turlough Downes,
School of Mathematical Sciences)*

The CosmoGrid project, led by Dr Turlough Downes, has been modelling how stars form, using computer simulations. From these simulations the project has discovered that when stars are formed, large, energetic jets of gas are expelled from the region around the star. These can last for over 10,000 years, be several light years long and have speeds of up to 400 km/s.

Before a star can begin to shine it must gather enough matter from its environment to create high enough pressure at its centre for nuclear fusion. As this material gets close to the star it begins to orbit faster. The jets we see coming from forming stars are thought to decelerate the orbit of the dust and gas in the disk. This allows gravity to pull the material onto the star, ultimately allowing the star to “light up”. Without these jets no star could form and through their study we learn more about how stars such as our own sun are born.

The Centre for Healthy Living



The Centre for Healthy Living integrates research, education and clinical care in an academic setting for the purpose of advancing science and shaping the structure and quality of healthcare (*adapted from Lang 2002*). The School of Nursing

provides the basis for public and private partnership. The resulting framework allows medical, nursing and paramedical staff and researchers to drive and contribute to the research agenda. The dialogue with many client/consumer groups in the industry is essential for the advancement of health and healthcare research. The Centre will therefore provide a significant portion of the clinical context required to translate research evidence into positive health outcomes.

Hybrid Microfluidic Devices for Complex Chemical Analysis

(Dr. Brett Paull, School of Chemical Sciences)

Funded through a €1.13 million EU Marie Curie Excellence Grant, Dr Miroslav Macka and Dr Brett Paull are establishing a Marie Curie Excellence Team, to be housed within the School of Chemical Sciences and National Centre for Sensor Research. The team's focus will be the development of hyphenated microfluidic devices for rapid chemical analysis of complex samples. The specific focus will be on the miniaturisation of current chromatographic separation and detection technologies. Key to the success of the project is the focus on new selective materials for nano-scale separations, such as functionalised polymer monoliths formed in-situ within microfluidic channels. The new analytical technology emanating from the project will have a significant impact in applications requiring rapid in-situ monitoring of complex systems, such as the increasingly important pharmaceutical and biopharmaceutical industries, biomedical diagnostics and remote environmental monitoring.

DCU Business School

Research at DCU Business School is strongly linked to the academic theme of Business and Innovation, both at a collaborative and individual level. The DCU Business School has a dedicated research centre that focuses on Learning, Innovation and Knowledge (LInK), and addresses key areas in business and management. The research culture is characterised by research events, the dissemination of work nationally and internationally, publishing in and editing scholarly journals and texts, and collaboration with a range of academic institutions and networks worldwide.

As well as supporting the ongoing research interests of academic staff, DCU Business School provides encouragement and support to a strong community of international postgraduate research students, who undertake research at both Doctoral and Masters levels. Their focus includes accounting, economics and finance, marketing, human resources strategy, organizational psychology and innovation.

Research Centres/Activities

Research activity is structured around five core business disciplines:

- Economics and Finance
- Accounting
- Marketing
- Human Resource Management
- Management and Management Information Systems



Economics and Finance

Economics

The research of economists in this area focuses on the industrial and economic development of Ireland at a regional, national and international level particularly with reference to the following:

Innovation and technology change; industrial policy; sub-sectoral industry analysis; small and medium sized enterprises (SMEs); entrepreneurship and new venture creation; finance and venture capital; commercialisation of academic based research; measurement and management of business and bio-incubation centres; e-business and service quality; MNEs and European integration; economic geography; public expenditure, structures and trends.

Research expertise is also held in the areas of health policy; economics of occupational health and safety; international political economy; economic methodology; and philosophy of science.

Finance

Researchers focusing on finance have established an international reputation at the highest level and have created strong links with other international researchers in the following areas:

Portfolio and fund management; asset pricing; stock market efficiency; stock price behaviour; equity investment strategies; initial public offerings; corporate finance; finance and capital markets; financial economics; bond market analysis and strategies; international finance; financial market microstructure and behavioural finance; econometrics; time series analysis; stochastic modelling; nonlinear modelling; computational statistics.

Professor Liam Gallagher

PROFILE



Professor Liam Gallagher is Professor of Finance and Head of the Economics and Finance Group within DCU Business School. His research focuses on the use of applied econometrics in modelling the behaviour of financial markets and, in particular, (i) investigating the linkages between macroeconomic time series and stock price behaviour and (ii) dynamic models of asset price behaviour.

The latter of these involves collaborations with international researchers from the UK and the US, and is one of the four themes of research in Quantitative Finance undertaken at DCU. This involves leading two research teams: one investigating nonlinear dynamic asset models; the other investigating non-normal (higher order moments) asset price behaviour. Using derived theoretical models the research will also consider a number of applications of this approach: nonlinear interdependencies among international financial markets and asset classes; nonlinear stochastic volatility and financial risk management; empirical testing of market microstructure theories of the firm; predictability in asset price movements; mean reversion in asset prices; stochastic volatility and option pricing; higher order moments and risk factors; and performance of hedge funds and pensions.

Professor Gallagher is co-editor (with Mark P. Taylor) of *Speculation and Financial Markets*, Edward Elgar, 2002. He has published widely in international peer-reviewed journals, including, *Southern Economic Journal*, *Economic Inquiry*, *Applied Financial Economics*, *Economic Letters*, *Manchester School*, *Applied Economics*, and *Scottish Journal of Political Economy*.

Professor Bernard Pierce

PROFILE



Professor Bernard Pierce is Professor of Accounting and Executive Dean at DCU Business School. He is a member of the Institute of Chartered Accountants in Ireland (ICAI) and the Association of Chartered Certified Accountants (ACCA). His main research interests are in the

areas of management control, management accounting and role orientation of management accountants. Ongoing collaborations with researchers in Dundee University, NUI Galway and The Graduate College of Union University, New York, address issues such as factors associated with perceived effectiveness of cost allocation systems, senior management perspectives on accounting control systems and behaviour patterns of trainee accountants in response to control system-induced time pressure. In addition, he is leading research teams investigating management control implications of money laundering, development of management accounting systems through organisational growth cycles, and the role of management accountants in innovation. He has also conducted and collaborated on a number of studies addressing various aspects of management control systems in major public accounting firms. He has published in international journals such as *Management Accounting Research*, *The European Accounting Review*, *Accounting Organisations and Society*, *Accounting Auditing and Accountability Journal* and the *British Accounting Review*.



Accounting

Researchers are active in the following areas:

- **Management Accounting and Control Systems**
Topics such as activity based costing, money laundering and accounting control systems, as well as the role of accountants in new product development are representative of the research projects undertaken.
- **Student Learning**
Researchers address issues such as student approaches to learning accounting and business, and motives, expectations and preparedness of students in higher education, second level and in the accounting profession. The continuing professional education of accountants is also of interest.
- **Accounting and Business Information Systems**
Specific topics of interest are (i) ERP systems with a particular focus on small and medium sized enterprises, and (ii) the emergence of XBRL in Ireland and internationally.
- **Accounting History**
This area of research, with the assistance of the Institute of Chartered Accountants in Ireland, is examining the history of pre-professional and professional accounting education in Ireland. Historical research on the development of accounting in different settings is also considered.
- **Ethics in Accounting and the Accounting Profession**
Projects include investigations of ethical issues in accounting and implications for control, governance, regulation and the accounting profession. Gender issues in the profession are also examined.



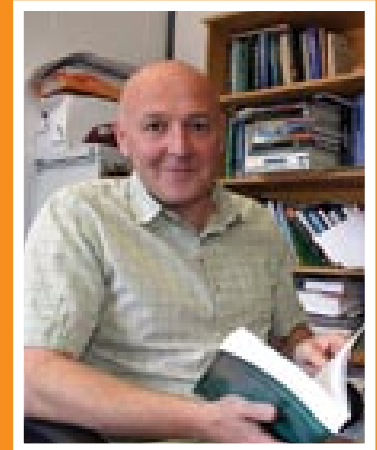
Marketing:

Significant research areas include:

- Brand management and Brand Culture, Corporate Branding and Reputation, Business to Business Branding, Agribusiness and Organic Food Brand Consumption, Food Health Issues.
- Discourses of Customer Service and Service Quality. Marketing Metrics, Key Role of Manager's Personal Values and their Impact on Market Orientation, Organisational Culture and Marketing Strategy
- Marketing Metrics, Key Role of Manager's Personal Values and their Impact on Market Orientation, Organisational Culture and Marketing Strategy.
- Eliasian Perspectives on Sport, Bohemia, Business and Innovation and Professional Musicianship, Strategic Marketing Communications.
- Ethics and Marketing, Consumption Studies, Qualitative Methods in Consumer Research, Green Consumption, Theorising Ecological Sustainable Communication and Risk Society, Corporate Social Responsibility and Social Entrepreneurship.
- Consumer Behaviour and Consumer Research considering the Impact of Bereavement on Consumption and the Consumer Behaviour of Older Consumers.
- Foreign Market Entry Strategies and Export Behaviour, Strategic Alliances and Internationalisation of SMEs, Marketing, Innovation and Technology.

Dr. Pierre McDonagh

PROFILE



Dr. Pierre McDonagh is the Associate Dean for Research in DCU Business School. He is a pioneer in researching the area of Green Management and is considered an international expert in this field. He serves as Global Policy and Environment Editor for the *Journal of Macromarketing*. His distinguished record of international publications in marketing focuses on the pressures of environmental issues, consumer society and sustainable consumption for management and strategic marketing communications – particularly agribusiness, food marketing, and marketing communications sectors.

His current research projects include:

- The Organic Food Consumption project with Arizona State University
- The ECOSCALE project with Clemson University, UCD, University of Exeter, University of Edinburgh
- The Bohemia project with Alan Bradshaw, University of Exeter
- The Fair Trade project with Carolyn Strong, Cardiff Business School and Kellie Dalton, DCU Business School
- Dr. McDonagh is also leading colleagues internationally to establish a Centre for Consumption Studies within Ireland.

He is the European Editor for the *Academy of Marketing Science Review* and has recently been invited onto the Editorial Review Board for the interdisciplinary journal, *Consumption Markets and Culture*. He has also guest edited special issues of the following international journals: *European Journal of Marketing* (2002), *Consumption, Markets and Culture* (2005), and *Journal of Strategic Marketing* (2006, forthcoming).



Human Resource Management

Research interests in this area extend to both HRM and Organisational Psychology/ Behaviour fields:

- HRM and Performance, Management Development and Education, Career Management & Development, Performance Pay and Non-pay Reward, Diversity Management, Social Capital and Knowledge Sharing, Communities of Practice.
- Organisational Trust, Commitment, Organisational Socialisation & Identity, Relational Networks in the Workplace, Psychological Contract and Work, Work-family Balance, Organisational Stress & Well-being, Organisational Culture Change, Perceptions of Time, Motivation indices, Innovation and Creative Problem-solving.

Professor Kathy Monks

PROFILE



Professor Kathy Monks is Director of LInK. She has worked in DCU Business School since 1984, where she has held a variety of positions, including Associate Dean for Research and Faculty. Her research interests are focused on human resource management systems, management education and development, and professional careers. Currently she is involved in two international collaborative research projects: the first examines the impact of management development on organisational performance, and involves partners in ten European countries. Telephone interviews with 174 organisations based in Ireland have indicated that there is an ad hoc response to management development, with the sample majority neither evaluating the impact of this process nor linking it to their business and HR strategies. This finding is cause for concern given both the costs of management development and the crucial importance of effective management to Ireland's continued economic growth.

The second project, examining the impact of management education on individual and organisational development, is a four-country transcontinental study with partners in Australia, South Africa and the USA (see LInK profile).

Together with Dr Edel Conway of DCU Business School, she is engaged in a nationally funded Health Research Board project that is investigating the impact of commitment to change in the health service. She has published with colleagues in journals such as *Human Resource Management Journal*, *The International Journal of Human Resource Management*, *Personnel Review*, and *Accounting, Organizations and Society*.



Learning, Innovation and Knowledge Research Centre – LInK

Research within LInK focuses on the creation and dissemination of knowledge both within and outside organisations. The Centre brings together researchers from DCU, University College Cork, National College of Ireland and the Royal College of Surgeons to work on a variety of national and international projects that include management education and development, leadership, commercialisation, distance learning, professional careers and work-life balance.

One example of the collaborative work currently being undertaken is a study on the impact of management education on individual and organisational development. Research has identified management development as a key resource that firms need to understand and support in order to create sustainable competitive advantage. Yet, little attention has been focused on understanding the issues that impact on the support for, and outcomes of, management development. Specifically, the study assesses:

- Perceived competencies, levels of motivation, conscientiousness and perceptions of work-life balance among managers and professionals undertaking a management education programme.
- The climate within organisations for the transfer of learning from management education.
- The impact on organisational development and performance.

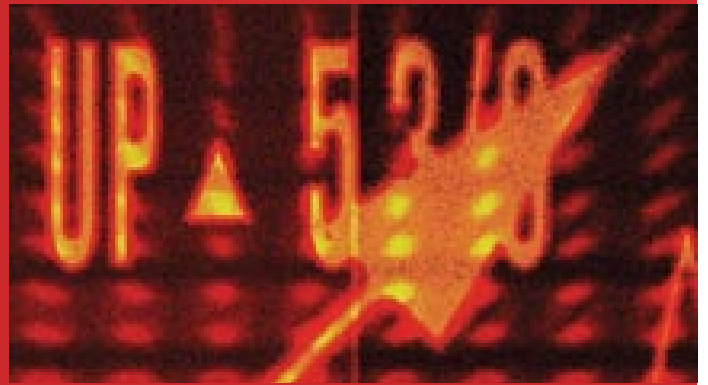
As well as data from Ireland, the study has been advanced by partners in South Africa (University of Capetown), Boston, USA (Northeastern University), and Australia (University of Technology, Sydney). The findings to date provide unique insights into individual, organisational and cultural differences that influence the impact that management education has on individuals and organisations.

Management and Information Systems:

Management

Researchers in management area are active in the areas of strategic and institutional leadership, industry evolution, strategic renewal and turnaround.

Researchers have particular interest in researching the single firm: strategic and process innovation, outsourcing, the value chain, the supply chain, management of knowledge and organisational social capital. Researchers also model two-firm (duopoly) competition under product differentiation and advertising, using analytical, game theoretic and simulation methods.



Information Systems

Under the information systems heading, research is ongoing into electronic commerce, in particular, security and risk management, determinants of technology adoption and usage, critical dimensions of online service quality and strategic information systems.

Professor Brian Leavy

PROFILE



Professor Brian Leavy has been AIB Professor of Strategic Management in DCU Business School since 1994. He joined the university in 1981, and is a former dean of the Business School. He is currently the Head of the Management and Information Systems Group, and Academic Director of the School's executive education programmes.

His research interests include strategic leadership, competitive analysis, supply chain strategy, industry evolution and strategy innovation. Current collaborations focus on industry evolution, which studies the process and pattern of industry change at maturity – particularly in industries like wholesaling where the influence of technology is not predominant, and the concept of industry life cycle has somewhat limited explanatory power. Much of his more recent research is closely linked to the university's Business and Innovation theme, as reflected in such recent papers as "Creativity: the new imperative" in the *Journal of General Management* and a "A leader's guide to creating an innovation culture", published in *Strategy & Leadership*

He is a contributing editor of the Emerald journal, *Strategy & Leadership*, and is the author/co-author of three books, *Key Processes in Strategy*, published by Thomson Learning, *Strategy and General Management* (with J.S Walsh of UCC), published by Oak Tree Press, and *Strategy and Leadership* (with David Wilson of Warwick Business School), published by Routledge.

Engineering & Computing

DCU Engineering and Computing research activities reflect a strong multidisciplinary approach, that encompasses a number of major centres and groups and a cross over with other DCU research areas, such as the Life Sciences. Our research has a long history of interaction with industry (provided by a direct service through Power Electronics Ireland) that sustains a number of long-term industrial partnerships and sponsored awards, demonstrates a considerable IP track record, and delivers significant successes in commercialisation and research innovation programmes.

Research activities are both basic and applied in nature and funding comes from sources including Science Foundation Ireland and the EU Framework Programme. Collaborations with industrial partners, such as Samsung, Google and Medtronic AVE, also provide funding, which demonstrates confidence in our research capabilities. Inter-disciplinarity is a realised aim in much of the research undertaken and is reflected in our core strengths.

DCU Engineering and Computing Research has a world class reputation across the research spectrum in terms of start-up companies, translational experience and commercialisation of research. Most recently, researchers in the Adaptive Information Cluster formed part of a successful bid with Trinity College Dublin, University College Dublin, Dun Laoghaire Institute of Art and Design and The National College of Art and Design, to establish the National Digital Research Centre

We also house a graduate training centre in the area of Medical Technologies, funded through the EU 6th Framework Marie Curie Scheme.

Research Centres

There are six research centres:

- Research Institute for Networks And Communications Engineering (RINCE)
- Centre For Digital Video Processing (CDVP)
- Adaptive Information Cluster (AIC)
- Materials Processing Research Centre (MPRC)
- Irish Centre for High End Computing (ICHEC)
- National Centre For Language Technology (NCLT)

Research Institute for Networks and Communications Engineering (RINCE)

RINCE's mission is to realise new research directions and make landmark contributions to the development of information and communication technologies (ICT) in the Global Information Society. Nine different groups, both individually and collaboratively, are developing cutting edge research. Employing our specific areas of expertise, RINCE plays a key role in the development of ICT technologies through research and development, national and international collaborations, industrial interactions (such as General Electric, HP, Ericsson and Intel) and education and training. RINCE's focus in performing world class basic and applied research has resulted in technological breakthroughs, which have had major beneficial impacts on society.

The eAccessibility Group recently completed a large-scale study of EU public service websites in terms of their accessibility for users with disabilities. It is hoped that the results will lead to the establishment of standardised protocols, ensuring equal access to websites for all users.

Research conducted by **RINCE speech technologists** will automatically translate phone conversations in our native tongue to the language of the receiver, with intonations remaining intact.

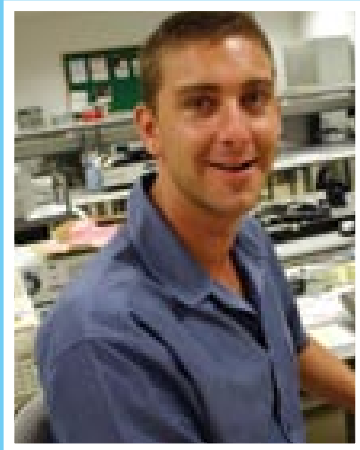
The Radio and Optical Communications Group continues to examine how fibre-optics enable broadband connections to the home. Researchers in the Performance Engineering Laboratory meanwhile are enhancing the performance of mobile-videos.

The **Nanoprocessing Group** recognises that old-fashioned silicon technology is reaching a 'brick wall'; microchips built on Si technology won't work fast enough and/or consume too much power. In anticipation, this research group is investigating a new technology which will work faster while consuming less power.

RINCE reaches out to engineers of the future through its **'Engineering and Research Skills'** secondary schools transition year programme. Through the SFI-funded Secondary Teacher Assistant Researchers (STARs) programme, we also host teachers working as assistant researchers in the laboratories during their summer vacation.

Professor Liam Barry

PROFILE



Professor Liam Barry is the Director of RINCE and he supervises the Radio and Optical Communications Group. The seven active researchers' main goal is the design, simulation and demonstration of new technologies for future broadband photonic communication systems.

Before joining DCU, Professor Barry spent time abroad in industry and academia. He was employed as a Research Engineer in the Optical Systems Department of French Telecom's Research Laboratories in Lannion, where his research involved the use of ultra short optical pulses in high capacity optical networks. This led to a PhD from the University of Rennes. He also spent time at the Applied Optics Centre in Auckland University, New Zealand, where his work focused on optical pulse generation and measurement, and the use of optical non-linearities for high speed all-optical switching in fibre networks.



Novel Optical Transmitters for Broadband Optical Networks

Professor Liam Barry

The massive growth in demand for broadband services is driving the need to increase capacity in the access networks beyond what can be achieved with current electronic technologies. One possible solution is to use Fibre-To-The-Home (FTTH), which could offer almost unlimited bandwidth in comparison to what is currently available. As a broadband networking solution it would have the flexibility to meet customer demand for two-way, interactive, video-based services. The Radio and Optical Communications Group in RINCE, in collaboration with two Irish SMEs (INTUNE Technologies and Eblana Photonics), and through funding from SFI, are investigating the use of novel optical transmitters. These are being developed by the two SMEs to progress the next generation of optical access networks, including FTTH. This work involves determining how the performance criteria of novel optical transmitters from these industrial partners will affect the design of future optical networks.

Centre For Digital Video Processing (CDVP)

The Centre for Digital Video Processing (CDVP) is a cross-disciplinary collaboration between computer and electronic engineers. The Centre is a founding component of the Adaptive Information Cluster (AIC).

The CDVP performs basic and applied research into the technologies necessary to support the efficient management of large collections of multimedia information, specifically addressing video, image and audio information. Research is conducted into audio-visual content analysis for feature extraction; content-

based information retrieval for information-seeking applications; browsing and search interfaces (including using mobile and next generation interface devices); and overall video navigation for safety and for security applications. All activities are linked by the common aim of providing efficient management of large collections of information.

Research in the CDVP is funded by both industry and by research funding agencies, including Google (US), Microsoft Research (US), Samsung (Korea), Science Foundation Ireland, Enterprise Ireland, and several multi-partner EU framework projects. A spin-off company, Aliope Ltd, was created in 2002 to commercialise CDVP intellectual property. It has since been purchased by another Irish company.



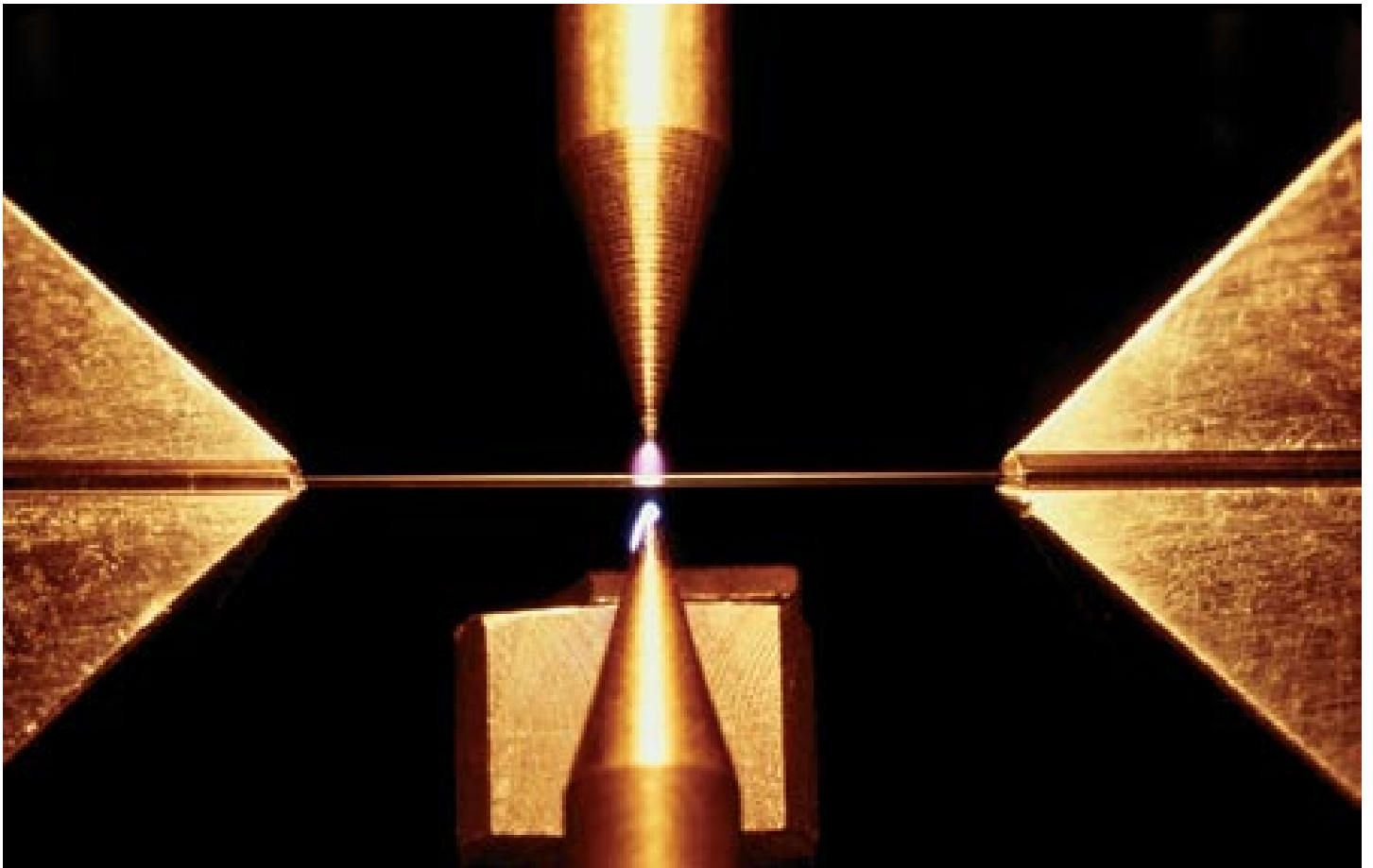
Adaptive Information Cluster (AIC)

Focused on the area of Ambient Intelligence, the Adaptive Information Cluster (AIC) is a cross-disciplinary research cluster with a mission to integrate research on adaptive sensor networks, content extraction, adaptive utilisation and adaptive middleware. The cluster, established in 2004 with funding from Science Foundation Ireland, consists of 90 researchers and research staff.

The AIC brings together world-class researchers in sensor & materials science, software systems engineering, electronic engineering and cognitive and computer science. Its three research centres are DCU's National Centre for Sensor Research (NCSR), DCU's Centre for Digital Video Processing (CDVP) and University College Dublin's School of Computer Science and Informatics (SCSI).

The AIC collaborates closely with industry partners, other research institutes and public bodies to develop applications in health management, food quality, personalised retailing, home entertainment, traffic management, environmental monitoring, security and threat detection. Industry collaborators include Mitsubishi Electric Research Labs, IBM (TJ Watson, New York), Vodafone, Changing Worlds, Intel, Google and Microsoft Research, as well as the Environmental Protection Agency and the Marine Institute.

AIC sensor research is focused on integrating sensors into pervasive communication systems as front-end information gatherers. The aim is to generate true context aware networks that bridge the digital and molecular worlds. The overall goal is to understand how people and their environments interact dynamically. The AIC has unique capabilities to generate new types of sensing devices, including transducers, chemical sensors and biosensors, as well as integrating data from these devices with information from video cameras and acoustic sensors.



Materials Processing Research Centre (MPRC)

The Materials Processing Research Centre (MPRC) engages in research activities related to materials engineering and materials processing techniques. These range from structural materials for mechanical or biomedical applications to electronic components. The mission of the MPRC is to contribute to science, industry, healthcare and education through knowledge driven materials development. Underpinning this work is a pursuit of sustainable technologies and/or enhanced standards of living.

Key technologies at the MPRC include Coating Deposition Systems, Casting and Semi-Solid Processing, Metal and Ceramic Powder Based Processing, Polymer Processing, Rapid Prototyping and Forming Processes. A range of materials testing equipment can characterise

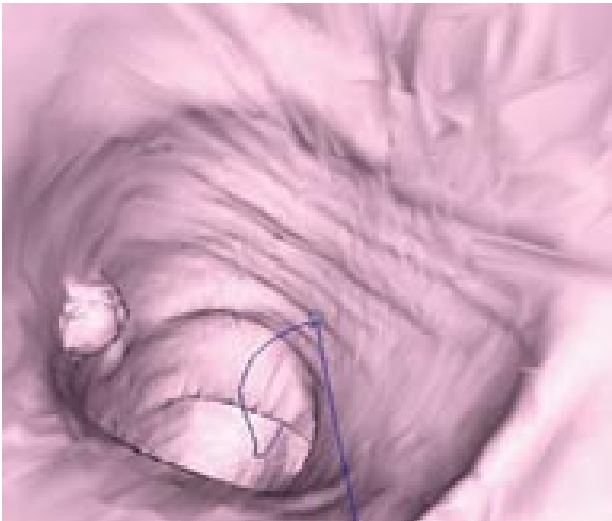
mechanical and physical properties of a range of materials. Extensive use is also made of numerical simulation tools including ANSYS and FLUENT.

MPRC researchers have links with the National Centre for Plasma Science and Technology and the Vascular Health Research Centre, and collaborations are undertaken with companies in the medical device and electronics sectors. In 2005, the Centre secured a Marie Curie Early Stage Research Training Host Fellowship programme in the area of *Novel Fabrication Techniques to Produce Scaffolds for Tissue Engineering Applications*. This is a four year project training postgraduate researchers.

MPRC researchers have published over 130 peer reviewed journal publications and almost 400 conference publications. The MPRC is multi cultural, with current and past researchers originating from Ireland, France, Spain, Italy, Bangladesh, Saudi Arabia, China, Egypt, Libya, and India.

CAD-CTC

Professor Paul F. Whelan (Vision Systems Group) and Dr. Helen Fenlon (& Dr. Padraic Mac Mathuna (Mater Misericordiae Hospital)

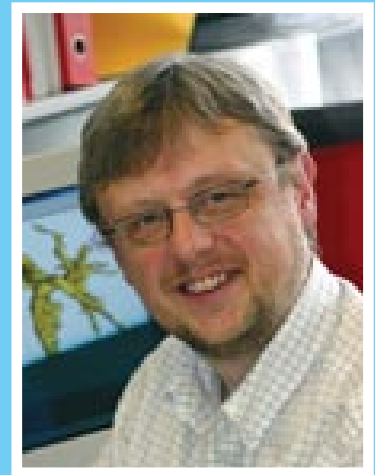


This research investigates the automated computer analysis of Computed Tomography (CT) colonography to detect colorectal cancer. By using standard and low-dose radiation ct acquisition, the focus of this work is to advance a variety of specific non-invasive image processing, analysis and classification (computer-assisted diagnostic (CAD)) techniques. These will improve detection of early colorectal cancer and polyps using standard and low-dose Computed Tomography Colonography (CTC). A CT scanner takes images of a patient's abdominal region which are then automatically analysed by computer to determine whether a potentially cancerous polyp exists.

Research focuses on modelling and implementing robust computer aided diagnostic techniques for polyp detection, specifically in classifying tissue regions for a wide range of polyp morphologies. The team is currently reaching levels of sensitivity and specificity for the computer aided diagnostic approaches, which are similar to both traditional endoscopic (which is considered the gold standard) and manually read CTC approaches. The system is currently undergoing preliminary clinical trials at the Mater Misericordiae Hospital (Dublin). In line with a key element of **"Leadership through Foresight"** this project focuses on translational research by its inclusion of medical and life science members as part of the group's core activity.

Professor Paul Whelan

PROFILE



Professor Paul Whelan is a Professor in the School of Electronic Engineering and holds a Personal Chair. Paul established the Vision Systems Laboratory and its associated Vision Systems Group in 1990, and currently serves as its director. He also serves on the steering committee of RINCE. He was responsible for the establishment and on-going management (1995-2000) of the world wide web-based Remote Access to Continuing Engineering Education (RACeE) initiative.

His research interests include image segmentation - and its associated quantitative analysis (specifically mathematical morphology, colour-texture analysis) with applications in computer/machine vision - and medical imaging (specifically computer aided detection and diagnosis and focusing on translational research).

As well as publishing over 100 peer reviewed papers, Prof Whelan has also co-edited 3 books. He is a Senior Member of the Institute of Electrical and Electronics Engineers, a Chartered Engineer, and a member of the Institute of Engineering and Technology and the International Association for Pattern Recognition (IAPR). He is also a member of a range of computer vision related conference program committees and acts as a reviewer for a number of the main computer/machine vision journals.

Dr Michael Scott

PROFILE



Dr Michael Scott is a Senior Lecturer in the School of Computing. His team is investigating the implementation and application of Identity-based cryptography, and other cryptographic schemes based on bilinear pairings on special elliptic curves. He is a co-INVENTor of the BKLS algorithm which is the most commonly used method to calculate these pairings.

New applications, such as a method of digital signcryption have been INVENTed and patented by Dr. Scott and his team of researchers. Joint work with researchers from Royal Holloway College in London has resulted in the recent discovery of the new and very efficient n_T pairing.

Current research concentrates on implementing pairing-based cryptography on smart-cards, such as the "sim" card of a mobile phone, with a view to integrating pairing-based cryptography to secure mobile applications. This work is funded by Enterprise Ireland.



Irish Centre For High End Computing (ICHEC)

The Irish Centre for High End Computing (ICHEC) was set up in 2005, to help drive and support cutting edge research in Ireland. It is the result of a collaboration involving DCU and five other universities in Ireland, as well as the Dublin Institute for Advanced Studies and the Tyndall Institute. DCU's involvement is led by Dr Turlough Downes (Mathematical Sciences), who is on its Governing Board, with Science Council members Professor Heather Ruskin, (Engineering and Computing) and Professor Miles Turner (Science and Health). ICHEC provides access to world class high end computational resources for all Irish researchers, as well as training them to utilise these resources.

DCU researchers are using the Centre's resources to gain a greater understanding of processes in a wide range of scientific and engineering problems, including Systems Biology and multi-scale responses in Biomimetics, cardiovascular stent design and astrophysics.

Therapeutic Ultrasound Angioplasty

Dr. Garrett McGuinness and Dr. Graham Gavin, School of Mechanical and Manufacturing Engineering

The use of ultrasound is commonly associated with imaging and diagnostic procedures in medicine for the early detection and assessment of numerous conditions. At increased powers, however, therapeutic ultrasound appears to have great potential in the treatment of various cardiovascular diseases – particularly severe blockages of the coronary arteries known as chronic total occlusions (CTOs). These life threatening blockages are currently associated with major complications when treated with familiar procedures, such as balloon angioplasty and stent implantation.

In collaboration with a major medical device company, with established R & D in Ireland, and funded under Enterprise Ireland's Innovation Partnership scheme, research into ultrasound's potential benefits assessing the effects of transmitting therapeutic ultrasound down thin medical guidewires commonly used in minimally invasive cardiovascular surgery. Efforts are concentrated on the design and development of prototype therapeutic ultrasound devices that are used in experimental studies. Advanced computer modelling techniques help predict the behaviour and effects of these devices in conditions similar to clinical situations.



Dr Joseph Stokes

PROFILE



Dr Joseph Stokes is a lecturer in the School of Mechanical and Manufacturing Engineering, and is a member of the Materials Processing Research Centre. His research interests include powder production and processing for biomedical applications.

Biomaterials and medical devices represent a fast emerging market in Ireland, specifically femoral implant technology. Prostheses are joined into their anatomical location using a thermally sprayed Hydroxyapatite (HA) coating, which allows the bone to ingress into the implant. The recognised long-term durability of the implant is attributed to the performance of the coating and studies confirm that the performance of the deposit on the implant can be improved with a deeper investigation in the area of HA powder production

His independent research career started in 2003, after completing his PhD in the area of thermal spraying. During this time he has advanced his own profile by attracting postgraduate/postdoctoral students and forming industrial and European research laboratory links. The latter was funded through the Spraynet European Thematic Network part of the EU 5th Framework. He currently supervises seven researchers and is a Principal Investigator in an EU 6th Framework Marie Curie Early Stage Training Project.



National Centre For Language Technology (NCLT)

Language is the key modality in human communication. Vast amounts of valuable information are encoded in text available on the world-wide-web and the electronic data repositories of large business, governmental, educational, health and entertainment organisations. Because information extends across language divides, language technologies are required. World-wide, translations need to be made available more quickly and for more languages. The solution is to develop Machine Translation (MT) systems capable of translating large volumes of text. Customers want to access information remotely, using spoken language, unimpeded by keyboard- or screen-

based interface devices, while language learners want interactive, multi-modal learning material.

The National Centre for Language Technology conducts basic research into the processing of human language by computers, including machine translation, grammar induction, speech recognition and synthesis, information retrieval and extraction, and the teaching and learning of languages using computers. Research conducted at the NCLT has produced ground-breaking technologies in Example-Based Machine Translation (including the translation into Sign Language) and the acquisition of wide-coverage grammatical resources.

Research projects within the NCLT have been funded by SFI, IRCSET and Enterprise Ireland. The NCLT works in close collaboration with industrial partners including IBM, Microsoft and Xerox PARC and Chinese Universities.

Multi-scale Response and Biomimetics

Professor Heather Ruskin, Martin Crane, Ray Walshe and Geoff Hamilton (Biocomputation Research Laboratory, Modelling and Scientific Computing Research Group)

The individual, collective, and co-operative responses of cells and their constituents (DNA, RNA, proteins etc.) depend on parameters and perturbations such as pressure, temperature, viral invasion and degradation. Biological system complexity places limitations on computational models at atomistic scale, hence the need for *biomimetics* - simplified models mimicking biology and designed to gain insight into the fundamental principles and mechanisms that lead to both local and global response.

Such models can address a variety of questions on biological assemblies across different scales, including epigenetic changes through interacting networks, viscoelastic properties of biodegradable polymers for cartilage repair and efficiency of complex formulations for drug delivery systems. Identification of fundamental laws, universal and detail-specific, can help accelerate biological knowledge acquisition on the basis of abnormalities and their role as originators of disease, the design of new drugs, and the function of bio-materials.

While characteristic properties of macromolecules and cells have been extensively studied, the quantitative or systemic approach to understanding how basic interactions at different scales lead to observed global and specific properties, is relatively recent. The confluence of fundamental laws (atom-to-materials), tools (mathematical and computational), and phenomenological biology, in an integrated approach, is a potential key to understanding co-operative behaviour in complex biological systems.

Professor Heather Ruskin

PROFILE



Professor Heather Ruskin is currently Associate Dean of Research in the Faculty of Engineering and Computing. She leads the Biocomputation

Research Laboratory in the National Institute for Cellular Biotechnology, (NICB) and chairs the Modelling and Scientific Computing research group ModSci. Her principal research strands are Biocomputation/ Biomimetics and Socio-economic modelling. Major projects focus on viral dynamics/immune response and drug dissolution, as well as societal risk factors, with supporting projects in parallel and distributed methods and datamining/Microarrays. She has been engaged in research on computational models for complex systems and statistical methods in the natural sciences for a number of years.

Dr. Ruskin serves on the Irish Research Council for Science, Engineering and Technology, the Science Council for ICHEC, (Irish High Energy Computing Centre) and is a Council Member for the Institute for Numerical Computation and Analysis. She has collaborated with other institutions nationally, within Europe, China and the USA.

Humanities and Social Sciences

Researchers at the Faculty of Humanities and Social Sciences answer questions of economic and social relevance at both the national and international level. They also comment on how our increasingly complex society works and understands itself. In all its research, the Faculty uniquely benefits from the significant national public and media profile of a number of academic staff.

The faculty has recently begun a programme of doctoral training which prioritises qualitative and quantitative techniques. In this and other projects the Faculty aligns itself with the academic theme of Internationalism, Interculturalism & Social Development.

The Faculty incorporates five schools:

- Applied Languages and Intercultural Studies (SALIS)
- Communications
- Education Studies
- Fiontar
- Law and Government

... and three University Research Centres:

- The Centre for International Studies (CIS)
- The Centre for Translation and Textual Studies (CTTS)
- The Centre for Society Information and Media (SIM)



SALIS

SALIS focuses on the interdisciplinary study of languages and cultures, and the processes of communication between national and cultural communities. Research is divided into three distinct but interrelated areas: **Intercultural Studies, Language Studies and Translation Studies.**

Intercultural Studies ranges from comparative literature and history of ideas, to intercultural communication and multiculturalism. It includes work on national stereotypes and identities, and on language and interculturality.

Language Studies includes second language acquisition, CALL, language policy, educational technology, psycho- and sociolinguistics, and textual analysis.

Translation Studies work in contrastive textology, translation technology, subtitling/dubbing, translation theory, translation history, corpus-based translation studies, travel literature and interpreting studies.

Dr Aileen Pearson-Evans

PROFILE



Dr Aileen Pearson-Evans is Senior Lecturer in the School of Applied Language and Intercultural Studies (SALIS). Her interest in

language teaching methodologies and cross-cultural communication prompted her to live and study in Japan (1985-7, 1992-5), and to teach Japanese in DCU (1992-5). Her doctorate focused on the cross-cultural adjustment of Irish students in Japan (TCD, 2000), and she has since published widely on aspects of cross-cultural adaptation and on intercultural dimensions of language teaching. She is a specialist in the application of intercultural theory to practice, intercultural dimensions of language teaching, training for working/managing in intercultural environments, cross-cultural adaptation issues, and West/East (Japan, China) communication. Currently she is Director of the Leonardo-funded *European Intercultural Workplace (EIW)* Project – a pioneering research project that comprises an international partnership of 10 European states investigating the impact of cultural diversity at work, and developing training materials to enhance communication in intercultural work environments across Europe.

Communications

Research interests are concentrated in media content analysis, media policy and history, social aspects of digital media, journalism practice, cultural change and cross-cultural communication.

FIONTAR

The interdisciplinary focus in FIONTAR links identity, self-confidence and entrepreneurial capability at individual, local and national levels. FIONTAR's research agenda focuses in particular on these issues and allows Irish to become linguistically a fully integrated part of the modern world of business and technology at postgraduate level.

Education Studies

The School of Education's research interests include teaching and learning, policy and structures in Irish post primary and further education, curriculum design, research methodology, qualitative research, action research, programme and organisational evaluation and information and communication technologies in education and training.

Law and Government

The School of Law and Government concentrates its research activity in two main areas: law and society, and governance and international studies.

Law and Society

The School prioritises research with a strong empirical focus in the general area of law and society. Research strands include medical and health care law, business and social partnership, the family and personal relationships, and judicial reform.

Governance and International Studies

This work focuses on issues such as international political economy and development, international relations, conflict and security studies, and governance of economic policy.

Professor Michael Cronin

PROFILE



Professor Michael Cronin is Director of the Centre for Translation and Textual Studies. His research over the years has focused on how recognition of linguistic diversity is vital to a proper understanding of the human condition. He is the author of a number of titles which include *Translating Ireland: Translation, Languages, Identities* (Cork University Press, 1996), *Across the Lines: Travel, Language and Translation* (Cork University Press, 2000), *Translation and Globalization* (Routledge, 2003), *The Irish Language in the New Century/ An Ghaeilge san Aois Nua* (Cois Life, 2005) and *Translation and Identity* (Routledge, 2006).

Professor Cronin was awarded the Canadian Association of Translation Studies/Vinay Darbelnet Prize for *Across the Lines* in 2000, and he is also the recipient of the Prix du Québec. He is a leading researcher in Fiontar and a central research goal is to situate the Irish language in a global context.

This year Professor Cronin was appointed to the Irish Research Council for the Humanities and Social Sciences (IRCHSS), the Royal Irish Academy and the Humanities and Social Sciences Council of the French National Research Agency.



Centre for International Studies

The Centre for International Studies (CIS) prioritises research in four interrelated areas:

- development policy
- international relations
- conflict and security studies
- governance of economic policy

The aim of CIS is to maximise the links between these different disciplines, and to facilitate the cross-fertilisation of research ideas and the development of team-based research projects.

The centre acts as a focus for visiting speakers and scholars in DCU. Recent guest speakers have included: Pat Cox (former President of the European Parliament); Gareth Evans, (member of High Level Panel on UN Reform); Peter Sutherland (former Director General of the WTO and the UN Secretary General's special representative on international migration); Sandy Thurman (CEO International AIDS Trust and President Clinton's National AIDS Policy Director); and numerous diplomats, military officers, visiting academics and leaders of development NGOs.

Centre for Translation and Textual Studies

The Centre for Translation and Textual Studies is a leading international centre for the study of all aspects of translation. Research includes computer-assisted translation, corpus-based translation studies, community interpreting, localisation, screen translation, translation pedagogy and translation history. CTTS is involved in collaborative projects with translation scholars from Europe, North America and Latin America. CTTS works closely with major industry players such as IBM and Symantec to examine how translation technology can be used more effectively in a modern world of multilingual and culturally diverse markets.

The Centre is involved in a major project investigating the ethical dimensions of interpreting in the community, in the areas of Mental Health Care, Law Enforcement, and Health and Safety (in the construction industry). The CTTS has extensive experience in community interpreting research through close involvement with the EU-funded Asialink project, which saw researchers from the Centre training community interpreters as far afield as China and Vietnam.

CTTS has compiled the TRASNA database, which contains the details of over 16,000 translations of Irish works by 350 writers, into more than 60 languages - the largest national database of its kind in the world. As such, it has become an indispensable reference tool for researchers the world over.



The Centre for Society Information and Media (SIM)

The Centre for Society Information and Media (SIM) is a communications research centre investigating socio-economic, historical, professional and cultural aspects of print, audiovisual and digital media.

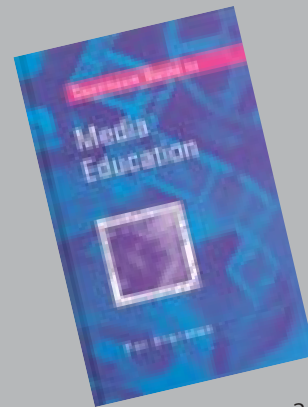
SIM brings together researchers who represent a range of media study approaches, including those of policy studies, reception analysis, cultural studies, political history, textual studies and social organisation. The current Centre Director is Professor Farrel Corcoran.

SIM's work focuses on four principal themes:

- Innovation in the Information Society
- Media Policies, Practices and Audiences
- Digital Media Cultures
- Science Communication

Dr Pat Brereton

PROFILE



Dr Pat Brereton is Deputy Director of the Centre for Society Information and Media (SIM). His latest book, *Hollywood Utopia – Ecology in Contemporary Hollywood Cinema* (Intellect Books, 2005) has been favourably reviewed in publications from the fields of film studies, ecology and philosophy. He has recently been invited to prepare two book chapters on ecology and film. *An Encyclopaedia of Irish Cinema*, co-authored with School of Communications colleague, Dr Roderick Flynn, has been submitted to the publisher, Scarecrow Press, and is due to appear in 2006. Dr Brereton has previously had a *Guide to Media Education* published (Continuum, 2001). He is a member of the editorial board of the new media journal, *Convergence*, and is guest editor of a special issue in 2006 on DVD special features.



Regulating Lobbying Activity in the EU, USA, Canada and Germany: Implications for Ireland

Dr. Gary Murphy, Senior Lecturer in the School of Law and Government, is engaged in a research project examining the regulation of lobbying activity in the European Union, the USA, Canada and Germany. The aim of this research is to assess how lobbying legislation in these jurisdictions is relevant to Irish public life.

During in-depth interviews with lobbyists, politicians and those responsible for drafting lobbying legislation, the individuals were asked about the pros and cons of the regulatory system in operation, whether or not dynamics

differed in the specific policy areas interviewees worked in, and what specific recommendations they would make to both central and local government officials in Ireland seeking to regulate lobbying activity within the different levels of governance.

This project is funded by the Irish Department of Environment, Heritage and Local Government and is being undertaken in conjunction with Dr. Raj Chari of the Department of Political Science at Trinity College, Dublin.

Professor Robert Elgie

PROFILE



Professor Robert Elgie is Paddy Moriarty Professor of Government and International Studies in the School of Law and Government. His research focuses on the issue of good governance. For example, why do governments delegate decision-making responsibility to independent agencies in some countries but not others? And what are the effects of such decisions? The answers to these questions have profound real-world consequences. They help to set the agenda for good governance both at home and abroad.

Professor Elgie is an expert in the politics of contemporary France. He has published extensively in this area, including *Political Institutions in Contemporary France* (Oxford University Press, 2004), *Debates in French Politics* (Routledge, 2000), and the *Role of the Prime Minister in France* (Macmillan, 1993). He is also the co-editor of the journal *French Politics* (published by Palgrave), the leading international journal in the area.

He also publishes in comparative politics, and has a particular specialism in the area of political leadership. He is currently preparing two books as editor, *Semi-Presidentialism Outside Europe* (Routledge) and *Semi-Presidentialism in Central and Eastern Europe* (Manchester University Press).

Professor Elgie has been awarded funding from the Irish Research Council for the Humanities and Social Sciences to study the changing patterns of parliamentary activity of the Taoiseach in the Dáil.

Active citizenship in Central America

Dr. Peadar Kirby, School of Law and Government

This three-year project is researching the capacity of civil society organisations (CSOs) in Central America to engage effectively with their state and international organisations on the basis of evidence based advocacy. It will examine the internal capacities, needs and links between CSOs and local universities, helping to establish whether networking Central American universities with local civil society groups could develop a more active citizenry, who are able to influence public policy in a pro-poor direction. The initial focus is on El Salvador, Nicaragua and Honduras, with Guatemala and Belize due to follow. Priority is being given to key areas such as education, health, livelihood security and market access for civil society producer groups. The project leaders are Dr Peadar Kirby and Dr Barry Cannon, Post-Doctoral Fellow at the CIS.

'Language On-Line Portfolio Project' (LOLIPOP)

The project is financed by the EC under the Socrates, Lingua II Programme. It focuses on the creation of a multilingual, online, interactive version of the European Language Portfolio (ELP) with an enhanced intercultural dimension. The ELP is a document, developed by the Council of Europe. It is designed to assist and support the language learner and contains three elements: a passport, biography and dossier. It uses the Common European Framework of Reference for Languages as a reference point for learning and assessment. DCU leads a consortium of twelve Higher Education Institutions across Europe. DCU is represented in the project by Ms. Veronica Crosbie, Dr. Jenny Bruen and Ms. Juliette Péchenart of the School of Applied Language and Intercultural Studies, and Mr. Charlie Daly of the School of Computing Studies.

Qual-Praxis Project

Qual-Praxis is an evaluation of the relationship between the Further and Higher Education systems in six European Union countries. It is led by Gerry McNamara, Justin Rami and John Lalor, and funded by the Leonardo da Vinci Programme of the EU and the Further Education and Training Awards Council of Ireland. The main objective is to discuss and examine innovative student assessment models from the perspective of different national Vocational Education and training (VET) traditions.

The Qual-Praxis project will bring work-based assessment practices, their roots and future perspectives to the attention of the European audience. The primary target groups of the project are policy makers, educational administrators and researchers.

Fiontar Tearmaí Unedig

Fiontar Téarmaí Unedig is a major Humanities project funded under EU programme Interreg IIIa (Ireland-Wales) Priority 1 Measure 4 (communications in technology and transport). The Irish strand is partially funded by Foras na Gaeilge and the HEA. The project value is €1.46m. The partners are FIONTAR, DCU and the University of Wales Lampeter. The main objective of the project, both in Ireland and Wales, is to provide online linguistic solutions for the general public.

The principal objective of the Irish strand of the project is the creation of a national terminology database for Irish, for both specialist and general users over the Internet, and the creation of a terminology management tool.

The demand for terminology in Irish has greatly increased since the enactment of the Official Languages Act 2003. This project will produce a software solution which will provide both a terminology management system for professional terminologists and a publicly-accessible on-line dictionary for everyday users.

Dr. Gerry McNamara

PROFILE



Dr. Gerry McNamara is Head of the School of Education Studies. His research interests focus on curriculum development and evaluation. His work encompasses both the development of new programmes and initiatives and the evaluation of policies, programmes and projects.

He has published widely on the theory and practice of educational evaluation, and is particularly interested in the dilemma of educational evaluation as both a mechanism of accountability and an instrument of professional autonomy and development. He is a leading member of the European Evaluation Society and was recently appointed to the Europa Consortium of the EU to advise on and conduct evaluations of initiatives funded under the Technical Support Programme to developing nations outside the Union.

At present Dr. McNamara is evaluating the new system of school inspection recently introduced in Ireland. Peter Lang, New York, will publish his next book, *Evaluating Schools and Teachers*, in 2006.

He is also currently working on two further evaluation projects; firstly, an analysis of the relationship between Further and Higher Education, and secondly, an evaluation of Relationships and Sexuality Education, with particular reference to gay and lesbian issues and to homophobic bullying in post primary schools.

INVENT - "DCU's Commercialisation Gateway"

The mission of INVENT is "to transform knowledge into commercial success."

INVENT is responsible for:

- The management of the University's research based Intellectual Property, as well as its commercialisation through technology transfer, licensing and the creation of campus companies.
- The development and management of the Innovation & Enterprise Centre on campus at DCU

INVENT's role is to add value to promising research at an early stage by fostering links between emerging technologies, developed and the financial and entrepreneurial resources of industry and business. This is achieved through the Commercial Gateway:

- By introducing new technologies to the marketplace, INVENT is the gateway for early stage technologies arising from DCU research.
- INVENT licenses university innovations to established companies. It also initiates start-up companies as the commercialisation pathway for some technologies.
- INVENT has a highly successful programme working with commercial partners on spin-in activities, corporate venturing and intra-preneurship, all of which benefit the university greatly.

INVENT continues to seek key relationships with experienced individuals/companies, across the breadth of technologies within its portfolio.

Campus Company Development examples:

Gas Sensor Solutions Ltd. is the 2nd company spin-off from the National Centre for Sensor Research (NCSR). Gas Sensor Solutions is a global sensor technology company, providing customised solutions to customers requiring accurate, reliable gas composition information. GSS systems are based on a revolutionary new sensor technology that measures gas composition using a printable sensor membrane and a reliable robust analyser instrument. See www.gss.ie

Lexas IT Ltd, an Irish owned company trading successfully since 2001, is expanding into the development of products for the semiconductor manufacturing market. The company's mission is to be the leading provider of integrated process diagnostic and monitoring systems to the semiconductor manufacturing industry. Lexas IT has progressed its active research and development activity for over 18 months, and, in January 2005, Lexas Research was established. Through close and productive links with researchers at Dublin City University's National Centre for Plasma Science and Technology, Lexas has been able to 'spin-in' its R&D activity into the INVENT Centre. The company is developing ground breaking technology for manufacturing at the frontiers of miniaturisation, and is developing tools for monitoring and controlling nanoscale surface modification processes for the semiconductor manufacturing industry. This technology makes manufacturing possible below 65 nanometers.

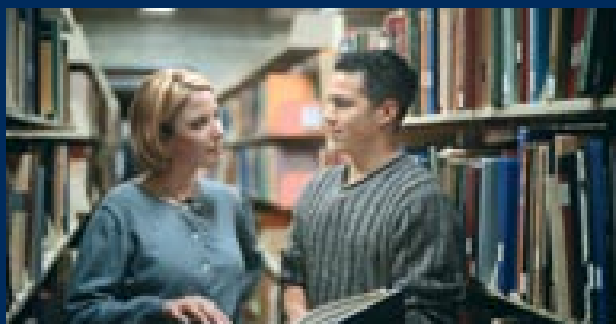
Postgraduate Students

DCU Graduate School

In *Leadership through Foresight* DCU has set ambitious targets for postgraduate research growth, as part of Ireland's drive towards developing an internationally competitive Fourth Level. The Director of Graduate Research at DCU is responsible for the management and development of the university-wide Graduate School. A key strategy is the implementation the Graduate School is the provision of a structured internationally competitive support system for young postgraduate researchers. The overall key objective is to improve the postgraduate research experience at DCU, through the provision of improved frameworks and structured course supports which will complement students' core research activities and improve their career opportunities. Additional initiatives, including PhD industrial internships, are being developed that will enhance the postgraduate experience at DCU.

International Postgraduate Students

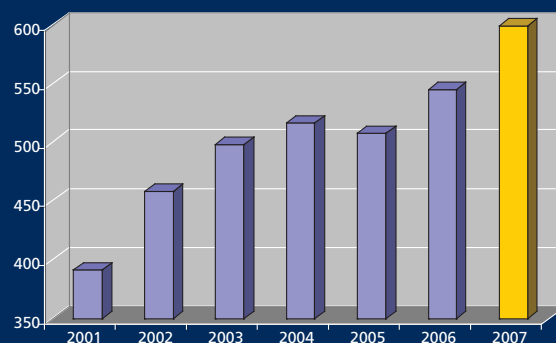
With over seventy different nationalities represented on campus, DCU is one of the most culturally diverse universities in Ireland and cherishes the huge contribution which international students from around the world make to academic life across all Faculties.



Studying in a foreign environment is both an exciting and rewarding experience but it can also present challenges, which may manifest themselves at different stages of the student's studies. **The International Office** at DCU specifically aims at facilitating the application, orientation and integration periods of international students and assisting students reach their academic and personal potential.

During the Orientation Period, students are introduced to a variety of areas, which will be of relevance throughout the period of their studies and beyond. These include an overview of the academic support available – including Academic English Classes, which take place throughout the year, information on our 'International Coffee Meetings', which combine a social event with a workshop on areas such as 'culture shock', 'career planning' or 'tips for travelling around Ireland' and advice on the integration process. At any one time we have approximately 800 students from all corners of the globe attending our institution – the welfare of these students is our primary concern.

Postgraduate Research Students



Collaborative Options

There are a variety of options for collaborating with DCU researchers, ranging from undergraduate and postgraduate internships to large-scale research programmes, depending on the status of the research area and your needs. In many cases grant-aid support from national and international research funding may be available. Please contact the Office of the Vice-President for Research for informal discussions on options to suit your needs.

ENTRY LEVEL

PROGRAMME/PROJECT OPTIONS

DCU RESEARCH
EXPERTISE

UNDERGRADUATE



Co-Operative education
- 6 month placements

POSTGRADUATE



PhD Scholarships
PhD Industrial Internships
- 6 month placements

RESEARCH
COLLABORATIONS < 2 YEARS



Feasibility studies
Short-term R&D projects
Consultancy

LARGE-SCALE
COLLABORATIONS 2-5 YEARS



Bi-Lateral collaborative
programmes

Multi-party collaborative
Programmes (universities,
Industrial, international partners)
e.g. EU Framework, Science
Foundation Ireland, IDA Ireland

TECHNOLOGY TRANSFER



IP licensing / assignment
Training & Recruitment
Professional Doctorates

Economic & Social impact

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For further details on the researchers, schools and centres featured in this brochure, please access the DCU website:

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