

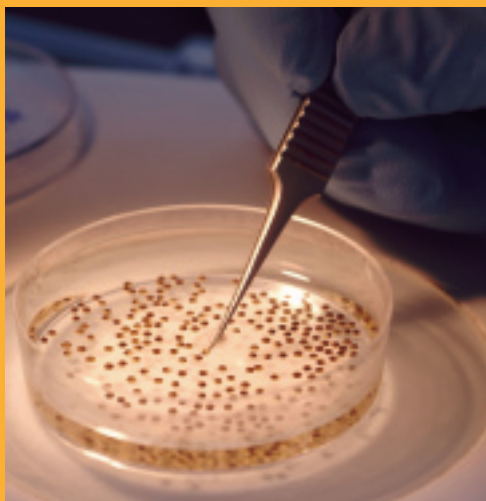
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Towards a Research-Intensive University

Research is the activity that drives innovation and discovery to fuel Ireland's knowledge economy. UCD is committed to becoming a leading research-intensive university dedicated to the search for knowledge and marked by a spirit of critical enquiry. It is also becoming an institution where the intensity of research and dedication to scholarship drives and stimulates teaching and learning, and inspires students.

Research grants and income depend largely on the institutional reputation. UCD continues to build its reputation as a destination of choice for leading research talent, providing an environment in which research leaders can innovate and excel.

As a research-intensive university, UCD will offer a wide range of top quality undergraduate and postgraduate student-centred learning, which combine quality research with the best teaching and learning methods.



Research Funding

UCD Research

UCD Conway Institute of Biomolecular and Biomedical Research

UCD Geary Institute

Dublin Molecular Medicine Centre (DMMC)

NovaUCD – The Innovation and Technology Transfer Centre

UCD Humanities Institute of Ireland

UCD Urban Institute Ireland

UCD Mícheál Ó Cléirigh Institute

UCD aims to build an environment that encourages and attracts world-class researchers from many disciplines, while also enhancing confidence in UCD as a destination for quality investment from public and private sectors. Specifically, UCD has set itself the following objectives as part of its plan to become a leading, research-intensive university, to:

- Strive for excellence in research across the institution
- Attract and retain leading researchers
- Enhance teaching and learning through research
- Develop research postgraduate programmes
- Contribute to the objectives of a knowledge society
- Make UCD a leader in attracting quality research investment.

UCD will develop interdisciplinary programmes that draw on the strengths of the university and build a critical mass of research leadership and expertise. Several major programmes are in development with contributions from a range of disciplines, including mathematics, computer science and informatics, engineering and biomedical sciences. The UCD Geary Institute continues to be instrumental in European policy debate while the UCD Humanities Institute of Ireland creates a cross-disciplinary platform for all levels of research at UCD.

The development of more structured career pathways that recognise and reward research excellence is essential if UCD is to attract and retain top researchers. The focus in the last year has been on the graduate programmes, with UCD establishing five graduate schools. UCD is also developing postdoctoral training programmes that recognise the many and varied career options in industry, academia and government.

Professor Michael Ryan has been appointed as Dean of Doctoral Studies and Postdoctoral Training to spearhead these initiatives. Key to the success of all elements of this strategy will be the continued investment in state-of-the-art facilities and technology platforms. In September 2003, UCD opened the Conway Institute of Biomolecular and Biomedical Research, Ireland's most advanced biomedical research centre. In October 2005, UCD opened the Genome Resource Unit (GRU) in one of its major teaching hospitals, the Mater Misericordiae University Hospital, and a second GRU will open shortly in St Vincent's University Hospital. These Units provide dedicated facilities for patient-oriented research and, with the Conway Institute, provide a platform for translational 'bench-to-bedside' medicine.

RESEARCH FUNDING 2003-2005

The research community has steadily increased its awards to UCD, particularly in programmes for individual investigators. In 2003/04, UCD was awarded €50 million, an increase of 9% on 2002/03. This represents funding from all state agencies and charities, as well as commercial grants. For 2004/05, funding in the same categories jumped to €63 million, an increase of 26%. Including the HEA Programme for Research in Third Level Institutions, UCD's research income for 2005 is close to €80 million (see Tables 1 and 2).

In 2005 the IDA approved a €72 million grant to a UCD-led partnership to establish the National Institute for Bioprocessing, Research and Training (NIBRT) on the Belfield campus. Under the able leadership of Dr Kurt Naujoks, researchers from UCD, TCD, DCU and Sligo IT spent over 12 months developing and refining a programme that will provide a unique opportunity for UCD undergraduates and postgraduates to participate in an emerging industry in Ireland. NIBRT is the largest award ever made in the state for research and demonstrates the potential of interdisciplinary programmes.

In the inaugural year of the prestigious SFI PIYRA (President of Ireland Young Researcher Award), 2004, two UCD researchers were recognised (see page 21). These highly competitive awards provide up to €1 million to researchers to establish their own team within five years of receiving their PhD. The aim is to help top-tier young investigators develop careers as internationally recognised researchers.

This success reflects the efforts of many senior researchers in UCD, who identified potential candidates, selected the short-list and supported the applicants through the process. The year 2004/05 also saw a jump in the number of applications for grants.

TABLE 1 – RESEARCH AWARDS

Year (October to September)	Total Value Contracts signed incl. Indirect Costs (€ million)	Total Indirect Costs (€ million)	Income (Annualised) (€ million)	Total number of contracts awarded	Number of proposals submitted
2002/03	45.8	4.5	32.3	384	584
2003/04	49.8	5.6	45.6	405	685
2004/05	62.5	8.1	54.1 (est. 2005)	495	1,074

TABLE 2 – FUNDING SOURCES 2004 AND 2005

Funding Source	Number of Contracts	Value (€ million)
Science Foundation Ireland	156	50.6
Other Irish Funding Organisations	281	21.9
Health Research Board	91	
IRCSET	79	
IRCHSS	24	
Food Safety Promotions Board	10	
Heritage Council	10	
Others	67	
Enterprise Ireland	84	6.8
European Commission	66	10.8

In each of the two years under review, UCD was awarded more SFI Basic Research Grants (2004) and Research Frontier Programme Grants (2005) than any other institution nationally. SFI also funded two large Clusters of Investigator Awards, one in Biotechnology – the Applied Neurotherapeutics Research Group headed by Professor Ciaran Regan – and one in Information and Communications Technology – the Adaptive Information Cluster, which includes Professor Barry Smyth, Professor Paddy Nixon and Dr Gregory O'Hare in the Computer Science Department.

AWARDS

For the period of the report a total of €1.2 million was awarded to UCD staff to facilitate the pursuit of research objectives. These included the President's Research Fellowships (see Table 3) which facilitate members of the academic staff who wish to avail of a leave of absence for research, thus helping underpin the university's strategy. The President's Research Awards provide starter grants for newly-recruited members of the academic staff. Other awards include the Discretionary Conference and Travel Grant scheme and Academic Publications scheme (see Table 4). In 2004/05 the awards were restructured – see Seed Funding Schemes (page 20).

TABLE 4 – IN-HOUSE AWARDS 2003-2005

	Total Value of awards, by Scheme and year (€)	Number of awards made
Academic Publications Scheme 2003/04	9,750	11
Support for Academic Conferences 2003/04	31,250	14
Discretionary Conference/Travel Grants Scheme 2003/04	51,251	84
President's Research Awards 2003/04	254,082	32
President's Research Fellowships 2003/04	264,385	9
President's Research Fellowships 2004/05	302,400	8
Seed Funding Scheme Round 1 2005	305,309	28
Total value of in-house awards between September 2003 and August 2005	1,218,427	



TABLE 3 – PRESIDENT’S RESEARCH FELLOWSHIPS

2003/04	Department	Faculty	Amount (€)	Research area
Dr Richard Reilly	Electronic & Electrical Engineering	Engineering & Architecture	31,500	Modelling Multisensory interactions involved in the Human Attention System
Professor Jean-Michel Picard	French	Arts	31,500	French Language and Culture in Medieval Ireland
Dr Cathal M. Brugha	Management Information Systems	Commerce	31,500	Nomology: The Science of the Processes of the Mind
Professor Edward P. Farrell	Environmental Resource Management	Agriculture	31,500	The Multifunctional Plantation Forest in Atlantic Europe
Professor Eugene J. O'Brien	Civil Engineering	Engineering & Architecture	12,385	Sabbatical leave to develop the best research team in the world in Traffic Loading on Bridges
Dr Edward Timoshenko	Chemistry	Science	31,500	Modelling dynamics of hyperbranched and biological macromolecules
Dr Therese Kinsella	Biochemistry	Science	31,500	Investigation of the protein targets that specifically / differentially interact with the Tpa and Tpb isoforms of the human thromboxane A2 receptor
Professor Ben Tonra	Dublin European Institute	Interdisciplinary Studies	31,500	Global Citizen and European Republic – Irish Foreign Policy in Transition
Dr Ursula Fanning	Italian	Arts	31,500	Impure Subjects: Italian Women's Autobiographical Writings in the Twentieth Century
2004/05	Department	Faculty	Amount (€)	Research area
Professor Da-Wen Sun	Biosystems Engineering	Engineering & Architecture	37,800	Development of the Cryopreservation Techniques for Living Cells and Tissues
Dr Tadhg Ó hAnnracháin	History	Arts	37,800	Catholic Europe, 1590-1648
Dr Frank Barry	Economics	Human Sciences	37,800	Foreign Direct Investment and Irish Economic Development
Dr Geraldine Moane	Psychology	Human Sciences	37,800	A post-colonial analysis of Irish society as a context for development
Dr Aidan O'Sullivan	Archaeology	Arts	37,800	Early Medieval Ireland: people and their landscapes, AD 400-1100
Professor Stephen Gardiner	Mathematics	Science	37,800	Applications of approximation methods in potential theory
Professor Finian Martin	Pharmacology / Conway Institute	Science / Conway Institute	37,800	Studies on the organisation of mammary epithelial cells into 3-dimensional assemblies. Dysfunctional cell-cell interactions model early events in breast cancer progression
Dr Andrea Prothero	Marketing	Commerce	37,800	Motherhood: Identity, Experience and Consumption

UCD RESEARCH

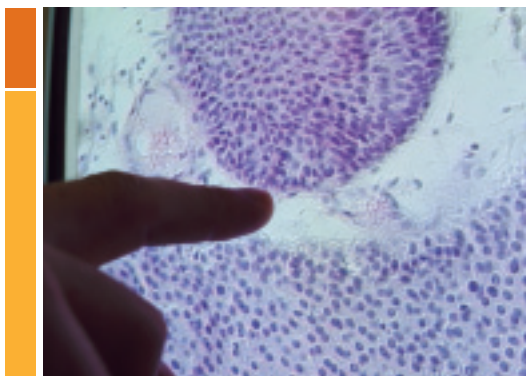
UCD Research is the organisation that supports and develops research within the university through three pillars of activity: Research Development, Business Development and Research Services.

SEED FUNDING SCHEMES

A key goal of this organisation is to build research capacity and stimulate research. The Seed Funding Scheme (launched in 2004/05) supports the research community in a number of ways, including research release and dissemination (including publication). Of the 91 applications reviewed, 28 were funded in Phase 1, 2004/05.

THE RESEARCH ECONOMY

UCD Research is developing the *Research Economy* to provide better models of the costs of research. A key element of this work is the SFI Overhead Investment Plan, now in its second year. Under the SFI OIP, new processes have been introduced to capture and record research overheads.



STRATEGIC AND MAJOR INITIATIVES

UCD Research introduced a funding scheme for *Strategic and Major Initiatives*, which supports large projects requiring a major effort from the research and management communities. These included the National Institute for Bioprocessing, Research and Training (NIBRT), a unique collaboration between Chemical Engineering, Biotechnology and Systems Biology, with contributions from a number of groups across the campus and in our partnering institutions. Other programmes supported were in the areas of digital media, suicide research, materials science and financial services.



RESEARCH SUPPORT SERVICES

A major task for the university is to develop a Research Management System that collates the research components of all support and administrative units. This major programme, a collaboration between the IT Group in UCD Research and the Management Services Unit of UCD, is an essential underpinning for the development of research support services and the Research Information System.

A key goal for UCD Research is to develop specific research services in the support units which will lead to service level agreements with the research community. In 2004/05, UCD Research funded the establishment of a specific Research Support Team under the guidance of a *Computer and IT Services Research Support Committee*, chaired by Professor Ciaran Regan. UCD Research also funded a survey and benchmark of *Technology Transfer* with a view to developing the service further in 2005/06.

In the coming year our staff will work with UCD Personnel to develop career paths tailored to the needs of the research community, including the establishment of a postdoctoral training fellowship and tenure track.



*President Mary McAleese, Dr Emmeline Hill, Dr Bill Harris,
Director General of SFI*

Dr Emmeline Hill

RESEARCH TITLE : *Genomics of performance in thoroughbred horses*

Dr Emmeline Hill, of the Department of Animal Science in the Faculty of Agri-Food and the Environment, was awarded €1.2 million over a five year period to fund her work on the genomics of athletic performance in thoroughbred horses.

Researchers have found that up to 30 per cent of performance variation in champion racehorses is determined by their genes. This research investigates the genetic contributions to racing performance using both population genomics and functional genomics approaches. The focus is on understanding the molecular pathways involved in muscular adaptation to fitness and training.

Ireland has a world-class reputation in thoroughbred breeding and racing, and is home to one tenth of the world's thoroughbreds. In this context, Dr Hill's research is essential as it seeks to identify genetic factors that are important in race-winning, thoroughbred horses and will assist in improving training regimes in order to minimise potential injury. Through this research the Irish horse industry should gain some competitive advantage over its rivals.

Dr Jens Erik Nielsen

RESEARCH TITLE : *Towards an understanding of enzyme catalysis: a multidisciplinary informatics-based approach*

Dr Jens Erik Nielsen, of the Department of Biochemistry in the Faculty of Science, was awarded €1.2 million to fund his work on dissecting enzyme structure-function relationships.

Dr Nielsen graduated from the University of Copenhagen, Denmark. Following PhD qualifications in Germany and a postdoctorate at the University of California, San Diego, he joined UCD in 2003.

Dr Nielsen's research interests are centred on being able to predict the experimental effect of site-directed mutants in enzymes. Mutant enzymes play a major role in many diseases and a better understanding of how mutations in enzymes affect the function of enzymes will pave the way for novel treatments for important diseases. Additionally, mutant enzymes are employed routinely in many industrial processes where their use contributes significantly to a cleaner environment.



*President Mary McAleese, Dr Jens Erik Nielsen, Dr Bill Harris,
Director General of SFI*

UCD CONWAY INSTITUTE OF BIOMOLECULAR AND BIOMEDICAL RESEARCH

The mission of UCD Conway Institute of Biomolecular and Biomedical Research is to promote knowledge, health and economic advancement through excellence in biomolecular and biomedical research. When the Institute was opened in 2003, its remit encompassed a number of strategic, research, and teaching and learning objectives.

The Institute has the following strategic objectives:

- Establishing a world-class 'Centre of Excellence' in the biosciences at UCD within 10 years
- Providing effective governance, management and advisory structures
- Offering leadership in achieving the wider strategic objectives of the university in the areas of research, teaching and technology transfer in the life sciences
- Achieving innovation through co-operation and partnership with academic, healthcare and commercial partners.

The Institute has the following research objectives:

- Creating a structure for scientific, management and reporting purposes on three research disciplines (Centre for Synthesis and Chemical Biology, Centre for Integrative Biology and Centre for Molecular Medicine)
- Achieving an understanding of the molecular mechanisms underpinning human and animal diseases
- Proactively translating research findings into healthcare and industrial sectors.

With regard to Teaching and Learning, objectives include enhancing the undergraduate curriculum, providing a generic and specialist training environment for postgraduate students and building bridges with the wider community through continuing education courses.

PROGRESS TO DATE

The spirit of 'innovation through co-operation' is evident in the collaborative research that is being carried out with academics at local, national and international level. Existing commercial partnerships are being strengthened and potential partnerships actively sought. The SFI cluster award made to the Applied Neurotherapeutics Research group in 2003, under the leadership of Professor Ciaran Regan, recognises the potential of collaborative research between academics at a national level and commercial partners at an international level.

The UCD Conway Institute currently has 128 investigators. Together with their associated teams of approximately 300 postgraduate students and 150 postdoctoral fellows, they comprise a research-active community of some 600 people.

During the time frame of this report, Conway investigators published over 430 articles in peer reviewed journals, and they were awarded a total of €31 million in peer reviewed grant income.

By working closely with colleagues in NovaUCD, the Institute endeavours to raise the profile of technology transfer issues within the wider UCD research community. Between 2003 and 2005, a total of seven patents and three licensing agreements were lodged by Conway investigators and six campus companies were established. In addition, over 70 PhD theses were submitted by postgraduate students affiliated to Conway investigators.

PROGRESS IN RESEARCH

The construction and occupation of the new Centre for Synthesis and Chemical Biology (CSCB) will be completed in September 2005. In the 2,500m² facility, six state-of-the-art research laboratories will also house analytical instrumentation facilities including nuclear magnetic resonance (NMR) spectroscopy and mass spectrometry centres. The new Centre will facilitate studies at the interface of chemistry and biology, thus strengthening the Institute's research continuum.

*New CSCB building
to be completed
September 2005*



The Proteome Research Centre (PRC) under the leadership of Professor Stephen Pennington was launched on 3 June '04, with lectures from world leaders in the field of proteomics. Equipped with state-of-the-art instrumentation and software, the PRC supports research to gain mechanistic insights into biological processes, identify diagnostic and prognostic biomarkers of diseases, and identify potential targets for therapeutic intervention in human diseases.

In a joint UCD Conway/DMMC (Dublin Molecular Medicine Centre) initiative, the recruitment process began for a Chair of Bioethics. It is envisaged that the successful candidate will play a vital role in achieving this strategic research objective of the Institute.

PROGRESS IN TEACHING AND LEARNING

National and European recommendations for best practice in the development, monitoring and supervision of postgraduate education programmes were incorporated in the redesign of the Conway postgraduate programme (implemented 2004/05).

In both the summer of 2004 and 2005, approximately 30 undergraduate students were given the opportunity to work in Conway research groups, greatly enhancing their undergraduate experience.

There was an overwhelming response to the 2004/05 pilot Conway outreach programme, which was designed to engage the general public in the research activities of the Institute and promote science as a viable career option for secondary school pupils. The initiatives attracted over 850 secondary school pupils.

FUTURE OBJECTIVES

To achieve all of the Institute's objectives, emphasis will be placed on strengthening the links between UCD and the constituent teaching hospitals by encouraging collaborative research between scientists and clinicians. The multidisciplinary ethos of the Conway will be further strengthened through collaborative projects involving some of the emerging areas within the Institute, such as proteomics, bioinformatics and structural biology.

APPLIED NEUROTHERAPEUTICS RESEARCH GROUP

Collaboration between academia and industry

In January 2004, the Applied Neurotherapeutics Research Group (ANRG), based in the Conway Institute, UCD, and led by Professor Ciaran Regan, was established with a €7.7 million research cluster award from Science Foundation Ireland (SFI). This grant supports scientists from UCD (including Conway investigators, Dr William O'Connor and Dr Keith Murphy), Trinity College Dublin (Professor Pete Humphries) and the Neuroscience Discovery Group of Wyeth Research. Their research focuses on disorders of the brain including Alzheimer's disease, schizophrenia and depression.

Dr Menelas Pangalos leads the Wyeth Neuroscience Discovery Group that provides financial support to the project as well as technology and guidance in the drug development process. "It is a unique synergy of academic and industrial talents, and has a good chance of helping us understand the root causes of these debilitating diseases of the brain, and uncovering new approaches for us to better treat patients in the future," said Dr Pangalos.

UCD CONWAY OUTREACH PROGRAMME

AccesScience is a competition for third year Conway postgraduate students to explain their research without the use of scientific jargon. In 2005, six finalists competed in front of a celebrity judging panel, before repeating the event for over 450 secondary school pupils.

Over 120 science-themed posters were received from these schools and six winning entries were displayed on the DART as part of Science Track, a joint initiative between Iarnród Éireann and UCD Conway Institute.



UCD GEARY INSTITUTE

The mission of UCD Geary Institute is to foster research excellence in social science.

This is being achieved through:

- Frontier methods of investigation leading to the best in research publication
- Enhancing the international profile and ranking of our researchers
- Highlighting the importance and relevance of our research findings through interaction with policymakers, the policy community and wider society
- Playing a leading role in the training of the next generation of social scientists and facilitating interaction between junior and senior researchers
- Creating and developing key social science infrastructure, based on the Irish Social Science Data Archive (ISSDA), which holds material such as census and survey data, election results and opinion polls.

PROGRESS TO DATE

The CIRCA group, for the HEA, reported in 2004 that the Institute's greatest impact "has been to establish a... highly active, competent social science research centre... with members... publishing widely at the high end of the peer-reviewed journal spectrum." An external review by the EU as part of the Framework programme also qualifies the Institute's success.

UCD Geary Institute researchers play an important role in policy debates – working as advisers to the UK and Northern Ireland governments and the OECD on education policy, as well as to the Department of Finance on labour market intervention policy.

The impressive portfolio of active research collaborations includes:

- The Kennedy School at Harvard, Multidisciplinary Programme on Inequality
- IRCHSS and ESF supported research networks in empirical microeconomics
- EU Framework Programme supported networks on political behaviour
- POMONA-EU supported research on disability
- Major research partnerships between Geary researchers and researchers at RAND, University of Chicago, University of Warwick, University College London, University of Kent and Princeton University amongst others.

UCD Geary Institute



In the academic years 2003/04 and 2004/05, the UCD Geary Institute raised over €4.5 million in external research funding, excluding PRTL (Programme for Research in Third Level Institutions) funds, from major peer-reviewed sources (HRB, IRCHSS, EU Framework) and private philanthropy.

A series of lectures by, amongst others, Nobel Laureates in Economics, Professor James Heckman (Chicago) and Professor Joseph Stiglitz (Columbia), was integrated with the NESF/UCD Geary Institute conference *Getting the Evidence*, held in February 2005; participants included researchers from the UK ESRC Evidence Based Policy Network, Mathematical Policy Research (Princeton) and RAND Europe.

FUTURE OBJECTIVES

UCD Geary Institute's continuing goal to become a leader in social sciences in Europe will be achieved through academic excellence and public outreach, with UCD leading the dialogue between academia and the policy/practitioner communities. The UCD Geary Institute research programme will also strengthen its connections with areas such as public health and demography, law (criminological research in particular) and business research.

The Institute will deliver on the 'knowledge transfer' issues in policy that have been a common theme over past years. A series of meetings is scheduled to begin in spring 2006.

Connections to Irish society will be greatly helped by creating capacity for quantitative and qualitative survey research, including two major comparative surveys of Irish society in 2006: the European Social Survey (ESS) and the Survey of Health and Retirement in Europe (SHARE).

The Institute programme will engage with the graduate student body in a programme of 'advanced' seminars and masterclasses focused on developing and sharpening the skills of students emerging from UCD, and connecting the students to the research programmes of the Institute.

APPLIED MICROECONOMICS CLUSTER

The Applied Microeconomics Cluster at UCD Geary Institute comprises eight full time UCD researchers (including postdoctoral scholars), four visiting researchers and three graduates. The team focuses on leading edge research in areas such as health, education, political participation and social behaviour, and sees its work as having the potential to make a real difference to the lives of people in Ireland. As a result, it is potentially very important for government policymakers. Such work is a unique area of strength for UCD, with this Cluster publishing in the highest impact journals in economics.



Some of the team of researchers based in the Geary Institute

DUBLIN MOLECULAR MEDICINE CENTRE (DMMC)

One of the major collaborative initiatives in the biomedical sciences in Ireland is exemplified by the DMMC. This joint venture between UCD and TCD was enlarged in 2005 with the formal inclusion of Royal College of Surgeons in Ireland (RCSI) as a full and equal part owner of the DMMC. Since 2000, this groundbreaking partnership has been the recipient of over €100m of investment through Cycle 2 and Cycle 3 of PRTLl.

The DMMC network comprises the Conway Institute (UCD), the Institute of Molecular Medicine (IMM, St James's) and the Institute of Biopharmaceutical Sciences (IBS, RCSI). These molecular medicine research centres have strong links with the affiliated teaching hospitals: Mater Misericordiae University Hospital, St Vincent's University Hospital (UCD), St James's Hospital, Adelaide Meath and National Children's Hospital, incorporating National Children's Hospital (TCD), Beaumont Hospital (RCSI) and Our Lady's Hospital for Sick Children.

Strategically positioned to reap the benefits of synergy between the three Dublin medical schools and their six affiliated teaching hospitals, the DMMC has the potential to grow into a world-class initiative in translational research. This will include the launch of projects that involve important partnerships with the pharmaceutical industry.

PROGRESS TO DATE

There are now over 18,000m² of new research laboratory facilities in operation at three venues: Conway Institute of Biomolecular and Biomedical Research, the Institute of Molecular Medicine and the Institute of Biopharmaceutical Sciences. These facilities were funded largely by the Higher Education Authority, under its Programme for Research in Third Level Institutions (PRTLl).

To ensure that the partnership's collaborative efforts produce optimum results, many infrastructural elements have also been put in place, including an IPA, a research database and a cross-institutional education resource. A formal agreement that commits each of the three owner institutions to collaborate in agreed areas in Molecular Medicine was signed by all parties on April 25 '05, in the presence of the Minister for Education and Science, Mary Hanafin, T.D.

Elsewhere, creating an infrastructure at hospital sites for tissue acquisition and biobanking is in progress, while a multi-institutional consortium in disease-specific areas has been created.

Wellcome Trust funding has been secured for a National Biocollection Resource for the study of psychoses in Ireland. Led by investigators from the Institute of Molecular Medicine (TCD), this programme draws on expertise from across the DMMC.

An Education Strategy Group is developing a comprehensive and flexible cross-institutional education and training programme in Molecular Medicine. This curriculum combines the academic strengths and clinical expertise of our participant institutions and affiliated teaching hospitals, within a new administrative structure to ensure citywide dissemination of courses.



Signing the new DMMC agreement, sitting from left, Dr John Hegarty (Provost, TCD), Mr Michael Horgan (CEO & Registrar, RCSI), Dr Michael Kamarck (Chair of DMMC Board & Senior VP, Wyeth BioPharma), Dr Hugh Brady (President, UCD). Standing from left, Professor Niall O'Higgins (UCD & President of RCSI), Ms Mary Hanafin, T.D. (Minister for Education and Science), Dr Pierre Meulien (CEO, DMMC).

The construction of a Genome Resource Unit at the Mater Misericordiae University Hospital was completed in October 2005. A second Unit at St Vincent's University Hospital will open shortly. These clinician scientist-led facilities will provide an additional 2,500m² of research space and, when linked with other facilities around the city, have the potential to create a highly specialised clinical research network.

FUTURE OBJECTIVES

While many of the DMMC building blocks are now in place, more needs to be done to achieve the goal of world-class excellence. Future focus will be on:

- The harmonisation of policies and procedures governing biobanking across the six Dublin teaching hospitals

- The building of additional clinical research infrastructure capacity and networking of all sites
- The initiation of ambitious training and development programmes for clinician scientists and research nurses who will represent the core of our capability to perform translation research
- The creation of public/private partnership in disease-specific areas, bringing together pharmaceutical companies, hospitals and academic groups in innovative and challenging business models.

PROSTATE CANCER RESEARCH CONSORTIUM

The Prostate Cancer Research Consortium is the first Irish multi-institutional, inter-disciplinary consortium in prostate cancer research. It comprises 25 academic investigators and clinician scientists from two universities (Trinity College Dublin and UCD) and the five affiliated hospitals. Established in 2003, with funding from the Irish Cancer Society, the consortium leverages resources assembled across Dublin through the DMMC. It has become a highly successful model for cross-institutional collaboration, allowing a critical mass of investigators from different institutions to work together against prostate cancer.

The consortium aims to:

- 1. Establish a prostate cancer tumour bank to support ongoing research*
- 2. Survey patients to better understand male attitudes to tumour banking and profiling*
- 3. Apply genomic and proteomic characterisation technologies to identify novel biomarkers, which allow the early detection and prognosis of prostate cancer cases*
- 4. Correlate these molecular characterisations with disease progression phenotypes*
- 5. Evaluate novel therapies in pre-clinical models of prostate cancer.*

Pictured are Dr William Watson (UCD) and Professor Donal Hollywood (St Luke's/St James's), two of the principal investigators.

The creation of the tumour bank is central to the consortium's activities and the availability of research nurse specialists has been key to this success. Tumour tissue samples are being collected and the consortium is approximately half way towards its target of 300 tumour samples. The combined efforts of surgeons, pathologists and research nurses ensure that patients are appropriately consented, tumour and non-tumour tissue are sampled and that these materials are graded consistently.

Three principal investigators, Dr William Watson (UCD), Professor Mark Lawler (TCD) and Professor Donal Hollywood (St Luke's/St James's) provide scientific leadership to the consortium. Their research teams utilise state-of-the-art technologies at the UCD Conway Institute and, in a related project, are collaborating with investigators at the National Cancer Institute (US).



NOVAUCD – THE INNOVATION AND TECHNOLOGY TRANSFER CENTRE



A major strategic objective of UCD is to contribute to the social, economic and cultural objectives of a knowledge society. To achieve this, research programmes must be aligned to these same objectives, be fully realised and engender an entrepreneurial culture.

Key objectives of NovaUCD include:

- Initiation of a knowledge management programme
- Identification and protection of UCD's intellectual property
- Commercialisation of UCD's intellectual property through licensing and spin-off companies
- Training of UCD staff in knowledge transfer and entrepreneurship through integration of NITM (National Institute of Technology Management) and NovaUCD
- Developing corporate partnerships with business and industry to support and enhance research activities.



The activities of NovaUCD are overseen by a Board chaired by Mr Paul McCambridge, Vice-President and Managing Director of Xilinx, and includes senior representatives of UCD, industry, the NovaUCD sponsors and the research funding agencies.

PROGRESS TO DATE

With the support of a unique public-private partnership, NovaUCD has established facilities specifically designed to support the development

of a community of entrepreneurs. Six private sector sponsors together with Enterprise Ireland and UCD raised €10 million for the initial two phases of the planned four-phase development. To date, 4,090m² of newly constructed space comprises 48 incubation units, including six bioincubation units. The private sector sponsors provide professional support and in return are allocated a small shareholding in companies locating at NovaUCD.

Since the mid 1990s, NovaUCD and its predecessor, the University Industry Programme, have supported over 100 knowledge-based companies including the spinouts ChangingWorlds (provides intelligent mobile portal solutions), NTERA (develops NanoChromics displays technology) and WBT Systems (provides intelligent learning solutions), which have attracted over €135 million in investment.

changingworlds

NTERA

WBT
SYSTEMS

NovaUCD is responsible for the implementation of the UCD Intellectual Property (IP) policy and supporting the development of a strong pipeline of intellectual property. UCD is currently recording the highest earnings from licensing income of the nine universities in Ireland.

NovaUCD offers comprehensive programmes to increase UCD's awareness of commercial issues. It also helps to develop accredited programmes in technology transfer for researchers and technology transfer professionals.

FUTURE OBJECTIVES

NovaUCD's new strategic initiatives for 2005/06 include:

- Development of short courses and accredited training programmes in Technology Transfer, including a Masters in Technology Transfer and modules for inclusion in the PhD programme
- Expanding the intellectual property pipeline and enhancing the commercialisation of UCD research
- Development of incubation space, related facilities and programmes to support knowledge-intensive start-up companies that commercialise UCD research, particularly in life sciences
- Focused initiatives to support commercialisation in specific research areas.

In 2004, the inaugural NovaUCD Innovation Award was presented to Professor Mark Rogers, Faculty of Science, for developing a BSE test that reduces the time for a BSE diagnosis from 14 days to 3.5 hours. Following validation in Ireland and by the European Commission, the test was licensed to Enfer Scientific Ltd. The resulting royalty income to the university has surpassed €1.7 million.

The 2005 NovaUCD Innovation Award was presented to Professor Barry Smyth, co-founder of the successful campus company, ChangingWorlds. His research covered Artificial Intelligence, with a particular focus on personalisation techniques which look at ways to develop information systems that automatically learn about and adapt to the needs of individual users.

Today ChangingWorlds develops leading multi-access, intelligent portal platforms for Vodafone, O2, Swisscom Mobile and TeliaSonera. ChangingWorlds has raised almost €6 million in funding and employs 60 people.



PROFESSOR MARK ROGERS



PROFESSOR BARRY SMYTH



UCD RESEARCH IN BIO-SIGNAL ANALYSIS SYSTEM WILL STREAMLINE WAITING LISTS AT EAR NOSE AND THROAT (ENT) CLINICS

PhD student, Rosalyn Moran, working with Dr Richard Reilly, Faculty of Engineering and Architecture, is developing a unique remote diagnostic system to screen for voice diseases. The technology has attracted a number of awards for its commercial potential, including the Irish Software Association's inaugural 2004 Student of the Year Award for the most commercially viable software.

Rosalyn Moran has developed software for the detection of laryngeal pathologies using telephone quality voice and an interactive voice response system for speech sample acquisition. The system is intended as a screener for surgical candidates and is built for patients of ENT clinics worldwide. Detection is carried out using a two second voice sample from a telephone call with results computed automatically.

Over the last year Ms Moran has participated in the NovaUCD Campus Company Development Programme, and her project, Vocal Health Screen, was the overall winner of the 2005 Programme, for the project that made the most progress during the year.

The UCD team is also hoping to expand its research capacity with post-doctoral research, investigating further spectral analysis algorithms and developing the system with Dublin hospitals as well as expanding the study to hospitals abroad.

UCD HUMANITIES INSTITUTE OF IRELAND

To accomplish its goals the UCD Humanities Institute of Ireland (HII) has two sets of objectives – one focusing on strategy and research, the other on teaching and learning.

The HII's strategic and research objectives are to:

- Act as a national and international centre for excellence in the humanities and as a catalyst for innovative scholarship and research, in conjunction with national and international partners
- Attract high calibre PhD Students and Postdoctoral Fellows from outside UCD
- Foster the diversity of humanities research by creating a cross-disciplinary and integrative platform for all levels of researchers at UCD
- Support innovative research by individual researchers as well as humanities-specific models of teamwork and collaboration, encouraging cross-fertilisation between projects
- Improve the international profile of UCD through high-calibre international collaboration with strategic partners
- Act as an advocate for the humanities in the academic sphere and wider community.

With respect to teaching and learning, the HII's objective is to transform postgraduate training by creating programmes that promote interdisciplinary learning and transferable skills.

The Irish Virtual Research Library and Archive (IVRLA), is a major digitisation project that will combine the holdings of several Schools in the UCD College of Arts and Celtic Studies and the UCD Library's Special collections. Currently these are held on numerous media formats, including sound recordings, video tape and manuscript collections.

PROGRESS TO DATE

Strategy and Research

The HII has made a significant contribution to its objectives of transforming the humanities research culture at UCD. The Institute's conferences and international collaborations have enriched the intellectual life of UCD and the wider Irish academic community.

The provision of dedicated space for PhD students, where they mix with peers from other disciplines, has been the most successful aspect of the HII programme to date.

IVRLA's digital and virtual repositories are an emerging solution to the broad range of requirements for the capture, management and dissemination of digital materials. Ancillary areas such as digital preservation and long term access to such sources are being examined.

Teaching and Learning Objectives

The HII's pioneering induction programme for PhD students in the humanities will be incorporated into the training programme provided by the Graduate School of the UCD College of Arts and Celtic Studies.

FUTURE OBJECTIVES

The HII will build on its research achievements to date by developing a new research programme which will serve as a leading-edge inter-disciplinary platform for the study of cultural, social and economic aspects of identities in Ireland. Particular emphasis will be placed on the application of such research to current challenges and opportunities confronting Irish society in a global comparative context. The HII will put issues of identity and culture to the foreground as it works to create innovative opportunities for research collaboration between researchers in the humanities, social sciences and other sciences.

In developing a research programme centred on cultures and identities in Ireland, the HII will also seek to enhance the role and contribution of the humanities in the development of a knowledge society in Ireland. In parallel with this research programme, the HII will launch a humanities infrastructures programme which will aim to create innovative teaching/research opportunities and diffusion mechanisms for research in the humanities.

It is intended that the HII programmes will facilitate the integration of Irish researchers in the humanities within the European Research Area.

UCD URBAN INSTITUTE IRELAND

The overarching strategy for the UCD Urban Institute Ireland (UII), for the period of this report, was to create a world-class centre for urban studies research in Ireland in areas that include urban mobility, urban fabric and evolution, building performance and sustainability, urban change and development governance.

To achieve this strategy the goal was to locate the Centre at UCD and operate within a collaborative framework with TCD. This will be extended to other academic institutions over time.

Other goals are to:

- Promote and facilitate interdisciplinary research clusters that comprise critical mass in these areas
- Generate a strong and growing portfolio of research that contributes significantly to international literature and links to the needs of the policy process in Ireland and elsewhere
- Integrate research findings to enrich the teaching programmes
- Provide a building that facilitates and fosters interactive research and symbolises sustainability
- Support the development of a postgraduate student-centred PhD programme
- Provide a governance structure, notably a board with strong external non-academic presence from government and business.

PROGRESS TO DATE

Since its founding with HEA support in late 2000, the Institute has established a portfolio of quality research, organised into five research areas:

1. Mobility
2. Urban fabric and urban evolution
3. Building performance
4. Change and development
5. Governance and risk management.

In 2003, the Institute moved into a state-of-the-art building on Richview campus. The Building Environment Laboratory (BEL) has an artificial sky, and the Urban GIS based information system (URBIS) allows spatial integration of data.

Associated activities include the publication of a growing number of refereed journal articles and books and a range of public and academic seminars.



The Urban GIS based information system (URBIS) enables spatial integration of data

UII has demonstrated considerable research capacity in the fields of design, planning, engineering, spatial analysis, and environmental economics and policy analysis. The success in individual funding applications focused on energy in buildings (lab based), city regions (EU project), transport, reading the Irish urban landscape, housing and planning, and communities and governance. With the addition of Alistair Rowan leading the Buildings of Ireland project, there is also the possibility of developing a building conservation strand.

Total PRTL funding amounts to €3,021,977, while other research and consultancy funding has reached €350,000. Over 200 journal articles have been published, with the presentation of over 50 conference papers.

As part of the Institute's development strategy, a Development Manager, a Built Environment Lab Technician, and an Urban GIS Technician were hired, and a new Director was appointed.

FUTURE OBJECTIVES

The new strategic phase of UCD Urban Institute Ireland will commence in late 2005, with a focus on four key clusters:

1. Energy and Indoor Environment Cluster (EIEC)
2. Spatial Analysis Cluster (SAC)
3. Transport and Transport Infrastructure Cluster (TTIC)
4. Urban Environment Cluster (UEC).

A series of international workshops are being convened to help optimise the design and performance of these clusters.

UCD MÍCHEÁL Ó CLÉIRIGH INSTITUTE

The UCD Mícheál Ó Cléirigh Institute pursues a number of clear strategies to support its ongoing research efforts:

- Continue and consolidate conservation and digitisation of gathered information and make this available via research tools (in conjunction with IVRLA)
- Consolidate the Institute's position as a leading research body for medieval and early modern Irish studies
- Concentrate its research focus on:
 - Material culture of ecclesiastical bodies
 - Historiography of Ireland
 - Development of interdisciplinary methodologies
- Develop further the pioneering partnership model in pursuit of the Institute's public educational remit.

PROGRESS TO DATE

The success of the UCD Mícheál Ó Cléirigh Institute can be judged by a number of criteria.

To date, three PhDs have been completed, with three postdoctoral fellows and nine PhD fellows. Postgraduate teaching is delivered in the UCD School of History and Archives.

Twenty eight medieval and early modern manuscripts have been digitised and published on the web for the use of researchers and students. As a result, conservation has been extended to include paper artefacts, while a survey of remaining manuscripts in Killiney has also been commissioned.

The Institute holds the largest regular medieval Irish seminar and at least two international conferences are organised per annum. The four year international conference series on the Louvain dossier was launched in 2004, commencing with St Patrick. St Brigid followed in 2005, with St Colmcille scheduled for 2006 and Louvain hagiography for 2007. A major international publisher has agreed to produce the series.

A pilot project on Franciscan material culture has resulted in the identification of a large number of new items and increased the known total of 17th century chalices by almost 15%.

A partnership arrangement is now in place with the Irish Institute Louvain and National Museum of Ireland.

FUTURE PLANS

Alongside exhibitions, a series of international summer schools on the Irish in Europe will take place in 2007, in conjunction with the Irish college in Louvain.

There will be a €10 million fundraising campaign to continue the work of the Institute and to fund a signature building and repository.



Develop professional training in languages, palaeography and historical methodology for people active in the heritage sector. Professional archaeologists in particular will be targeted.

The UCD Mícheál Ó Cléirigh Institute has been designated the official co-ordinator of the Louvain quadricentenary in 2007. A schedule of events has already been agreed with the major stakeholders – Irish Government and diplomatic service, Franciscans, University of Leuven and manuscript repositories and museums in Ireland and Belgium.