

# NovaUCD Report 2008

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April 2009

## Introduction

Last October, NovaUCD celebrated its fifth year of operation and this provided an opportunity to reflect on the achievements of UCD innovators and entrepreneurs. NovaUCD's successes clearly demonstrate that the growth in public investment in R&D at UCD is yielding a significant return to the Irish economy and society. For example UCD related campus companies have created well over 1000 high-quality job opportunities and the total investment and realisation in UCD spin-out companies, over the past decade, is now more than \$200 million. The innovation pipeline at NovaUCD is also strong as UCD researchers have disclosed 184 inventions and over 120 patent applications have been filed during the past 5-years.

Building on the success of NovaUCD and that of its counterpart at Trinity College Dublin, the two universities have jointly unveiled a visionary job creation plan as part of the national recovery initiative built around the development of the Smart Economy.

The UCD/TCD Innovation Alliance is a radical partnership which will work with the education sector, the State and its agencies along with the business and venture capital communities to develop a world-class ecosystem for innovation that will drive enterprise development and the creation of sustainable high-value jobs.

By forming the Innovation Alliance both universities recognise a need to evolve and play a powerful role within such an ecosystem. Evidence shows that during recession, innovation thrives and new realities bring with them new opportunities. The Government's Smart Economy framework pinpointed the ingenuity of the Irish people as the

way forward for the country. In that context, as institutions with a relevant responsibility, UCD and TCD felt impelled to act and set out how we could advance the nurturing of that ingenuity.

The Innovation Alliance has two major components

- A UCD/TCD Joint Venture in Enterprise Development will build on the considerable success of NovaUCD and its TCD counterpart. A key objective is to ensure that the State's investment in science, technology and innovation is used efficiently and with maximum impact on enterprise development and job creation. It will include new facilities for pre-competitive research and design, prototyping and process innovation, to help harness and commercialise new ideas, knowledge and inventions. It will also prioritise the establishment of a wider support framework of educational, legal, financial, technical, management and marketing capabilities and the support needed to set good new business ideas on their way.
- The new 4<sup>th</sup> level UCD/TCD Innovation Academy will begin the process of defining and mainstreaming innovation as the 3<sup>rd</sup> arm of the university mission alongside education and research. It will straddle the existing campuses, building on areas of combined strength and individual distinctiveness in the two universities. It will focus particularly on 4<sup>th</sup> level PhD training, positioning innovation centre-stage in their courses, facilitating student mobility between campuses, and ensuring that the breadth and depth of expertise and resources at UCD and TCD are available to Ireland's future entrepreneurs.

The Alliance envisages building a world-class enterprise corridor between UCD and TCD that will be home for up to 300 new enterprises with advanced technology centres to support indigenous industry. It will be a prototype for a national ecosystem to establish Ireland as an international hub for innovation. It will be similar in concept to the IFSC but focused on the creation and scaling-up of indigenous knowledge and technology-intensive enterprises and the attraction of multinational employers that will become the cornerstone for the knowledge economy.

A key objective of the Alliance will be to ensure that the State's investment in science, technology and innovation is used efficiently and with maximum impact on enterprise development and job creation. The creation of lasting jobs is the only solution for Ireland. We want to boost the university contribution to enterprise development by equipping graduates with the skills and ambition to be job creators rather than job seekers.

The Alliance builds on the tradition of collaboration and achievement by the two institutions but marks a sea-change in how education and research sets up to create jobs. It also puts in place a focus and capability to respond to initiatives proposed by the Government's newly announced Innovation Task Force, which will in time attract industry, nationally and internationally, and the investment community.

NovaUCD as the Innovation and Technology Transfer Centre at UCD will be at the forefront in establishing this new Innovation Alliance. The results contained in this Report demonstrate that NovaUCD has established itself as a national leader in the commercialisation of research and the

development of new high-tech enterprises and that it has developed a strong international reputation.

NovaUCD's success would not be possible without the financial support and confidence of its initial public-private partnership involving AIB Bank, Arthur Cox, Deloitte, Enterprise Ireland, Ericsson, Goodbody Stockbrokers, UCD and Xilinx.

Dr Hugh Brady

President

University College Dublin



# UCD Innovation Strategy to 2014

The Irish economy is currently in a state of flux, experiencing radical structural changes that will require significant change in all quarters. Ireland's future economy will continue to be a high-value location largely funded by foreign direct investment. A significant fraction of such foreign multinationals will also perform high-value R&D activities in Ireland, a change that has already begun. In essence, this is the Government's vision for building a Smart Economy.

The final piece of the vision, that is still largely unfinished business, is the emergence of a strong, indigenous enterprise base on the back of the deep knowledge and expertise we have garnered ourselves. This vision is the return on the over €5 billion continuing investment in research, 4<sup>th</sup> level education and innovation which has taken place in recent years. Having had major success in attracting such funding UCD, through NovaUCD, has a key role to play in this economic shift.

This economic shift is the context for UCD's Innovation Strategy (to 2014) which is being finalised as the NovaUCD 2008 Report goes to press. This Innovation Strategy is one pillar in the three main pillars, Education, Research and Innovation, of UCD's overarching strategy.

Under the Innovation Strategy, UCD sees its mission as being to support, feed and facilitate this shift by translating its knowledge and expertise to the benefit of Ireland.

Specifically, UCD's Innovation Strategy has three main objectives:

- To maximise the impact of UCD's knowledge and expertise to benefit Ireland, especially from converging disciplines

- To foster a culture of innovation and entrepreneurship at 3<sup>rd</sup> and 4<sup>th</sup> levels
- To build the critical social and corporate partnerships of a knowledge economy.

## Maximising the Impact of UCD's Knowledge and Expertise

Under the UCD Research Strategy, four priority areas have been identified; Earth Sciences, Global Ireland, Health and Health Care Delivery, and Information, Computation & Communications. From the major research investment in these areas, UCD will work to translate its knowledge and expertise to benefit Ireland's economic, social and cultural landscape.

Under the Enterprise Ireland Technology Transfer Strengthening Initiative (TTSI) NovaUCD is funded to increase the commercialisation outputs from UCD's research base, including licensing to established companies and new ventures. The main outcome from this strategic priority is to meet the specific targets of the TTSI programme which have been set to reflect international benchmarks in exploiting the outputs of research. Overall, by 2014, UCD should witness a step-change in such activities, particularly in the founding of campus companies.

These outcomes should reflect a major shift in the research and innovation culture of the institution, especially in the area of converging disciplines. UCD has set itself the goal of building a multi-million euro seed fund for campus companies based, in part, on UCD re-investing income gained from its commercialisation activities and also from funds raised from outside the institution. As a major initiative, UCD in its collaboration with TCD in

the Innovation Alliance, has set itself the goal of building and supporting spin-out companies.

### **Fostering Innovation and Entrepreneurship at 3<sup>rd</sup> and 4<sup>th</sup> Levels**

Apart from having a substantial undergraduate population, UCD hosts the lion's share of Ireland's postgraduate population. In the coming years, UCD will mainstream courses in innovation and entrepreneurship at the 3<sup>rd</sup> and 4<sup>th</sup> levels. This will give all students access to a range of transferable skills and a knowledge of business, thus giving them a wider set of career options beyond their core discipline.

During 2008, a similar strand of courses, delivered by NovaUCD, on starting a business and intellectual property has been introduced into the structured PhD Programme. Furthermore, new and adapted MSc and MBA courses are planned to focus on business aspects of the science, engineering and technology sectors. These courses are targeted at both new graduates and high-skilled workers to provide for their re-education and/or up-skilling, enabling them to enter new sectors and to support continuing professional development.

### **Building the Partnerships for a Knowledge Economy**

UCD will develop its partnerships with both social and corporate entities, with government, business and society. International experience shows that innovation in successful knowledge economies is predicated on extensive and rich partnership networks between universities, enterprise and government. Hence, a key part of the strategy is to explicitly develop and support these relationships. For example, UCD will work closely with Enterprise

Ireland, Industrial Development Authority and Local Authorities to market Dublin as a location for high-value employment.

UCD will develop preferred partnerships with specific companies through its research and educational programmes with a view to embedding these companies in the Irish Economy. At the same time, as NovaUCD incubates spin-out and spin-in companies, UCD will contribute to the base of indigenous enterprises that will form the cornerstone of Ireland's future economy. As part of this plan, accommodation for enterprises on campus will be built, developing the Belfield Innovation Park to increase the contact and collaboration between industry and university researchers. Finally, UCD will work to develop its social partnerships with the wider society to inform and advise on culture and policy formation.

Professor Mark Keane  
Vice-President for Innovation  
University College Dublin



## Foreword

During the year NovaUCD, the Innovation and Technology Transfer Centre at UCD celebrated its 5<sup>th</sup> anniversary since officially opening. While it is recognised that there is a long lead-time involved in commercialising the results of university research, the significant achievements in the last five years justify the faith of the initial sponsors who invested over €11 million in NovaUCD.

During the period 2004-2008, 7 new UCD spin-out companies have been incorporated. Forty-five high-tech and knowledge-intensive companies, including 15 UCD spin-out companies, have located at NovaUCD. A further 30 promoters of new ventures have occupied desk space.

NovaUCD's pipeline is also strong, with 184 inventions being disclosed by UCD researchers in this 5-year period. In addition, over 120 patent applications have been filed and 38 licence agreements have been signed with a range of indigenous and international companies.

A key success story for NovaUCD in 2008 was the acquisition of the UCD spin-out company ChangingWorlds by the US-quoted technology company Amdocs for \$60 million plus a deferred consideration. This brings the total investments and realisations in UCD spin-out companies to more than \$200 million over the past decade. The sale of ChangingWorlds was a huge achievement in the current economic climate and is an inspiration for the increasing number of academic entrepreneurs who are planning to commercialise the output of their research programmes.

In 2008 NovaUCD continued to develop its team of experts, its comprehensive programmes and its state-of-the-art facilities to support innovators and entrepreneurs in commercialising the output of their research and other knowledge-intensive activities of the University.

Key achievements during the last year include:

- UCD spin-out company ChangingWorlds acquired for \$60 million
- €1.45 million generated from commercialisation of research
- Fifty-three invention disclosures reported
- Thirty-eight patent applications filed across all areas of life sciences, engineering and information communication technology including
  - Twenty-five priority patent applications
  - Six PCT (Patent Co-operation Treaty) applications
  - Seven national/regional patent applications
- Thirteen licence agreements concluded with a range of indigenous and international companies
- One new UCD spin-out company incorporated
- Eleven new ventures completed the NovaUCD 2008 Campus Company Development Programme
- UCD's most successful licence to date, a BSE (Bovine Spongiform Encephalopathy) test, has now earned over €2 million in royalty income for UCD
- Several NovaUCD companies, including Duolog Technologies, Celtic Catalysts, Lightwave Technologies and Visor attracted investment
- The NovaUCD 2008 Innovation Award presented to Celtic Catalysts

- Twenty-five knowledge-intensive ventures occupying 90% of the incubation space located at NovaUCD at year end
- Over 200 staff members of these companies regularly use NovaUCD's facilities
- Thirteen companies have now graduated from NovaUCD to make way for new clients as part of NovaUCD's strategy of continuously refreshing our community of entrepreneurs.

During 2008 NovaUCD continued its various initiatives to support researchers and entrepreneurs.

- NovaUCD arranged and hosted over 125 events to increase awareness of intellectual property and other commercial issues and to promote a culture of entrepreneurship and innovation among researchers, students and staff
- Accredited PhD modules in innovation and knowledge transfer were delivered as part of UCD's Graduate Studies' Structured PhD Programme
- Increasing levels of support were provided by NovaUCD and its network for innovators and entrepreneurs in bringing their ideas from the research laboratory through proof-of-principle and prototype development to successful commercialisation.

NovaUCD was also involved in a number of international organisations including AURIL, Institute of Knowledge Transfer and ProTon Europe. The aim is to enhance the contribution of universities to innovation by increasing the efficiency of knowledge transfer and university/industry collaboration and enhancing the status and recognition of the knowledge transfer profession.

These and other developments are outlined further in this Report.

Dr Pat Frain

Director  
NovaUCD



#### Key 2008 Metrics

ChangingWorlds acquired for \$60 million  
 €1.45 million generated from commercialisation of research  
 25 companies located at NovaUCD  
 1 new UCD spin-out incorporated  
 53 invention disclosures  
 25 priority patent applications  
 6 PCT patent applications  
 7 national/regional patent applications  
 13 licence agreements  
 11 new ventures completed the CCDP

#### First Five Year Metrics (2004-2008)

ChangingWorlds acquired for \$60 million  
 €2.7 million generated from commercialisation of research  
 45 start-ups availed of incubation facilities  
 15 UCD spin-outs located at NovaUCD  
 7 new UCD spin-outs incorporated  
 184 invention disclosures  
 70 priority patent applications  
 29 PCT patent applications  
 23 national/regional patent applications  
 38 licence agreements  
 57 new ventures completed NovaUCD's CCDP



## NovaUCD

NovaUCD, the Innovation and Technology Transfer Centre, is the hub of knowledge transfer activities at University College Dublin. NovaUCD's vision is to become an international leader in the commercialisation of research and other knowledge-intensive activity for the benefit of the economy and society.

NovaUCD is a purpose-built facility, based on-campus, supported by the NovaUCD private sector sponsors, Enterprise Ireland and UCD. Dr Pat Frain leads a team of 16 professional staff with expertise and experience in technology transfer, new venture formation, communications and continuing professional development.

Since the establishment of NovaUCD in 2003 the level of commercialisation of research-generated intellectual property at UCD has increased. As the level of research and innovation increases in volume and sophistication, the implementation of UCD's commercialisation strategy by NovaUCD is of critical importance to enable UCD to fulfill its key strategic objective of contributing to the social, economic and cultural objectives of a knowledge society.



NovaUCD's Glazed Corridor

Building on prior successes in technology transfer and campus company development, NovaUCD's

support for innovation and knowledge transfer is built around 4 key areas:

- Managing technology transfer
- Incubating start-up companies
- Promoting a culture of innovation and entrepreneurship
- Building partnerships.

NovaUCD is located in a magnificent mid-18<sup>th</sup> century house formerly known as Merville House. NovaUCD is a state-of-the-art facility which was designed specifically to facilitate the development of a community of entrepreneurs and innovators. The concept for the centre was to restore the original house as the centrepiece of a complex of subsidiary buildings that surround it. The buildings are bright, airy and open with high-quality shared and circulation spaces that encourage the formal and informal interactions necessary for the development of our community.

This conversion to a modern innovation and technology transfer centre was funded by a unique public-private partnership. Six private sector sponsors; AIB Bank, Arthur Cox, Deloitte, Ericsson, Goodbody Stockbrokers and Xilinx contributed 75% of the €10 million raised to develop the first two phases (3,750m<sup>2</sup>) of the complex.

These sponsors were chosen to bring an appropriate mix of expertise and experience to the support programmes offered by NovaUCD. The balance of funds for the first two phases was contributed by Enterprise Ireland and UCD. Additional 'wet-lab' facilities and equipment to accommodate biotechnology start-up companies was funded (€1.3 million) by Enterprise Ireland and UCD.





Window at NovaUCD

### First Five Years

Last October NovaUCD celebrated its 5<sup>th</sup> anniversary since officially opening. While international experience shows that there is a long lead-time involved in commercialising the results of university research, the significant achievements in the last five years justify the faith of the initial sponsors who invested over €11 million in NovaUCD.

During 2004 to 2008, 7 new UCD spin-out companies were incorporated and a total of 45 high-tech and knowledge-intensive companies, which includes 15 UCD spin-out companies, located at NovaUCD. A further 30 promoters of new ventures occupied desk space at NovaUCD.

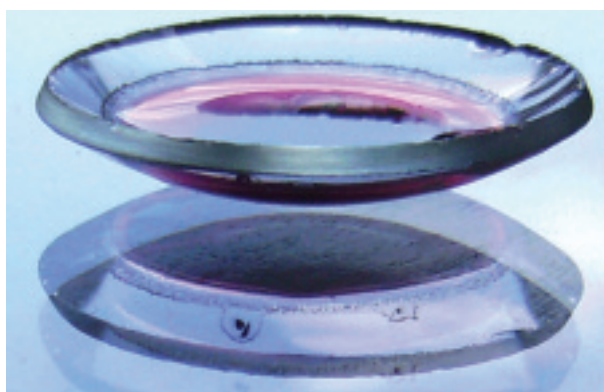
NovaUCD's pipeline of activities is also strong. In the same period, 184 inventions have been disclosed by UCD researchers, over 120 patent applications have been filed and 38 licence agreements have been signed with a range of indigenous and international companies.

# Technology Transfer

NovaUCD works with UCD researchers to identify and capture the intellectual property arising from UCD research programmes. NovaUCD ensures that innovators, entrepreneurs and industry alike can work together to reap the benefits of this intellectual property, whether through licensing to a commercial partner or through the creation of a spin-out company.

When a UCD researcher has an idea, service or product that they believe has commercial potential, NovaUCD's technology transfer team is on hand to help transform the innovations into licensable opportunities and/or start up companies by offering practical support and advice on due diligence of invention disclosures, legal expertise, filing of patent applications, business plan development, marketing, licensing and funding options.

NovaUCD's technology transfer operations, which are partially supported with funding provided by Enterprise Ireland under the Technology Transfer Strengthening Initiative, is also responsible for implementing UCD's policies on intellectual property.



©UCD 2008 Images of Research: Iodine UFO, Susan Kelleher, UCD School of Chemistry and Chemical Biology

## Identifying and Protecting Intellectual Property

The increase in research funding over the past number of years, combined with increasing awareness of intellectual property issues amongst UCD researchers, has led to an increasing number of invention disclosures submitted, patent applications filed and licences executed.

NovaUCD has a structured approach to ensure that an increasing level of intellectual property is identified and appropriately protected. Members of the technology transfer team meet regularly with UCD researchers to provide advice on commercial aspects of research proposals and contracts, to monitor the progress of research projects, to provide appropriate assistance to the researchers at the different stages of their research projects and to remind researchers of UCD's contractual obligations to funding agencies.

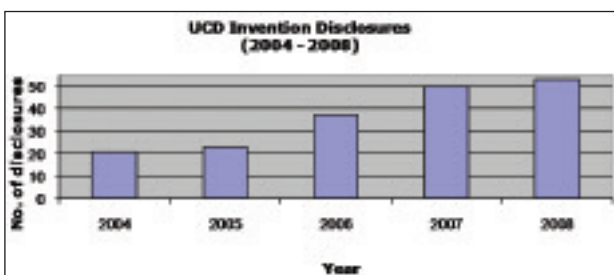
### Specific activities include:

- Drafting research contracts (in particular the IP sections), non-disclosure and material transfer agreements
- Supporting researchers in identifying intellectual property, completing invention disclosure forms and performing due diligence of these forms
- Searching patent databases
- Developing strategies for protection of intellectual property
- Preparing patent filings in association with patent agents
- Developing and implementing commercialisation strategies
- Meeting contractual obligations including the timely reporting of newly discovered intellectual property to the relevant funding agencies.

## UCD 2008 Intellectual Property Metrics

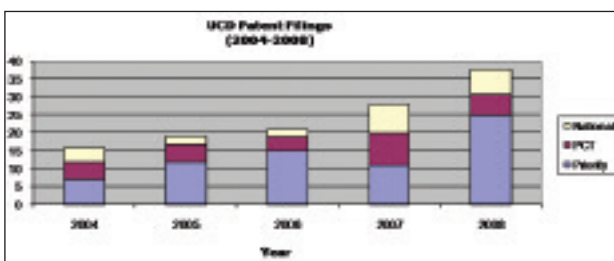
During 2008 a total of 53 invention disclosures were submitted to NovaUCD. This figure reflects a significant increase in the level of intellectual property being disclosed across the University from its research programmes, over the past 5 years, Figure 1.

Figure 1: UCD Invention Disclosures (2004-2008)



In 2008 UCD filed a total of 38 patent applications. This figure included 25 priority patent applications (pages 15-16), across all areas of life sciences, engineering and information and communication technology, 6 PCT (patent co-operation treaty) and 7 national/regional patent applications, Figure 2.

Figure 2: UCD Patent Filings (2004-2008)



## Exploitation of Intellectual Property

Whenever possible the intellectual property is managed for the benefit of enterprise development in Ireland which may involve licensing to

commercial partners or the creation of a start-up company. In this regard, NovaUCD, in consultation with UCD researchers, develops the most appropriate model for commercialisation of the intellectual property.

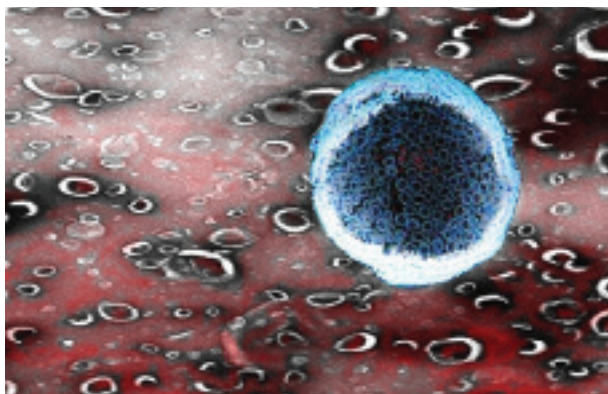
A number of different services form part of this process:

- Building high level market knowledge and an understanding of the relevant market sectors
- Access to advice, data and diagnostic tools
- Sourcing of licensees and marketing of inventions
- Drafting and negotiating licence agreements
- Sourcing of finance.

Thirteen licence agreements were executed during 2008 with a range of indigenous and international companies. In addition, over 130 agreements were negotiated by NovaUCD, ranging from bi-lateral agreements with one company to large multi-party collaborations, e.g. Strategic Research Clusters. Under many of these agreements, options were granted to the participating company to licence intellectual property thus ensuring a pipeline of potential licensing opportunities at future dates.

## Overseas Placements

Under Enterprise Ireland's Technology Transfer Strengthening Initiative, NovaUCD organised for Dr François Pichot and Dr Deirdre Leane, two of its Project Managers, Technology Transfer, to undertake working placements in the technology transfer offices in Yale University and the Cleveland Clinic respectively to gain experience and exposure to international best practice.



©UCD 2008 Images of Research: Self assembling image, Dr Raphael Darcy, UCD School of Chemistry and Chemical Biology with Dr Lawrence Penkler

### International Exhibition

NovaUCD participated at the inaugural CopenMind Conference and Exhibition which took place last September in Copenhagen, Denmark. CopenMind was a groundbreaking conference and exhibition which facilitated match-making between more than 100 university and research institute exhibitors and industry/company representatives from around the world with particular emphasis on 'cleantech' technologies.

Following the submission of abstracts by NovaUCD, two UCD researchers were selected by an independent scientific board to present at one of the 'clean tech' scientific sessions which took place during the conference. UCD was one of only a handful of universities or research institutes to have two researchers selected. The two UCD presenters were;

Dr Kevin O'Connor, UCD School of Biomolecular and Biomedical Science who presented on *Converting petrochemical plastics into a high value virgin biodegradable polymer* and Dr Anika Mostaert, UCD

Conway Institute of Biomolecular and Biomedical Science who presented on *Amyloid-based adhesives* authored with Professor Suzanne Jarvis.

### NovaUCD 2008 Innovation Award – Recognising Successful Technology Transfer

The NovaUCD Innovation Award was introduced in 2004. The Award is presented annually to an individual, company or organisation in recognition of excellence in, contribution or commitment to innovation or in recognition of success achieved in the commercialisation of UCD research or other intellectual activity. Previous Award winners were Professor Mark Rogers (2004), Professor Barry Smyth (2005), Professor Conor Heneghan (2006) and Professor Ciaran Regan (2007).

The NovaUCD 2008 Innovation Award was presented to Celtic Catalysts, a UCD spin-out company which has developed technology to enable global pharmaceutical companies manufacture drugs more cost effectively, particularly in anti-viral and anti-cancer therapeutic areas.

The Award was presented to the company in recognition of its successful commercialisation of chiral synthesis research which took place over many years in UCD's School of Chemistry and Chemical Biology. This is the first time that the NovaUCD Innovation Award has been presented to a spin-out company.

Celtic Catalysts was co-founded in 2000 by Professor Declan Gilheany and Dr Brian Kelly. Its focus is on the area of chiral synthesis and it has developed a comprehensive intellectual property portfolio and carved out a uniquely strong niche for itself in the specialised area of "P-chiral"



Brian Elliott, Chairman, Celtic Catalysts, Dr Hugh Brady, Dr Brian Kelly, CEO and co-founder, Professor Declan Gilheany, co-founder and Dr Pat Frain

technology. This technology can be used in the production of a range of drugs which are particularly prevalent in anti-viral and anti-cancer therapeutic areas.

Since 2004, Celtic Catalysts has secured €2 million in investment from 4th Level Ventures, Enterprise Ireland and the Business Expansion Scheme (BES). In addition it has secured two European Commission grants under the prestigious Marie Curie funding scheme.

In addition to product sales, Celtic Catalysts, which currently employs 17 people, has already signed several research alliance agreements with a number of multinational pharmaceutical companies. These research alliance agreements enable Celtic Catalysts utilise their expertise and technology to solve problems being encountered by pharmaceutical and biotech companies in the manufacture of their drugs.

## ChangingWorlds - A UCD Technology Transfer Case Study

Today ChangingWorlds, the award-winning UCD spin-out company, is recognised as the global expert in personalization for mobile data and subscriber intelligence techniques with over 50 mobile operator clients worldwide.

ChangingWorlds, began life in 1999 when it was co-founded by Professor Barry Smyth and his then PhD student, Paul Cotter, to commercialise the award-winning ClixSmart personalization engine developed as part of an extensive research programme in UCD's Smart Media Institute.

During 1999 Barry and Paul participated on NovaUCD's Campus Company Development Programme (CCDP) and ChangingWorlds was in fact the overall winner of that year's Programme.

Following completion of the CCDP, ChangingWorlds occupied incubation space in the Campus Innovation Centre at Roebuck, the forerunner of NovaUCD. Quickly outgrowing this space the company moved to South Dublin Business Park in Leopardstown, where it is still headquartered today.

Since establishing ChangingWorlds, Professor Barry Smyth and Paul Cotter have continued to maintain strong strategic links with UCD and UCD's School of Computer Science and Informatics. When the company established an Advanced Research Centre it located it at NovaUCD.

In 2005 Professor Barry Smyth was presented with the 2005 NovaUCD Innovation Award in recognition of his outstanding and continuing success in the

commercialisation of his research since joining UCD in 1995, which included the establishment of ChangingWorlds.

Since being established ChangingWorlds has rolled out its ClixSmart™ Intelligent Mobile Portal platform to over 50 mobile network operators worldwide, including Vodafone Global Group, O<sub>2</sub> Ireland and Germany, TeliaSonera, Celcom Malaysia, Hong Kong CSL and Sprint, USA. The company now employs over 160 highly qualified staff including staff based in Dublin and in offices in Brazil, the Far East and in the USA.

In December 2008 ChangingWorlds was acquired by the US-quoted technology company Amdocs for \$60 million and additional consideration may be paid at a later date based on the achievement of certain performance metrics.

### **UCD Opportunities**

UCD has a growing portfolio of licensing, collaboration and business development opportunities available for exploitation by industry and campus companies. Examples are listed on pages 17-18. Non-confidential summaries for many of these technologies are available from NovaUCD.



## UCD 2008 Priority Patent Applications

<b>Title</b>	<b>Patent Application</b>	<b>UCD Inventor(s)</b>	<b>UCD School</b>
A DNA-based test for association with elite sprinting performance in thoroughbred racehorses	An Irish and US priority patent application	Dr Emmeline Hill	Agriculture, Food Science and Veterinary Medicine
A DNA-based test for association with elite racing performance in thoroughbred racehorses	An Irish and US priority patent application	Dr Emmeline Hill	Agriculture, Food Science and Veterinary Medicine
A macrocyclic derivative and assemblies formed there from	A UK priority patent application	Dr Rafe Darcy	Chemistry and Chemical Biology
A method of assessing bacterial load of a sample	An Irish priority patent application	Dr Anthony Dolan with Teagasc	Agriculture, Food Science and Veterinary Medicine
A modified promoter sequence	A UK priority patent application	Professor Therese Kinsella	Biomolecular and Biomedical Science
A process for cleaning a membrane supported biofilm reactor	A European priority patent application	Dr Eoin Casey	Chemical and Bioprocess Engineering
A searching system and method	An Irish priority and US provisional patent application	Professor Barry Smyth	Computer Science and Informatics
Alpha-glycosyl thiols and Alpha-S-linked Glycolipids	A US priority patent application	Dr Xiangming Zhu	Chemistry and Chemical Biology
An isolated population of amniotic fluid cells	A European priority patent application	Dr David McLaughlin	Biomolecular and Biomedical Science
Automated building outline detection	An Irish priority patent application	Dr Hamish Carr	Computer Science and Informatics
Captodiamine	An Irish priority patent application	Professor Ciaran Regan	Biomolecular and Biomedical Science
Cognition TxP (alternatively transcribed genes associated with memory consolidation)	A US priority patent application	Professor Ciaran Regan	Biomolecular and Biomedical Science
Information retrieval	An Irish and US priority patent application	Dr Neil Hurley	Computer Science and Informatics
Integrated drilling, chamfering and deburring tool	An Irish priority patent application	Professor Gerry Byrne and Eamonn Ahearne	Electrical, Electronic and Mechanical Engineering



<b>Title</b>	<b>Patent Application</b>	<b>UCD Inventor(s)</b>	<b>UCD School</b>
Method and apparatus for control of large scale sensor networks	An Irish priority patent application	Dr Raja Jurdak	Computer Science and Informatics
Method and system for providing mobility support in mesh networks	An Irish priority patent application	Dr Liam Murphy	Computer Science and Informatics
Method of coating a thin liquid metal film onto a Solid Substrate	An Irish priority patent application	Dr Fergal O'Reilly	Physics
Method for performing magnetic resonance measurements and apparatus for executing said method	A European priority patent application	Dr Marcus Greferath	Mathematical Science
Method for producing poly-hydroalkanoate (PET to PHA)	An Irish and UK priority patent application	Dr Kevin O'Connor	Biomolecular and Biomedical Science
Meparfynol	An Irish priority patent application	Professor Ciaran Regan	Biomolecular and Biomedical Science
Microwave plasma sintering	An Irish priority patent application	Dr Denis Dowling	Electrical, Electronic and Mechanical Engineering
Nitrosylated Conjugated Linoleic Acids	A UK priority patent application	Dr Orina Belton and Professor Des Fitzgerald and colleagues from RSCI	UCD Conway Institute of Biomolecular and Biomedical Research
Pseudomonas putida styrene monooxygenase variants	A UK priority patent application	Dr Kevin O'Connor	Biomolecular and Biomedical Science
Schizo TxP (alternatively transcribed genes associated with Schizophrenia)	A US priority patent application	Professor Ciaran Regan	Biomolecular and Biomedical Science
The conversion of a mixture BTEX compounds by defined mixed cultures to medium chain length polyhydroalkanoate	A UK priority patent application	Dr Kevin O'Connor	Biomolecular and Biomedical Science

## UCD Technology Transfer Opportunities

<b>Title</b>	<b>Principal Researcher(s)</b>	<b>UCD School of</b>
A method and software tool for generating finite element models	Dr Debra Laeffer and Dr Hamish Carr	Architecture, Landscape and Civil Engineering, and Computer Science and Informatics
A microwaveable cheese product	Professor Dolores O’Riordan, Dr Michael O’Sullivan and Dr James Lyng	Agriculture, Food Science and Veterinary Medicine
Amyloid and amyloid-like structures as mechanically functional biomaterials	Professor Suzanne Jarvis and Dr Anika Mostaert	Conway Institute of Biomolecular and Biomedical Research
A platform technology – Assessing the action of molecular targeted drug treatments	Dr Jacintha O’Sullivan, Dr Hugh Mulcahy, Professor Diarmuid O’Donoghue	Centre for Colorectal Disease, St Vincent’s University Hospital
Computer forensics software tools	Dr Pavel Gladyshev	Computer Science and Informatics
Generation of an improved biocatalyst	Dr Kevin O’Connor	Biomolecular and Biomedical Science
Genetic markers for bull fertility	Dr Emmeline Hill and Dr Alex Evans	Agriculture, Food Science and Veterinary Medicine
High-performance and recycled constructed wetland material	Dr Yaqian Zhao	Architecture, Landscape and Civil Engineering
High-rate LDPC codes for data storage applications	Dr Marcus Greferath, Ms Cornelia Roessing and Dr Mark Flanagan	Mathematical Science and Electrical, Electronic and Mechanical Engineering
Methods for producing polyhydroxyalkanoate (PHA)	Dr Kevin O’Connor	Biomolecular and Biomedical Science
Novel image analysis system for nuclear biomarkers	Professor William Gallagher, Dr Donal Brennan and Mr Elton Rexhepaj	Biomolecular and Biomedical Science
Novel vaccine for protection against liver fluke disease in cattle and sheep	Professor Grace Mulcahy and Professor John Dalton (Associated Faculty Member)	Agriculture, Food Science and Veterinary Medicine
Peer-to-peer video-on demand technology	Dr Sean Murphy, Dr Hamid Nafaa and Dr Liam Murphy	Computer Science and Informatics
Power composer	Dr Chris Bleakley	Computer Science and Informatics

<b>Title</b>	<b>Principal Researcher(s)</b>	<b>UCD School of</b>
Rapid diagnostic tests for animal and human parasitic diseases	Professor Grace Mulcahy and Professor John Dalton (Associated Faculty Member)	Agriculture, Food Science and Veterinary Medicine
RECAP – Dynamic reassignment of cluster aggregation point in wireless sensor networks	Mr Antonio Ruzzelli, Dr Raja Jurdak and Dr Gregory O’Hare	Computer Science and Informatics
Text clustering software toolkits for targeted databases analysis	Professor Pdraig Cunningham and Dr Derek Greene	Electrical, electronic and mechanical engineering
The Serendipity Engine: A comparison based e-commerce platform	Professor Barry Smyth	Computer Science and Informatics
ufxDesign fixed point development tools	Dr Neil Hurley and Dr Guenole Silvestre	Computer Science and Informatics
Wearable posture sensor	Dr Brian Caulfield, Professor Barry Smyth and Ms Lucy Dunne	Physiotherapy and Performance Science and Computer Science and Informatics

# Start-up Companies

At NovaUCD we now have a proven track record in supporting entrepreneurs and start-up companies from the early feasibility stage through to business development, growth and investment.

The main elements of the NovaUCD's support programme for entrepreneurs and start-up companies includes:

- Advice and assistance on all aspects of new venture formation including:
  - Feasibility study
  - Project development
  - Building the entrepreneurial team
  - Developing the business model
  - Financial planning and management
  - Preparing business plans
  - Company formation
  - Access to sources of finance
  - Business growth
  - Investment
- Advice for entrepreneurs and researchers on ideas with commercial potential:
  - Academic entrepreneurs - The Campus Company Development Programme, a business start-up programme which has run annually since 1996
- Other supports:
  - Clinics and advice from the NovaUCD sponsors and other organisations covering areas such as legal issues, banking, finance, patenting, licensing and new venture formation
  - The NovaUCD Network of professional business contacts including seed and venture capital funds
  - Training programmes
  - Introduction to UCD's research expertise and facilities.

## Facilities

NovaUCD provides incubation and other related facilities for entrepreneurs, campus companies and knowledge-based ventures.

NovaUCD offers 14 desk spaces for individuals who are at the early stages of forming a company allowing them to undertake feasibility studies. NovaUCD also contains 42 incubation units for high-tech knowledge-intensive companies, ranging in size from 15m<sup>2</sup> to 64m<sup>2</sup>. Other facilities and services include a wireless network, a permanent boardroom which seats 22, numerous seminar and meeting rooms, a café, a dedicated server room and reception services.



Office at NovaUCD

NovaUCD also houses 340m<sup>2</sup> of bioincubation space to accommodate biotechnology companies. Laboratories are equipped with power and water supply, sinks, fume hoods and benching as well as voice and data points. Shared facilities available include fridge freezers, de-ionised water, ice machines, dishwashers etc. Companies locating in these laboratories are facilitated in accessing the full range of technology and general facilities available in UCD. Office space for companies

locating in these laboratories is also provided at NovaUCD.



Bioincubation space at NovaUCD

### **Academic Entrepreneurs - NovaUCD Campus Company Development Programme**

The NovaUCD Campus Company Development Programme (CCDP), which is now in its fourteenth year, is the main support programme run by NovaUCD for academic entrepreneurs who are spinning-out campus companies. This annual Programme, which in 2008 was delivered in association with Enterprise Ireland, offers a mix of monthly workshops, mentoring and one-to-one consultancy. It is delivered by NovaUCD staff, with the support of the NovaUCD Sponsors and other outside experts.

The CCDP is designed to assist academic entrepreneurs in the establishment and development of knowledge-intensive enterprises by providing the skills necessary to transform ideas into commercially feasible ventures.

In the last thirteen years over 140 projects and 210 individuals have completed the Programme. Previous programme participants now employ

around 750 people. Current NovaUCD client companies which previously participated on the Programme include Asimil8, Berand Neuropharmacology, BiancaMed, Celtic Catalysts, ChangingWorlds and Lightwave Technologies.

Asimil8, a new e-learning venture which has developed a next generation learning platform using virtual world and gaming technologies, was presented with NovaUCD's 2008 start-up award and €5,000 after being declared the overall winner of the 13<sup>th</sup> NovaUCD Campus Company Development Programme. The presentation took place at an Awards ceremony held in UCD's William Jefferson Clinton Auditorium with Bernie Cullinan, CEO, Clarigen as the guest speaker.



Garrett Hussey and Paul Groarke, co-founders of Asimil8

There is currently no convenient way for most students learning languages to practise their language skills other than travelling to foreign destinations which can be expensive and impractical. To address this and related issues in the learning environment Asimil8, which was co-founded in 2008 by Paul Groarke and Garrett Hussey, has developed a next generation learning platform to provide immersive education for languages and other subjects using virtual world

and gaming technologies. The use of virtual world and gaming technology is designed to engage students in the same way that video games grab and keep their attention. By 'immersing' students in real-life settings where they must use their knowledge, Asimil8 will give students a deeper and more dynamic understanding of their subjects.

Two other projects participating on this year's Programme, Flexitimers and Bioplastech received runner-up awards and prizes of €3,000 and €2,000 respectively.

Flexitimers has developed an internet platform that will enable companies to radically change how they recruit and approach the HR function. Flexitimers was established to address the needs of employers who wish to recruit professionals with experience and skills but not on a permanent basis and professionals looking for flexible (part-time, freelance and contract) positions and projects. Flexitimers was co-founded by Dervla Cunningham and Joy Redmond.



Dervla Cunningham and Joy Redmond, co-founders, Flexitimers

Bioplastech is commercialising a process which converts waste materials to a value-added, environmentally friendly (i.e. biodegradable) plastic. This plastic has numerous potential product applications in the packaging sector as well as in agriculture and biomedicines. Bioplastech is commercialising research which has been undertaken over the last number of years by Dr Kevin O'Connor and his team in UCD's School of Biomolecular and Biomedical Science.



Dr Kevin O'Connor, UCD's School of Biomolecular and Biomedical Science founder, Bioplastech



## Other NovaUCD 2008 CCDP Participating New Ventures

### **ASTRA-Research**

*Dr Mary Codd, UCD School of Public Health and Population Science*

ASTRA-Research is a data management solution venture focusing on health-related research to provide advice, research support, training and analysis.

### **BioSystems Engineering**

*Dr Fergal Tansy and Dr Alexis Pacquit, UCD School of Agriculture, Food Science and Veterinary Medicine*

BioSystems is developing a thermal process validation services for the Irish food industry along with developing a canine biometric identification system.

### **DESTinE**

*Stephanie Fitzgerald*

DESTinE is developing specialist software tool enabling schools to assess and profile the strengths and interests of students with Special Educational Needs within the second-level mainstream setting.

### **eBioTech**

*Professor Richard Reilly and Isabelle Killane, UCD School of Electrical, Electronic and Mechanical Engineering*

eBioTech has developed innovative technologies to remotely diagnose and monitor diseases such as Asthma.



Participants on the NovaUCD 2008 CCDP

### **ElectroSim**

*Dr Niall English, UCD School of Chemical and Bioprocess Engineering*

ElectroSim is developing software to significantly accelerate electrostatics in molecular simulations.

### **ERG Consulting**

*Professor Owen J. Lewis, UCD School of Architecture, Landscape and Civil Engineering*

ERG Consulting is being established to provide energy and environmental services to the Irish and European building industries.

### **EUV Source Solutions**

*Dr Kenneth Fahy, Dr Fergal O'Reilly and Dr Paul Sheridan, UCD School of Physics*

EUV Source Solutions is examining the provision of extreme ultra violet light sources and optics to the semiconductor industry.

### **Exergaming Solutions**

*Dr Brian Caulfield and Diarmaid Fitzgerald, UCD School of Physiotherapy and Performance Science*

Exergaming Solutions is utilising computer games to aid specific therapeutic exercises to improve the quality and outcomes of rehabilitation interventions.



## NovaUCD Client Forum

The level of support for client companies from the NovaUCD Network has continued to develop with the NovaUCD Client Forum arranged on a regular basis. The NovaUCD private sector sponsors and other organisations provide a mix of expertise (e.g. accounting, financial, legal, marketing and strategic management) to complement the NovaUCD team in supporting innovators and entrepreneurs in bringing their ideas from the research laboratory through proof-of-principle and prototype development to successful commercialisation.



Seminar room at NovaUCD

## NovaUCD Companies

Twenty-five innovative new ventures, occupying 36 incubation units, or nearly 90% of the available incubation space, are currently located in NovaUCD. Several of these companies are commercialising research specifically undertaken at UCD while the remaining start-ups have located in NovaUCD in order to interact more closely with UCD.

Thirteen client companies have now graduated from NovaUCD and moved on to new premises. It is an important element of NovaUCD's strategy to

continuously refresh our community of entrepreneurs and to have the capacity at all times to take on new projects.

### Current NovaUCD Companies

**Advanced Diagnostics Laboratory** - is Ireland's first commercial and diagnostic laboratory for animal health and toxicology

**AER** - is a leading Irish biofuels company

**AIB Seed Capital Fund** - provides venture capital for companies at the seed and early stages of development

**Aonta Technologies** - provides carrier grade voice conferencing solutions to Conferencing Service Providers and Telcos

**AP EnvEcon** - provides decision-support systems, solutions and specialist advice to the public and private sector for the management of environmental change

**Asimil8** - has developed a next generation learning platform to provide immersive education for languages and other subjects using virtual world and gaming technologies.

**Berand Neuropharmacology** - is a pre-clinical drug research company that offers a full spectrum of in-vivo neuropharmacology and pre-clinical neurobiology services, resources and expertise. It also applies its technical platforms and expertise to in-house drug discovery programs directed to developing neurotherapeutic strategies for the treatment of brain illness



Dr Jennifer Craig, Berand  
Neuropharmacology

**BiancaMed** – is a health technology company which offers leading health technology solutions for monitoring everyday living

**bioMérieux** - develops and evaluates in-vitro diagnostic tests for use in food, pharmaceutical and veterinary microbiology laboratories

**Bioscientific Diagnostics** – is a Contract Research Organisation (CRO) providing outsourcing services to the drug development industry, with a specific focus on Diagnostics, Biomarkers and biopharmaceutical product characterisation

**Biosensia** - develops and supplies disposable diagnostic test chips for point-of-use analytical applications

**Biosystems Engineering** – develops engineering solutions to existing commercial and industrial problems in an environmentally and technologically sound way

**Celtic Catalysts** – is a leading supplier of chiral products and technology to the Fine Chemical, Pharmaceutical and Biotech industries

**ChangingWorlds** – is the market-leading provider of intelligent personalization and wireless portal products to the telecommunications industry

**Doco System Solutions** - develops document management software solutions for global markets

**Enzolve Technologies** – is commercialising genetically engineered enzymes, enzyme-based specialty products and enzyme expertise

**Evolution** - is a software development house specialising in bespoke e-work/workflow and HR

**gsmExchange.com** – is an online trading platform for the GSM and telecommunications industry

**HomeInstead Senior Care** – provides comprehensive home care services for the elderly

**Ionic Business Systems** - provides a range of technology products including website design, implementation and hosting

**Java Clinical Research** - is a Contract Research Organisation specialising in providing a complete clinical trial service to the pharmaceutical and biotechnology industries

**Lightwave Technologies** – provides real-time web-enabled energy saving solutions for commercial buildings

**OncoMark** - focus is centred on the development and application of biomarker panels, particularly in the areas of oncology and drug development

**Q-Validus** - is a leading provider of international certification and management services

**Socowave** - was established to provide superior antenna-line technology solutions to the Broadband Wireless Access Industry.

### **NovaUCD Graduate Companies**

The following companies have graduated from NovaUCD

**Alltracel Healthcare Services** - provides scientific research, clinical trial and development services for the Alltracel Group and offers its services externally to healthcare companies seeking an external step-up in speed of innovation, technology development and commercialisation

**Broadcast Learning** - is a software systems company specialising in e-Assessment and e-Learning solutions

**Cornerstone International** - is a leading provider of professional training in China focusing on the software, business and finance sectors

**Duolog Technologies** - is a leading developer of EDA solutions for the IC (integrated circuit) design industry

**(e)Learning Union** - is a provider of e-learning management solutions and consultancy services  
Eventznnet - is a software development company which develops and markets software for event planning and management

**Intelligent Health Systems** - specialises in the

provision of services and products to the healthcare industry

**Locumotion** - medical services company

**Madingley** - is a mobile technologies company that develops unique solutions for operators of mobile data services

**Maritime Management** - provides shipping management, shipping finance and maritime consultancy to the global shipping industry

**Novus Financial and Management Solutions** - financial services management and consultancy company

**Neosera Systems** - is an EDA company researching and developing innovative hardware and software systems to enhance design methodologies for current and emerging semiconductor technologies

**Visor** - has developed an online accounting software, accountsIQ for accounting service providers.



Tony Connolly, Visor

## NovaUCD Company Success Stories

Several NovaUCD client companies have experienced success during the last year.

Dr Conor Hanley, co-founder of **BiancaMed**, the NovaUCD-based health technology company was among the entrepreneurs named as finalists in the Academic Enterprise Awards Europe 2008. These Awards were the first pan-European awards to recognise researchers who had started new businesses. Dr Hanley was the only Irish-based entrepreneur to reach the finals. The finalists were grouped into six categories, by industry sector and type of entrepreneur and Dr Hanley was a finalist in the Life Sciences category.

Established by the by the London-based Science|Business Innovation Board the Academic Enterprise Awards Europe 2008 was the first awards Programme across Europe to focus on university spin-outs and their founders. Science|Business is an independent news and events service for early-stage investment in R&D, across Europe and across industries.



Dr Conor Hanley, CEO and co-founder, BiancaMed

BiancaMed was co-founded in 2003 by Dr Philip de Chazal, Professor Conor Heneghan and Dr Conor Hanley as a spin-out from UCD's School of Electrical, Electronic and Mechanical Engineering.

**Celtic Catalysts**, the UCD spin-out company and a leading supplier of chiral products and technology to the Fine Chemical, Pharmaceutical and Biotech industries was declared the international winner of the *Rising Star Award* at the BioIndustry Association (Scotland) Thistle Bioscience Forum 2008 which took place in Edinburgh.

Celtic Catalysts was one of four Irish biotech companies, all members of the Irish BioIndustry Association, who took part in the international *Rising Stars Showcase* competition along with 8 other companies from Scotland and Israel.

During the year Celtic Catalysts also secured an additional €500,000 in funding from existing investor, 4th Level Ventures and private investors bring the total amount raised by the company to the €2 million mark.



Kevin Dalton and Dr Brian Kelly, Celtic Catalysts

Dr Brian Kelly and Professor Declan Gilheany co-founded Celtic Catalysts in 2000 as a spin-out from UCD's School of Chemistry and Chemical Biology. During 2008 Dr Kelly was also appointed company CEO.

**ChangingWorlds** won several awards during 2008. At the start of the year it won the inaugural *Irish Technology Leadership Group (ITLG)/Irish Times Innovation Award*. The award was established by the ITLG to recognise an innovative Irish company which it is believed has the most potential to succeed on the international stage. The ITLG is an independent organisation comprised of a number of high-level technology leaders in Silicon Valley who are Irish or Irish-American and who are committed to helping Ireland address the challenges of embracing new technology opportunities.

*The ITLG-Irish Times 2008 Innovation Award* was presented to ChangingWorlds in recognition of the company's impressive customer successes, product strategy, management team, outstanding intellectual property portfolio and international growth across all of its key territories, Europe, Asia and the US.

Later in the year ChangingWorlds won the *Company of the Year Award* at the 2008 Irish Software Association Awards ceremony. ChangingWorlds also won the *CPD (Continuing Professional Development) Company of the Year Award* at the annual Engineers Ireland award ceremony. The awards, now in their fifth year, were created to recognise the particular achievements of the top performers in this crucial area of engineering. ChangingWorlds used the Engineers Ireland CPD framework to foster creativity amongst its employees in its Advanced Research Centre at NovaUCD.



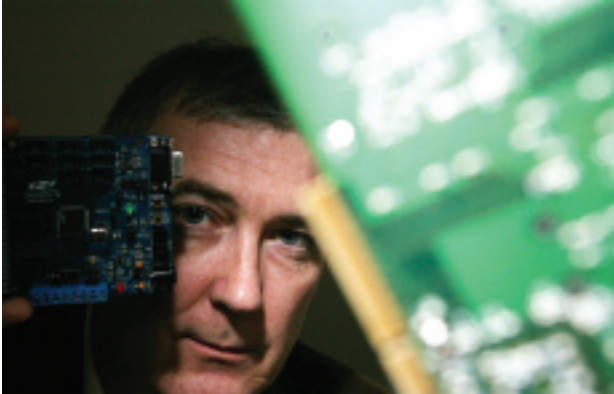
Myra Garrett, Managing Partner, William Fry; David Moran, CEO, ChangingWorlds and Shane Dempsey, Director, Irish Software Association

During the year **Duolog Technologies**, the Collaborative Design Automation™ company, opened a new sales, marketing and support office in Los Gatos, California as part of its global expansion plans and it announced that it intends to grow its revenues by 50 percent to \$15 million during 2009.

Duolog, which develops software tools that enable chip design companies to design their products faster and with fewer bugs, also scooped three of the *Best of DAC Awards*, at the 45th Annual Design Automation Conference (DAC) which it was attending for the first time.

DAC, which in 2008 was held in Anaheim, California, is the premier event for the design of electronic circuits and systems, and for Electronic Design Automation (EDA) and silicon solutions. A diverse worldwide community representing more than 1,500 organisations attends each year, with approximately 8,500 attendees and 250 of the world's leading and emerging EDA and silicon providers exhibiting annually at the show.





Ray Bulger, CEO, Duolog Technologies

Duolog was the overall winner of the *Most Interesting First-time Exhibitor award* and won the Trendsetter award in the Best Overall New Product category for its Spinner tool. In addition Duolog also won a Trendsetter award for *Best Demonstration on Exhibit Floor*.

Duolog Technologies, which was co-founded by Ray Bulger, currently employs more than 80 people and is headquartered at NovaUCD with design centres in Galway and Budapest, Hungary.

**Enzolve Technologies**, the UCD spin-out company, received substantial investment from Enterprise Ireland during 2008 under the National Development Plan (2007-2013) and private investors. This investment is enabling Enzolve Technologies to commence production of *NeoScreenPak*, a range of diagnostic kits for screening a variety of disorders that affect newborn infants. The initial test in the *NeoScreenPak* range will screen for phenylketonuria (PKU).

The screening of newborn infants for a variety of disorders that seriously damage their long term

health is well established in economically developed countries but less so in under-developed countries. In Ireland all newborns are routinely tested for five common disorders, phenylketonuria, maple syrup urine disease, homocystinuria, galactosaemia and congenital hypothyroidism. If left undetected and untreated any of these disorders will cause long term and serious impairment to the infant.

Enzolve's new diagnostic screening package, *NeoScreenPak* offers several key advantages over other available screening methods. *NeoScreenPak* is a single format test-package which will be used to screen for seven of the eleven most commonly screened disorders affecting newborns, thus eliminating the necessity for completely different set-ups for screening each of these conditions.

Enzolve's 'one-step' tests are also faster, more reliable, convenient and cost effective than tests currently available on the market. Such advantages are proving to be particularly attractive in international markets, especially those where newborn screening programmes are as yet under-developed or under-funded.



Dr Denise Cornally and Dr Anna Edvardsson, Development Scientists, Enzolve Technologies

Enzolve Technologies, which is commercialising genetically engineered enzymes, enzyme-based specialty products and enzyme expertise, was co-founded by Professor Paul C. Engel and Dr Suren Aghajanian as a spin-out from UCD's School of Biomolecular and Biomedical Science at UCD's Conway Institute of Biomolecular and Biomedical Research.

**Evolution** the human resources software company launch its latest product, TempSheets.com, in 2008. TempSheets.com is an easy-to-use online system designed for recruitment agencies that place temporary staff. TempSheets.com enables such firms to gain a competitive advantage by providing an easy and efficient way to record temporary staff timesheets, schedule staff availability and obtain client approval.



Alistair Thacker, founder, Evolution

TempSheets.com, which is currently being rolled-out to a number of recruitment agencies in Ireland, eliminates the need for paper-based timesheets which are time consuming for agencies to process, by allowing temporary staff to complete and submit their timesheets online. These timesheets

are then approved by the client company before being electronically submitted to the recruitment agency with all invoicing and payroll calculations already completed.

Evolution was founded in 2006 by Alistair Thacker who previously worked for SoftCo and Microsoft.

During the year, **gsmExchange.com** was commissioned by Vodafone to develop a business-to-business platform that enhances the purchase and distribution of their mobile handsets worldwide.



Essam Bishara, founder,  
gsmExchange.com

Vodafone had expressed a need for an intra-company-platform that would help them gain a competitive edge. The platform will ensure that Vodafone operating companies encountering unexpected high demands for particular handsets will have an internal exchange or channel to turn to when sourcing stock to meet these demands. In turn, Vodafone operating companies that find themselves over-stocked will use the platform to promote their stock to other Vodafone operating companies worldwide.



The internet-based platform is called the *Vodafone Spot Market Trading Platform*. It operates very much like a *Commodity Stock Exchange*, where offers and requests are matched up, and buyer and seller can agree on the terms, and conclude their transactions, quickly and efficiently online and within hours.

The *gsmExchange.com* platform serves the industry wholesale and retail channels on a global scale, supplying them with a valuable network with which to trade. Furthermore, the volume of data thus generated gives their clients a unique look into the workings and trends of the wholesale mobile handset market.

*gsmExchange* was founded by Essam Bishara.

**HeyStaks Technologies** established in 2008, was one of four new initiatives to share the Eircom 2008 €100,000 *Web Innovation Fund*. With this award, HeyStaks and the other winners enter into an agreement with Eircom to develop their concepts through to production and, if appropriate, initial launch on the *eircom.net* platform.

HeyStaks is the first spin-out company to emerge from the CLARITY CSET. CLARITY is a €16 million Science Foundation Ireland research centre focused on the so-called 'Sensor Web', which combines researchers from University College Dublin, Dublin City University, and the Tyndall National Institute, Cork.

HeyStaks which is a new approach to internet searching that helps people to share their search experiences with friends and colleagues has been developed by Professor Barry Smyth and colleagues from UCD's School of Computer Science and Informatics.




Dr Peter Briggs, Professor Barry Smyth and Dr Maurice Coyle, co-founders of HeyStaks

**Q-Validus** the international certification solutions provider was selected as a Dublin regional finalist in the 2008 *InterTradeIreland All-Island Seedcorn Business Competition*. Earlier in the year Q-Validus launched *Spreadsheet Safe™* an innovative training and certification programme designed to assist businesses in reducing the risks associated with poor spreadsheet design, use and control.



David Carpenter, CEO, Q-Validus



In response to the growing requirements of businesses to reduce the risks posed by unsafe spreadsheet practices, Q-Validus developed the Spreadsheet Safe™ training and certification programme. The programme is delivered in a one-day course during which candidates are given a total training solution including web-based e-learning, a training manual, a certification test and a certificate on successful completion of the test. Q-Validus was established in 2007 by David Carpenter, Garry Cleere and Dudley Dolan.

## Culture of Innovation and Entrepreneurship

The development of a culture of innovation and entrepreneurship is critical for the successful identification and commercialisation of intellectual property at UCD. By promoting awareness and embedding the ethos of innovation, knowledge transfer and commercialisation with the research community, NovaUCD is encouraging the seeds of valuable intellectual property which can be harnessed at a later stage for the benefit of all stakeholders.

NovaUCD has arranged over 625 events since 2003 to assist in creating this culture by increasing the awareness of entrepreneurship, innovation and technology transfer among the next generation of entrepreneurs and innovators. These events, which are aimed at researchers, staff and students, cover all aspects of commercialisation including intellectual property identification, protection and exploitation, commercialisation and new venture formation.



Sean Mitchell, CEO, Movidia, prior to speaking at a 2008 NovaUCD 'Entrepreneurs Live!' seminar

### Transferable Skills Training

NovaUCD's Continuing Professional Development (CPD) Programme offers specialised training

courses for graduate students, researchers, technology transfer professionals and senior executives and managers from industry who wish to develop their professional skills in the management and exploitation of research results and innovative concepts.

The courses are designed to assist those who are involved in the development and transfer of technology to the knowledge economy understand the issues facing them in management and exploitation of commercial applications. The courses offered are

- Postgraduate education, accredited PhD modules
- Bespoke training courses for researchers, technology transfer professionals and industry.

### Postgraduate Education

A complete accredited training module appropriate for graduate students participating in a structured PhD programme is available from NovaUCD. This module covers the management process required to transform an innovative idea into a commercial opportunity or business proposition. A fundamental understanding of the different forms of intellectual property (IP) is provided and students are guided through the stages and processes involved in the creation, capture, management and commercialisation of IP.

## Bespoke Training Courses

NovaUCD has also developed detailed training material (course book, workbook, case studies), which provides the foundation for seminars and workshops on key topics relevant to innovation and technology transfer and supports the development and delivery of specialised training courses to organisations for training of:

- Researchers and Principal Investigators
- Technology Transfer Professionals
- Company R&D, Licensing and IP Managers.

## Specific Training Topics

- The role of the researcher in the innovative process
- IP policy and national guidelines for management of IP
- The different forms of IP
- Patents and the patent system
- Managing the capture, reporting and protection of IP
- Evaluating and valuing IP
- Developing a business plan
- Negotiating and licensing IP
- Preparing agreements for disclosure of information, R&D cooperation, evaluation and exploitation of IP.

## Training Outcomes

On completion of the training courses participants will be able to demonstrate a thorough understanding of

- The commercialisation process
- Conduct research using best laboratory practice
- Implement processes for managing technology

transfer

- Assess the most appropriate routes to market
- Value and market research outputs and make the business case to potential funders
- Prepare a technology offer
- Negotiate and conclude collaborative research and licensing agreements
- Advise researchers and their colleagues on how to manage and exploit the commercial potential of research projects.



Bernard Henesy, founder, Phive Plasma Technologies prior to speaking at a 2008 NovaUCD 'Entrepreneurs Live!' seminar

## 'Entrepreneurs Live!' Seminar Series

NovaUCD with the support of Dún Laoghaire-Rathdown County Enterprise Board ran 10 seminars during 2008 in the extremely popular 'Entrepreneurs Live!' Seminar Series.

The aim of the seminars is to promote a spirit of entrepreneurship among the academic, research and student population at UCD. The seminars involve well known entrepreneurs who talk about their experiences of setting up and running their own business, emphasising the highs and lows encountered on their entrepreneurial journey, and highlighting the lessons they have learnt along the way. During each seminar, attendees have the

opportunity to participate in lively question and answer session with the guest entrepreneur.



Joe Drumgoole, founder, Putplace.com with UCD students Eimear O'Herlihy and Enda Gallery prior to speaking at a 2008 NovaUCD 'Entrepreneurs Live!' seminar



Sean Fee, co-founder, Lookandtaste.com prior to speaking at a 2008 NovaUCD 'Entrepreneurs Live!' seminar

Speakers at this year's seminars included Joe Drumgoole, Putplace.com; Sean Fee, Lookandtaste.com; Bernard Hensey, Phive Plasma Technologies and Sean Mitchell, Movidia.

To date 64 seminars have been run by NovaUCD. The series continues to attract large audiences and to stimulate a lively and enthusiastic debate between the speakers and the students. There is clearly a growing culture of entrepreneurship on UCD's campus which augurs well for UCD's ability to generate new ventures and high-tech employment for UCD graduates in the future.

# Communications and Partnerships

## Communications

NovaUCD communicates key messages to internal and external stakeholders, both nationally and internationally, through the media, by hosting visiting delegations, organising key events and attending conferences and exhibitions. The primary focus is to support NovaUCD's vision and to assist in achieving NovaUCD's objectives through the use of internal and external communication tools and media. This includes managing NovaUCD's strategic marketing activities, media relations, public relations, internal communications and event management activities.

## Links with Industry

Bridging the gap between academic research and industry and building relationships with industry is a key element of NovaUCD's commercialisation strategy.

**CLARITY**, a €16.4 million Science Foundation Ireland Centre for Science, Engineering and Technology (CSET) was established during 2008. This ground breaking research centre's focus is on the so-called 'Sensor Web', which captures the intersection between two important research areas, Adaptive Sensing and Information Discovery.



Professor Alan Smeaton, DCU, Professor Frank Gannon, Director General, SFI and Professor Barry Smyth

Led by UCD's Professor Barry Smyth, CLARITY is a partnership between University College Dublin and Dublin City University, supported by research at the Tyndall National Institute (TNI) Cork. In addition, CLARITY will collaborate with leading multinationals and SMEs including; IBM, Vodafone, Ericsson, Foster-Miller, ChangingWorlds, Fidelity Investments and Critical Path, as well as national agencies, such as the Environmental Protection Agency, the Marine Institute and the National Museum of Ireland.

NovaUCD has forged other strong links with a range of business partners. This long-term investment provides NovaUCD with a trusted network of potential partners and entrepreneurs and offers industry valuable opportunities to link with leading academic researchers and to access commercial opportunities at UCD.

During 2008 **Applied Intellectual Capital** (AIC) and **RedOx Biofuels** a wholly-owned subsidiary of AIC announced a new collaborative scientific research agreement with UCD to investigate methods of converting post-consumer waste into bio-degradable plastics.

By combining microbiological technology developed by Dr Kevin O'Connor UCD School of Biomolecular and Biomedical Science and AIC/RedOx's proprietary technology (mediated metal redox ("MMR")), the proposal is to convert several waste streams into bio-degradable plastics which can be used in a variety of forms ranging from plastic bottles to surgical parts thereby replacing traditional fossil fuel-based plastics. The collaboration may also be extended in the future to produce other value added products like bio-fuels from waste.

**Eck Industries**, located in Manitowoc, Wisconsin, and a leading caster of aluminum alloys and metal



matrix composites purchased a non-exclusive licence from UCD for the CDC Process. The CDC Process (Cast-Decant-Cast) produces near-net shape components from two dissimilar alloys or metals in a single multi-step casting operation. The CDC process which was invented and developed by Dr David Browne and colleagues from UCD's School of Electrical, Electronic and Mechanical Engineering.

In addition **EnBio** a provider of innovative surface coating technology for medical implants concluded a research collaboration programme during the year with UCD's School of Electrical, Electronic and Mechanical Engineering.

The objective of the 2-year joint programme which is valued at over €300,000 is to identify additional application areas for EnBio's proprietary surface modification technology which can improve patient outcomes following surgical procedures. 80% of the programme cost is being granted-aided through Enterprise Ireland's Innovation Partnership Programme.

During 2008 Dr David Browne and Dr Denis Dowling were both presented with Enterprise Ireland Commercialisation Awards in recognition of the successful licensing of technology developed by them to industry.

### **Belfield Innovation Park**

One of the major initiatives at UCD that will strengthen the engagement with industry is the development of the Belfield Innovation Park. The Innovation Park, which is a major objective in the UCD Commercialisation Plan, is a 10.3 ha site located in the southwest corner of the campus next to NovaUCD. The plans for the Park have steadily

progressed during the year and an outline for the first building has now been drafted. A number of companies have already indicated a strong desire to base their operations, in particular R&D functions, in the Park where they can potentially benefit from strategic relationship with UCD research groups. The Park will also provide second stage incubation space for companies that are currently located in NovaUCD.

### **Visit of Minister for Science, Innovation and Technology**

Dr Jimmy Devins TD, as Minister for Science, Technology and Innovation visited University College Dublin during the Summer of 2008. This included a visit to NovaUCD and the UCD Conway Institute of Biomolecular and Biomedical Research.

The Minister was welcomed to UCD by Dr Pádraic Conway, UCD Vice-President for University Relations. While at NovaUCD Professor Mark Keane, UCD Vice-President for Innovation briefed the Minister on UCD's planned Innovation Strategy (2009-2013). Dr Pat Frain, Director, NovaUCD provided Mr Devins with an overview of NovaUCD's background, aims and successes to date. Following a tour of the NovaUCD facilities the Minister travelled to the UCD Conway Institute where he was met by Dr Hugh Brady, UCD President.



Dr Pádraic Conway, Dr Pat Frain, Dr Jimmy Devins TD and Professor Mark Keane

At the UCD Conway Institute, several UCD researchers gave brief presentations to the Minister on four key research areas stretching from ICT to biotechnology all of which involve a strong multidisciplinary flavour involving convergence of different disciplines.

### **International Visitors**

During 2008 NovaUCD hosted 35 visiting national and international delegations from around the globe. These delegations included government, university and local state agency representatives, industrialists and others interested in innovation and technology transfer. These delegations came to NovaUCD to learn of UCD's experiences of supporting innovation and technology transfer on a university campus and to learn how an Innovation and Technology Transfer Centre such as NovaUCD has been developed, operates and to learn of its successes.

### **International Knowledge Transfer Networks**

Dr Pat Frain, Director of NovaUCD took over as Chair of ProTon Europe during 2008. ProTon Europe

is the pan-European network of knowledge transfer offices, national knowledge transfer associations and companies affiliated to universities and other public research organisations. ProTon Europe has over 250 direct member institutions in 28 European countries employing some 2000 knowledge transfer professionals. Dr Frain is the first Irishman to chair ProTon Europe.

ProTon Europe was established in 2002 to promote innovation by increasing the effectiveness and efficiency of knowledge transfer and university-industry collaboration across Europe. Through the representation of national associations at a European level ProTon Europe offers its members an opportunity to develop, inform and influence European policy relating to knowledge transfer.

ProTon Europe also supports the professional development of knowledge transfer offices across Europe through the exchange of best practice, staff exchanges, the delivery of appropriate training and networking.

## Personnel

As UCD's Vice-President for Innovation Professor Mark Keane's role is to be the focal point for UCD's commitment to entrepreneurship, knowledge transfer and external partnerships. Dr Pat Frain is the Director of NovaUCD and leads a team of

professional staff with expertise and experience in technology transfer, new venture formation, communications and continuing professional development.

The members of the NovaUCD team and contact details are given below.

Area	Name	Title	Contact Details
	Dr Pat Frain	Director	t: 00-353-1-716 3710 e: pat.frain@ucd.ie
	Jacqueline Boyd Lyons	PA to Director	t: 00-353-1-716 3710 e: jackie.boydlyons@ucd.ie
	Helen Mc Grath	Operations Manager	t: 00-353-1-716 3711 e: helen.mcgrath@ucd.ie
	Karina King	Business Support Executive	t: 00-353-1-716 3719 e: karina.king@ucd.ie
Technology Transfer	Dr Ciaran O'Beirne	Manager Technology Transfer	t: 00-353-1-716 3713 e: ciaran.obeirne@ucd.ie
	Peter Conlon	Project Manager Technology Manager	t: 00-353-1-716 3728 e: peter.conlon@ucd.ie
	Dr François Pichot	Project Manager Technology Manager	t: 00-353-1-716 3725 e: francois.pichot@ucd.ie
	Dr Claudia Wietek	Project Manager Technology Manager	t: 00-353-1-716 3722 e: claudia.wietek@ucd.ie
	Tara Mac Mahon	Legal Counsel Contracts	t: 00-353-1-716 3724 e: tara.macmahon@ucd.ie
	John Wrigley	Administrative Assistant	t: 00-353-1-716 3721 e: john.wrigley@ucd.ie
Enterprise Development*	Dr Ciara Leonard	Project Manager Enterprise Development	t: 00-353-1-716 3714 e: ciara.leonard@ucd.ie
Communications and Continuing Professional Development (CPD)	Micéal Whelan	Communications	t: 00-353-1-716 3712 e: miceal.whelan@ucd.ie
	Caroline Gill	Project Manager CPD	t: 00-353-1-716 3715 e: caroline.gill@ucd.ie
	Dr John McManus	Project Manager CPD	t: 00-353-1-716 3720 e: john.mcmanus@ucd.ie
Facilities	Thomas Hamill	Facilities Manager	t: 00-353-1-716 3717 e: thomas.hamill@ucd.ie
	Nalina Nagappan (am) Marie Caffrey (pm)	Reception	t: 00-353-1-716 3700 e: nova.reception@ucd.ie

\* Stephen O'Sullivan and Gerry Delaney were external consultants to the NovaUCD 2008 Campus Company Development Programme.

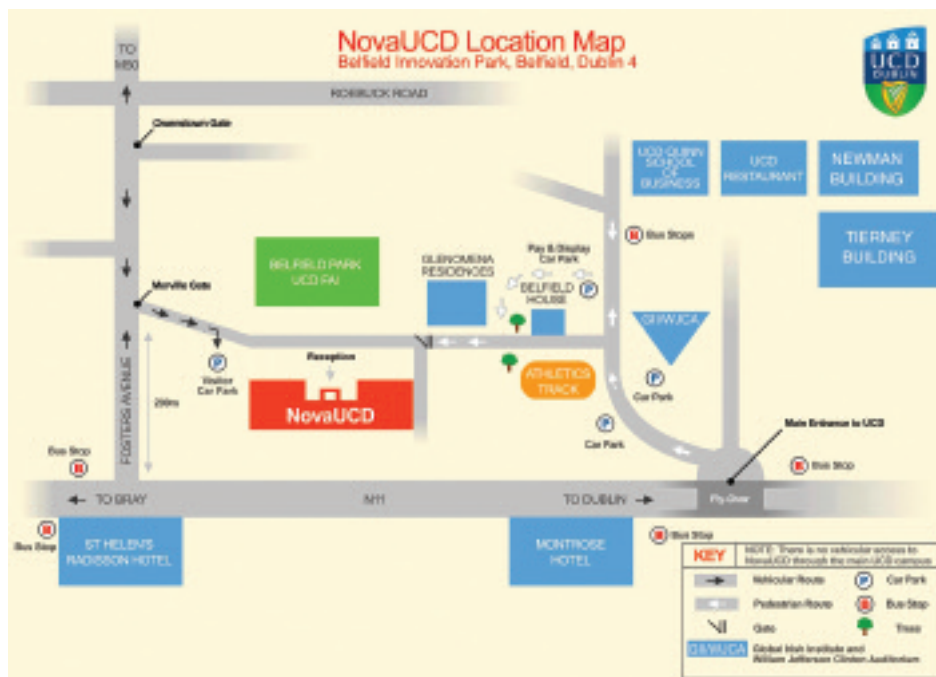
NovaUCD contact details: NovaUCD, Belfield Innovation Park, University College Dublin, Belfield, Dublin 4, Ireland. t: 00-353-1-716 3707, f: 00-353-1-716 3709, e: nova@ucd.ie, w: www.ucd.ie/nova

## Locations Map and Directions

The vehicular entrance to NovaUCD is located on Fosters Avenue, approximately 200m from the Stillorgan dual carriageway (N11). The road from this gate leads directly towards NovaUCD. Car parking for visitors is on the right hand side of the road, before reaching NovaUCD. The main

entrance to the NovaUCD Reception is through the front door of the building as indicated in the map below.

Visitors may also park in one of the University car parks and approach NovaUCD on foot.



For further information contact:

Micéal Whelan  
Communications  
NovaUCD  
Belfield Innovation Park  
UCD, Belfield, Dublin 4.  
t: 00-353-1-716 3712  
e: [miceal.whelan@ucd.ie](mailto:miceal.whelan@ucd.ie)

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