Annual Report and Accounts 2009
SCIENCE FOUNDATION IRELAND

Research for Ireland's Future

sfi Science Foundation Ireland

Contents

"Ireland now ranks in the top 20 nations for quality of scientific publications"

Researchers in the SFI supported Applied Optics Group, NUI Galway

Vision:

- Ireland will be a global knowledge leader that places scientific and engineering research at the core of its society to power economic development and social progress.

Mission:

- SFI will build and strengthen scientific and engineering research and its infrastructure in the areas of greatest strategic value to Ireland's long-term competitiveness and development.

SFI Core Values:

Excellence:
We fund internationally recognised world-class research.

Engagement:
We are committed to SFI's role in Ireland's development and to the research community.

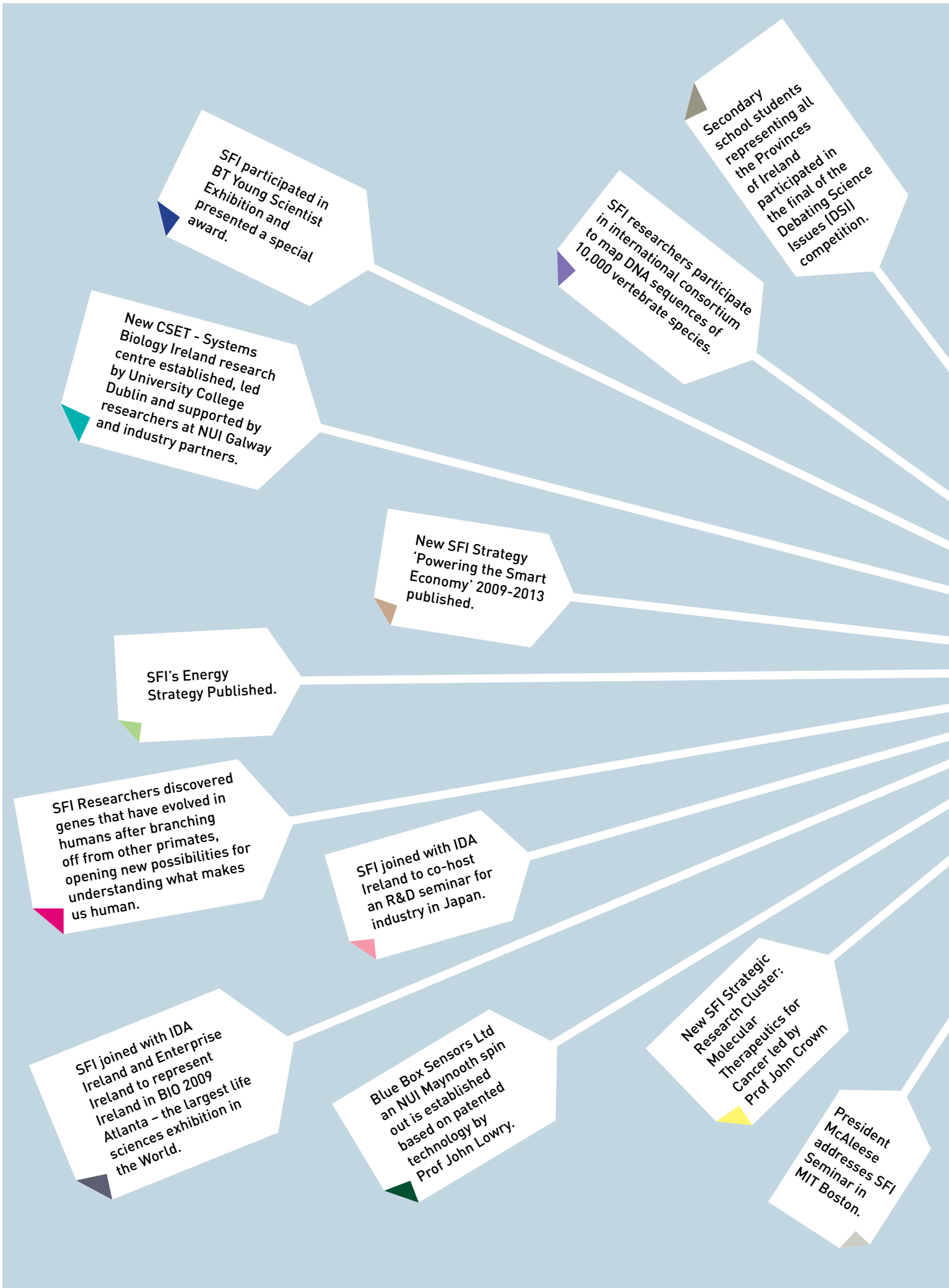
Strategic:
We are visionary, plan for the long term and invest in research with consequences for the benefit of Ireland's economy and society.

Innovation:
We are dynamic, collaborative, creative and responsive to the ever-changing needs of our stakeholders.

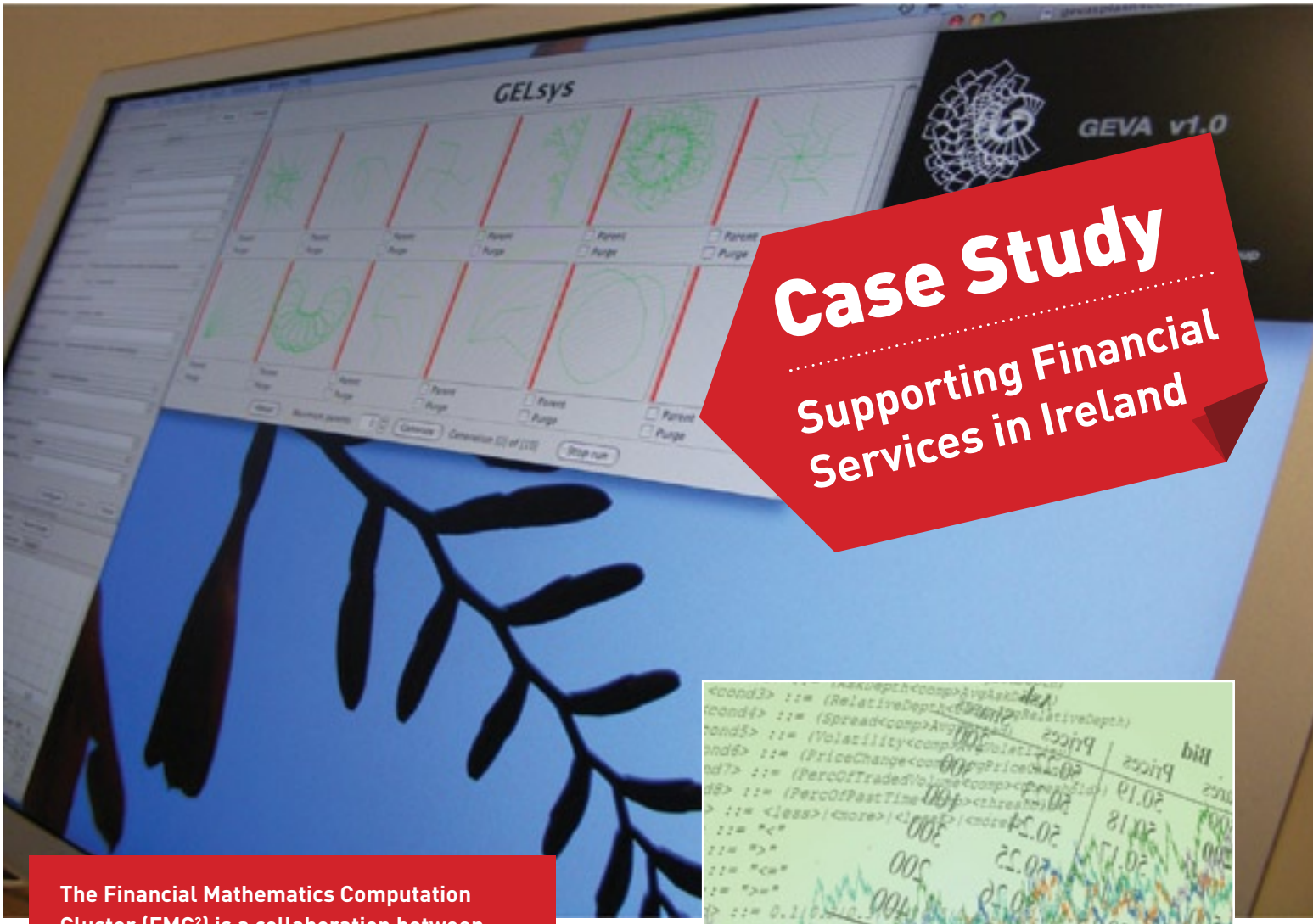
Integrity:
We inspire trust by acting fairly, objectively, honestly and transparently in the manner in which we operate and the research that we fund.

Frontier research:
We work at the frontiers of research. We advance knowledge, stimulate interdisciplinarity and promote linkages with industry.

"Ireland's publication level has doubled in the last decade"

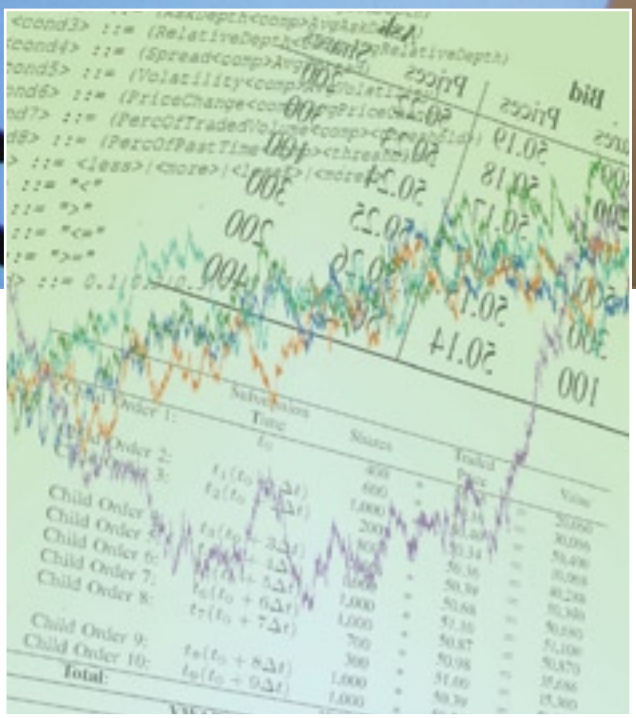

SFI participated in BT Young Scientist Exhibition and presented a special award.
Secondary school students representing all the Provinces of Ireland participated in the final of the Debating Science Issues (DSI) competition.
SFI researchers participate in international consortium to map DNA sequences of 10,000 vertebrate species.
New CSET - Systems Biology Ireland research centre established, led by University College Dublin and supported by researchers at NUI Galway and industry partners.
New SFI Strategy 'Powering the Smart Economy' 2009-2013 published.
SFI's Energy Strategy Published.
SFI Researchers discovered genes that have evolved in humans after branching off from other primates, opening new possibilities for understanding what makes us human.
SFI joined with IDA Ireland to co-host an R&D seminar for industry in Japan.
SFI joined with IDA Ireland and Enterprise Ireland to represent Ireland in BIO 2009 Atlanta – the largest life sciences exhibition in the World.
Blue Box Sensors Ltd an NUI Maynooth spin out is established based on patented technology by Prof John Lowry.
New SFI Strategic Research Cluster: Molecular Therapeutics for Cancer led by Prof John Crown
President McAleese addresses SFI Seminar in MIT Boston.


An internet technology developed at DERI, NUI Galway is used by President Obama's administration in its new website - 'Recovery.gov'.
International symposium on nanotechnology, featuring leaders of world nanoscience institutes hosted by the Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN).
Official opening of the Tyndall National Institute new building in Cork.
Announcement of 5 new SFI Strategic Research Clusters who will partner with 22 companies.
Eurohorcs Meeting in Dublin.
Researchers in UCD have solved a chemistry problem which has stumped researchers wordwide for more than a decade - this offers opportunities for drug development.
CSET Commercialisation Forum Established.
CRANN and HP announced research programme to contribute to the development of flexible displays that can be used for laptops, e-books and other electronic devices.
New Financial Mathematics and Computation SRC led by Prof Anthony Brabazon UCD.
SFI Science Summit 2009 – Ideas, Innovation, Impact – 350 researchers gathered in Athlone.
Multiple sclerosis, rheumatoid arthritis and diabetes patients could benefit from a research discovery by Professor of Experimental Immunology, Kingston Mills and his research team at TCD.
sfi
Delivering Research with Consequences
2009 Highlights



Case Study

Supporting Financial Services in Ireland



The Financial Mathematics Computation Cluster (FMC²) is a collaboration between Industry, University College Dublin, Dublin City University and NUI Maynooth.

FMC² brings together complementary expertise in financial mathematics, financial economics and computer science to create a multi-disciplinary research programme in asset and risk management, areas of critical importance to the future development of the international financial services sector in Ireland.

The academic principal investigators involved in FMC² are Professor Anthony Brabazon, Professor Gregory Connor, Professor John Cotter, Dr. David Edelman, Prof. Paolo Guasoni and Dr. Michael O'Neill.

FMC² is supported by multiple external partners, including Pioneer Investments, Ryan Capital and the Institute of Bankers in Ireland.

Robert Richardson, CEO, Pioneer Investment Management Limited, Ireland said,
"For Pioneer Investments, research has always been central to our business model over the past 80 years. We are pleased with the opportunity to be able to provide our international industry expertise to this strategic collaboration. We are very optimistic that through this project we can further enhance our in-house quantitative research capabilities and contribute to the development of the quantitative research discipline in Ireland."

DCU
UCD DUBLIN
NUI MAYNOOTH
Ollscoil na hÉireann Má Nuad
The Institute of Bankers in Ireland
PIONEER Investments®
FMC² Financial Mathematics and Computation Research Cluster
RYAN CAPITAL

Board Members*

1 **Prof. Patrick Fottrell**
Chairperson, SFI

2 **Prof. Frank Gannon**
Director General, SFI

3 **Dr. Jim Mountjoy**
Deputy Chairperson, SFI

4 **Mr. Sean Aherne**
Vice President of Operations,
Boston Scientific Limited, Tullamore

5 **Mr. Tom Boland**
Chief Executive Officer,
Higher Education Authority

6 **Dr. Rita R. Colwell**
Chairman, Canon US Life Sciences, Inc.
Distinguished Professor,
University of Maryland College Park
and Johns Hopkins University
Bloomberg School of Public Health

7 **Ms. Bernie Cullinan**
Chief Executive Officer, Clarigen

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Research Consultant

9 **Dr. Martina Newell-McGloughlin**
Director, University of California
Systemwide Biotechnology
Research and Education Program
Co-Director, NIH Training Program in
Biomolecular Technology

10 **Mr. Martin Shanagher**
Assistant Secretary,
Science, Technology and Intellectual
Property Division, Department of
Enterprise, Trade and Innovation**

11 **Dr. Don Thornhill**
Chairman, National Competitiveness
Council of Ireland

12 **Mr. John Travers**
Business & Economic Consultant

* See page 38 and 39 for notes related to Board Membership.
**The Department of Enterprise, Trade & Employment (DETE) was restructured in early 2010 and renamed as the Department of Enterprise, Trade & Innovation (DETI).

Chairperson's Statement

I am delighted to present Science Foundation Ireland's (SFI) Annual Report and Financial Statements for 2009.

A series of notable accomplishments were recorded during the year that served to build on momentum achieved by SFI to date and position scientific research as a more central influence in determining the best means of economic recovery.

I would like to acknowledge the ongoing commitment to promoting research in Ireland of An Taoiseach, Brian Cowen T.D., the Tánaiste and Minister for Education & Skills (formerly the Minister for Enterprise, Trade and Employment), Ms Mary Coughlan T.D., Mr Batt O'Keeffe, T.D., Minister for Enterprise, Trade & Innovation and Mr Conor Lenihan T.D., Minister for Science, Technology and Innovation.

A renewed focus on strategic policy took place with the publication of SFI's 'Powering the Smart Economy' Strategy 2009-2013. At the core of SFI's new strategy are four main objectives, namely the development of human capital, ensuring quality scientific output, increasing Ireland's global reputation as a location for excellent scientific research and providing for knowledge transfer. The strategy's implementation will see SFI continuing to collaborate closely with other State agencies such as IDA Ireland, Enterprise Ireland, Health Research Board, Higher Education Authority, Higher Education Institutions and other key stakeholders.

The establishment of a new Centre for Science, Engineering and Technology (CSET) in the emerging area of systems biology was announced in 2009. The Systems Biology Ireland research centre is led by University College Dublin and is supported by researchers at NUI Galway. The new CSET collaborates with industry partners Ark Therapeutics, Hewlett Packard, Servier, Agilent Technologies, Siemens Ireland and Protagen AG.

A total of seven new SFI Strategic Research Clusters (SRCs) were established during 2009, in ground-breaking, collaborative research activities involving academic institutions and 32 companies in key sectors such as financial mathematics, cancer and telecommunications. SFI now supports 19 SRCs and 10 CSETs that are collaborating with 179 companies.

SFI endeavoured in 2009 to expand upon its international engagement with a number of notable events showcasing the SFI proposition and Ireland's aptitude and skills base. At the start of the year, SFI co-hosted a major seminar in Japan with IDA Ireland, attended by key decisions makers from Japanese high-tech and life science companies. In his keynote speech, An Taoiseach, Brian Cowen T.D., announced three highly significant Japanese R&D initiatives for Ireland.

Mr Conor Lenihan T.D., Minister for Science, Technology and Innovation announced research funding awards of €20.7 million for 22 world-class research projects under the Science Foundation Ireland Principal Investigator Programme. Pictured at the award announcement are Mr Conor Lenihan, T.D., Minister for Science, Technology & Innovation and Prof Seamus Martin, TCD.

Also on an international note, SFI hosted a special 'Powering the Smart Economy' seminar at the Massachusetts Institute of Technology-affiliated Whitehead Institute for Biomedical Research, attended by President Mary McAleese. Addressing the Seminar, President McAleese said, *"Through Science Foundation Ireland (SFI), our small but dynamic country has been blazing a trail for innovation and scientific research. We have a great natural resource in the brain-power, creativity and adaptability of our people."*

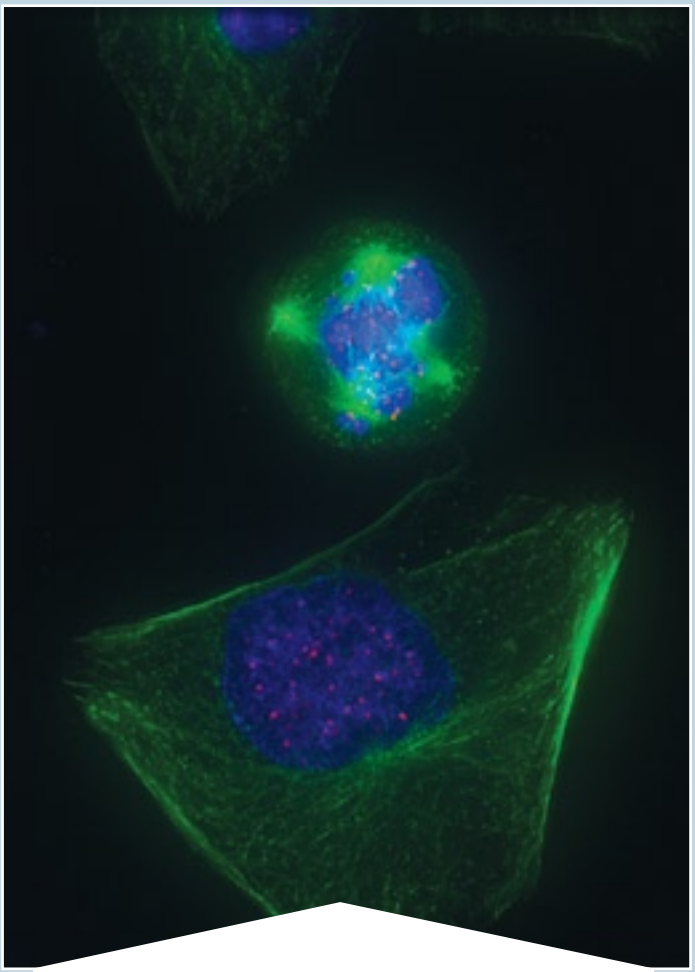
Closer to home, in November 2009 over 350 of our leading researchers attended the SFI Science Summit, 'Ideas, Innovation and Impact'. The event also featured the inaugural SFI 'Researcher of the Year' award, with the accolade going to Prof Luke O'Neill of Trinity College Dublin in recognition of his pioneering work in the areas of immunology and inflammatory diseases.

To the Board and Staff of SFI, I wish to express my appreciation for the relentless effort and commitment displayed throughout 2009. In particular, I would like to thank and commend Prof Frank Gannon for his imaginative and conscientious leadership as Director-General of SFI.

The economic climate that prevails in Ireland poses a serious challenge to SFI and the research agenda. Despite a highly productive year, SFI faces the challenge of maintaining the research base built over the past decade amidst a strong funding correction. SFI is clearly focused on protecting and building on this investment as a means to contribute to economic recovery and ensure sustainable economic development.

With the establishment in 2009 by Government of an Innovation Taskforce, the drive to achieve economic recovery and to position Ireland as an International Innovation Development Hub became a policy priority. SFI has a central role to play in ensuring that the ideals of this Innovation Taskforce are realised over the coming years. It is a responsibility that, individually and collectively, we relish.

Professor Patrick Fottrell
Chairperson



SFI Image Competition Winner 2009

Prof Kevin Sullivan, Prof of Cell Biology, and Dr Lisa Prendergast, Postdoctoral Fellow, were recently crowned winners of the SFI Research Image Competition with their image - 'Troubled Cell Division'. This new competition offered Science Foundation Ireland-funded researchers the opportunity to submit digital images created during the course of their research. The winning image shows a dividing cell whose spindle has been disturbed by removing a single protein from the chromosome. The image was taken during research into what might cause a cancer cell to fail in cell division and die instead of multiplying.

Director General's Statement

"Someone's sitting in the shade today because someone planted a tree a long time ago"
W Buffet

Amidst the most severe global recession in many decades, SFI operated in a much changed environment in 2009. However, in keeping with the spirit of Warren Buffet's quote, SFI's productivity increased in 2009 with significant improvements in both its direct and indirect outputs. Despite the funding correction SFI managed to maintain and grow its human capital base. More importantly this community produced a 26% increase in scientific publications, contributing to Ireland's recently acquired membership of the Top 20 nations for quality of scientific output. Given that the quality and impact of Ireland's scientific output was below that of Bangladesh just two decades ago it is remarkable that Ireland is now competing with advanced OECD economies in terms of the quality of its scientific and technological research. But there can be no let up. Whilst breaking into the Top 20 in such a short time is a significant achievement, maintaining and improving our position in the rankings is becoming more challenging as more and more countries have responded to the economic crisis by expanding their R&D investment. Such rankings are not an endgame in themselves, but as an attractant of high tech multinational and venture capital investment they are a strong indicator of Ireland's scientific and technological credentials.

Clear evidence is emerging that this progression is assisting the development agencies in their transformation agendas. Just five years ago less than a tenth of IDA Ireland's investments were in research, development and innovation (RD&I). In 2009 this grew to almost 50%, with investments valued at over €500 million. The level of indigenous firms performing significant R&D has risen by 38% in the last few years. Over the past decade employment, exports and value-added have grown significantly in R&D performing firms whilst they have declined in non-R&D performing firms. Amidst the most severe recession in many years it seems that such R&D performing firms are exhibiting greater growth and are more resilient in the face of challenging business conditions.

The SFI community of over 3,000 researchers now collaborate with 349 multinational corporations (MNCs) and small to medium enterprises (SMEs). They are producing an increasing stream of invention disclosures, patent applications, licenses and other

Pictured on the occasion of President McAleese's visit to Boston at a special Science Foundation Ireland (SFI) seminar, "Powering the Smart Economy," were (back row, l-r) Shaun Mahony, James Merrick, Conor Lenahan, Mark Sweeney, Rory Clune, Padraig Cantillon-Murphy, Ryan O'Hara, Maurice Fallon, David Quinn, and (front row, l-r) Rory Monaghan, Prof Frank Gannon, Director General, SFI, President of Ireland, Mary McAleese, Dr Martin McAleese, Conor Walsh and Nevan Hanumara. The seminar was held at the Whitehead Institute for Biomedical Research, Boston (affiliated to MIT, Massachusetts Institute of Technology).

"Our researchers secured over €50 million in funding from international sources, demonstrating the international competitiveness of our research capability"

pre-commercial outputs that are increasingly acting as magnets for commercial attention and activity. SFI is unambiguous that high quality research is a critical component of a functioning innovation system. Whilst the output of such research is often unpredictable and often it is not possible to directly link a given research project to a particular product or service, the overall elevation of Ireland's human capital through research helps to create an ecosystem where innovation can thrive and deliver a substantial economic and social dividend.

Our scientific credibility on the international stage is growing based on the past decade's investment and is helping to restore Ireland's international image. In 2009 our researchers established almost 2,000 research collaborations, 76% of them with partners outside Ireland, spanning 56 different countries. Our researchers secured over €50 million in funding from international sources, demonstrating the international competitiveness of our research capability. Our scientific and engineering research progress in recent years is something to be proud of, all the more so as it has been achieved on a relatively modest level of public investment by international standards. At approximately 1.5% of GDP, the state's investment in R&D is average by global standards and is below that of OECD economies. Viewed through an optimistic lens however, Ireland has been on an upward trajectory in this respect in recent years and continued national commitment to this agenda will see continued improvement in Ireland's performance and industrial competitiveness. This view has clearly found purchase with senior policy makers and business practitioners as the first recommendation in the Taoiseach's Innovation Task Force states *"Deliver on the investment framework set out in the Strategy for Science, Technology and Innovation (SSTI) 2006-13 and achieve the goal in the renewed Programme for Government of investing 3% of GDP in R&D by committing to investment in an updated SSTI for the 2014-2020 period."*

Pictured at the SFI Science Summit 2009 on the occasion of his announcement as SFI Researcher of the Year was Prof Luke O'Neill, TCD (middle) with Mr Conor Lenihan, T.D., Minister for Science, Technology & Innovation and Prof Frank Gannon, Director General, SFI.

After a decade of increasing investment in R&D, an investment that is clearly delivering for Ireland, it is reassuring that the commitment to research funding is being backed by such a strong statement of intent.

SFI has been proactive in developing relations and enhancing the cooperation across government departments and state agencies to ensure coordination across the ecosystem. I wish to thank all of the agencies and government departments for their support and cooperation throughout the past year, in particular IDA Ireland, Enterprise Ireland, Forfás, Health Research Board (HRB) and the Higher Education Authority (HEA) as we all pursue a common agenda to bring about sustainable economic recovery.

Professor Frank Gannon
Director General

Case Study

Optimizing Forest Resources

The Cork Constraint Computation Centre (4C) was established at University College Cork with initial funding from Science Foundation Ireland to the Centre Director, Professor Eugene C. Freuder.

4C is a UCC computer science research lab whose mission is to help computers help people make better decisions. 4C combines award winning science with active industry and government engagement. 4C was formed when Professor Freuder moved his research lab from the US, to merge with the UCC Constraint Processing Group.

TreeMetrics is a local Cork start-up with laser technology for measuring trees in the forest. Through an Enterprise Ireland Innovation Partnership 4C has helped TreeMetrics to convert that data into knowledge that permits better use of our forest resources, not just in Ireland but worldwide. TreeMetrics has now done business in 14 countries, exporting Irish technology. There have been three pieces of IP licensed from this project and a patent submitted. TreeMetrics continues to work with 4C to develop innovative solutions for forest management.

The CEO of TreeMetrics was quoted in Technology Ireland about 4C saying:

"We found out by pure chance that there was a world-leading optimisation lab in our own city and we quickly picked up the phone. ... The most important point is, they delivered the technology for us - it has given us a real edge. They delivered what we wanted and exceeded our expectations in terms of how they delivered it. ... We brought them to meet our customers. That was one of the keys to success."

The collaboration has led to further engagement by 4C in the forestry sector. 4C have just started to work with 13 other partners across Europe in an EU FP7 project, FlexWood, to enable better use of timber resources. The project aims to determine the optimal ways of cutting a forest and distributing its products effectively, and in particular to reduce wastage, which is currently estimated at €700 million annually across Europe. Crucial to this research is the technology provided by TreeMetrics to scan standing trees for their shape.

4C and TreeMetrics won an it@cork R&D Project Leaders Award and TreeMetrics were the overall winner of the IBM SmartCamp Ireland 2009.

www.4c.ucc.ie

Cork Constraint Computation Centre

TREEMETRICS

ucc
Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

Achievements

During 2009 SFI continued to build on the success of previous years.

The Government has invested significantly over the past 10 years in scientific and engineering research. Sustainability and predictability are essential if Ireland is to maintain the confidence of the international industrial and scientific community and continue to build its reputation. The current economic environment poses challenges and difficulties for all countries. For Ireland, as a small open economy, these challenges are significant. Ireland's primary resource has always been people. Innovation needs to be at the core of Ireland's economic development and it is people with ideas at all levels (enterprise, academic, government, etc.) that drive innovation – highly skilled, well educated, talented people. Ireland needs to ensure it is investing in the people required to build and sustain a modern knowledge-driven economy. These people are required to attract/maintain foreign direct investment and grow indigenous SMEs.

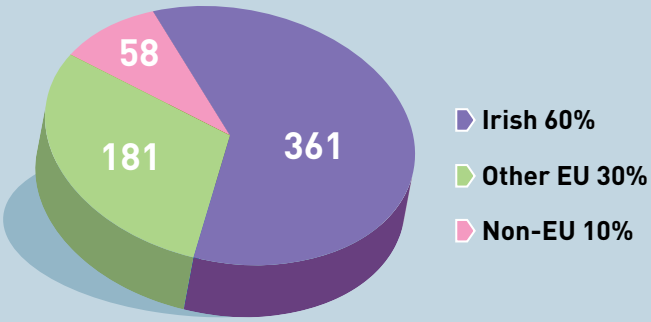
People are Ireland's Resource – Building our Human Capital.

An internationally competitive academic research base, together with the production of high quality trained researchers, particularly PhD graduates, is at the core of Ireland's transition to a 'Smart' economy. Highly skilled people are at the heart of Ireland's drive to sustainable economic growth and development. In addition, future foreign direct investment and resulting job creation in Ireland depends increasingly on the quality of our workforce. This is evidenced by IDA Ireland's announcements in 2008/2009 which show a distinct shift in the nature of foreign direct investment towards Research, Development and Innovation (RDI) activities underpinning Manufacturing, Global Business Services and expanding investments by existing multinationals in higher value added activities.

In 2009, SFI directly supported 3,225 research-related jobs in the Higher Education sector. In addition, SFI award holders leveraged funding from other sources to support a further 3,225 researchers in the sector, bringing the total engaged in active research to 6,450 individual team members.

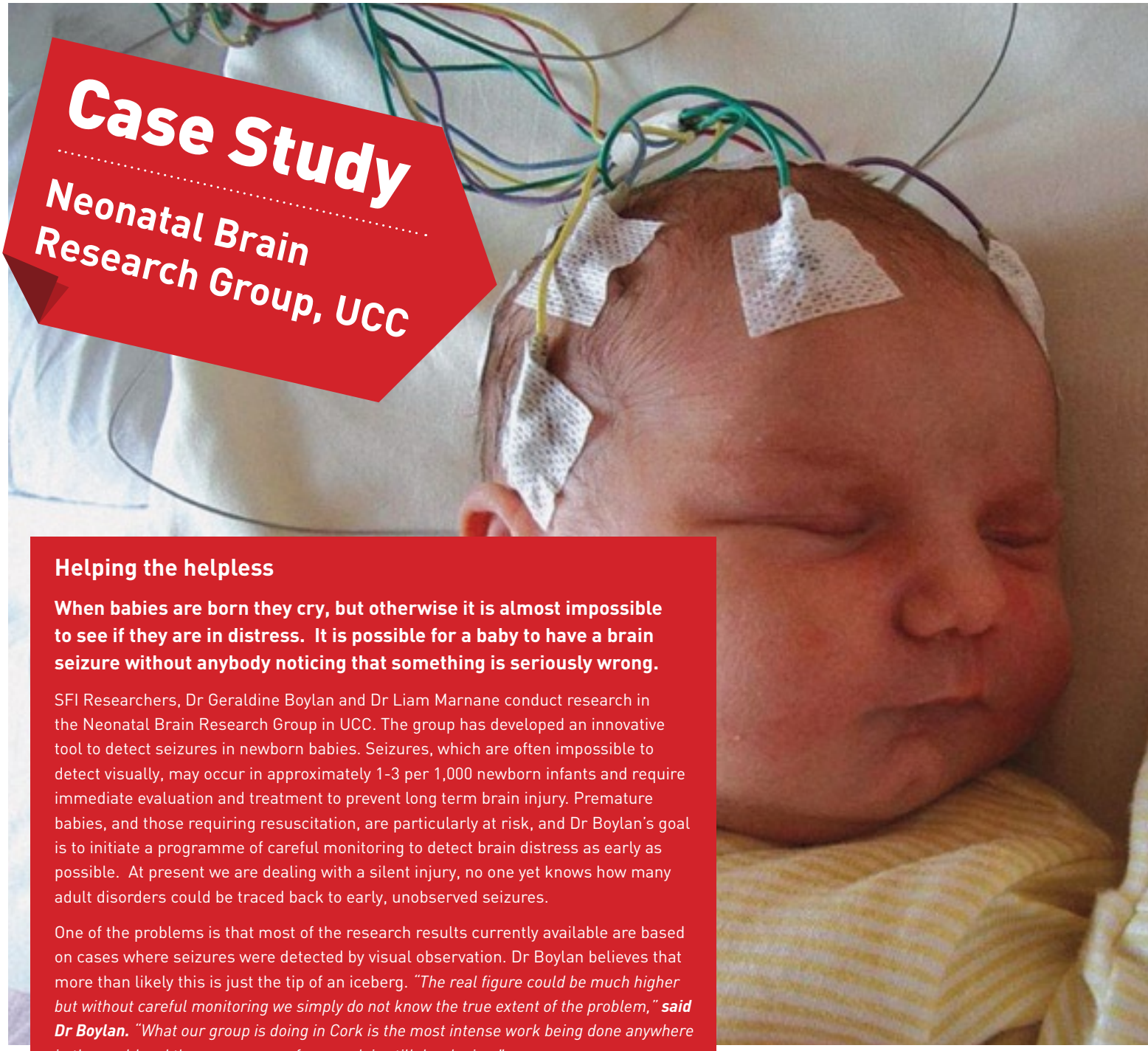
Of the 600 SFI award holders*, 60% are Irish, 30% come from other EU countries (predominantly the UK, followed by Germany) and 10% are from outside of the EU (of these 4% are from the US).

'Nationality' of SFI Award Holders



SFI research groups are playing a key role in supplying highly skilled researchers to enterprise. In 2009, SFI-supported teams included 846 Post Doctoral Researchers (up from 688 in 2008) and 1,344 PhD Students (up from 1,156 in 2008). Ireland's transition towards a Smart Economy is dependent on up skilling the labour force and at the core of this is increasing the number of highly skilled science and engineering graduates.

*Survey in the annual SFI Census 2009



Case Study

Neonatal Brain Research Group, UCC

Helping the helpless

When babies are born they cry, but otherwise it is almost impossible to see if they are in distress. It is possible for a baby to have a brain seizure without anybody noticing that something is seriously wrong.

SFI Researchers, Dr Geraldine Boylan and Dr Liam Marnane conduct research in the Neonatal Brain Research Group in UCC. The group has developed an innovative tool to detect seizures in newborn babies. Seizures, which are often impossible to detect visually, may occur in approximately 1-3 per 1,000 newborn infants and require immediate evaluation and treatment to prevent long term brain injury. Premature babies, and those requiring resuscitation, are particularly at risk, and Dr Boylan's goal is to initiate a programme of careful monitoring to detect brain distress as early as possible. At present we are dealing with a silent injury, no one yet knows how many adult disorders could be traced back to early, unobserved seizures.

One of the problems is that most of the research results currently available are based on cases where seizures were detected by visual observation. Dr Boylan believes that more than likely this is just the tip of an iceberg. *"The real figure could be much higher but without careful monitoring we simply do not know the true extent of the problem,"* ***said Dr Boylan.*** *"What our group is doing in Cork is the most intense work being done anywhere in the world and the programme of research is still developing,"* ***added Dr Marnane.***

The Cork group intend to launch an intensive monitoring programme for newborn babies using EEG (Electroencephalography) equipment. However, while the testing itself does not involve great expense, very few people have experience in interpreting the results. "In an adult, said Dr Boylan, it is difficult enough, but with a baby the brain is developing fast, so patterns change rapidly. The pattern in a baby of 24 weeks," she said, "is very different from a baby of 28 weeks."

The primary detection tool used by the Neonatal Brain Research Group uses a device that measures the electrical activity of the brain. The group has developed an innovative technology using machine learning techniques to automatically detect seizures from this electrical activity. The patented intellectual property developed has led to the acquisition of additional grants from other funding agencies including the Wellcome Trust, Enterprise Ireland and the European Union. In addition, the research team is collaborating with CareFusion, a medical-technology company that is a wholly owned subsidiary of Cardinal Health, to bring their novel technologies to market.

Web: www.ucc.ie/en/neonatalbrain/

CareFusion

ucc
Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

Pictured on the occasion of the publication of the SFI Energy Strategy were Mr Conor Lenihan, T.D., Minister for Science, Technology and Innovation, Prof Frank Gannon, Director General, SFI, Ms Mary Coughlan, T.D., Tanaiste & Minister for Enterprise, Trade & Employment and Mr Eamon Ryan, T.D., Minister for Communications & Natural Resources.

Ireland a location for Excellent Research – High Quality Output.

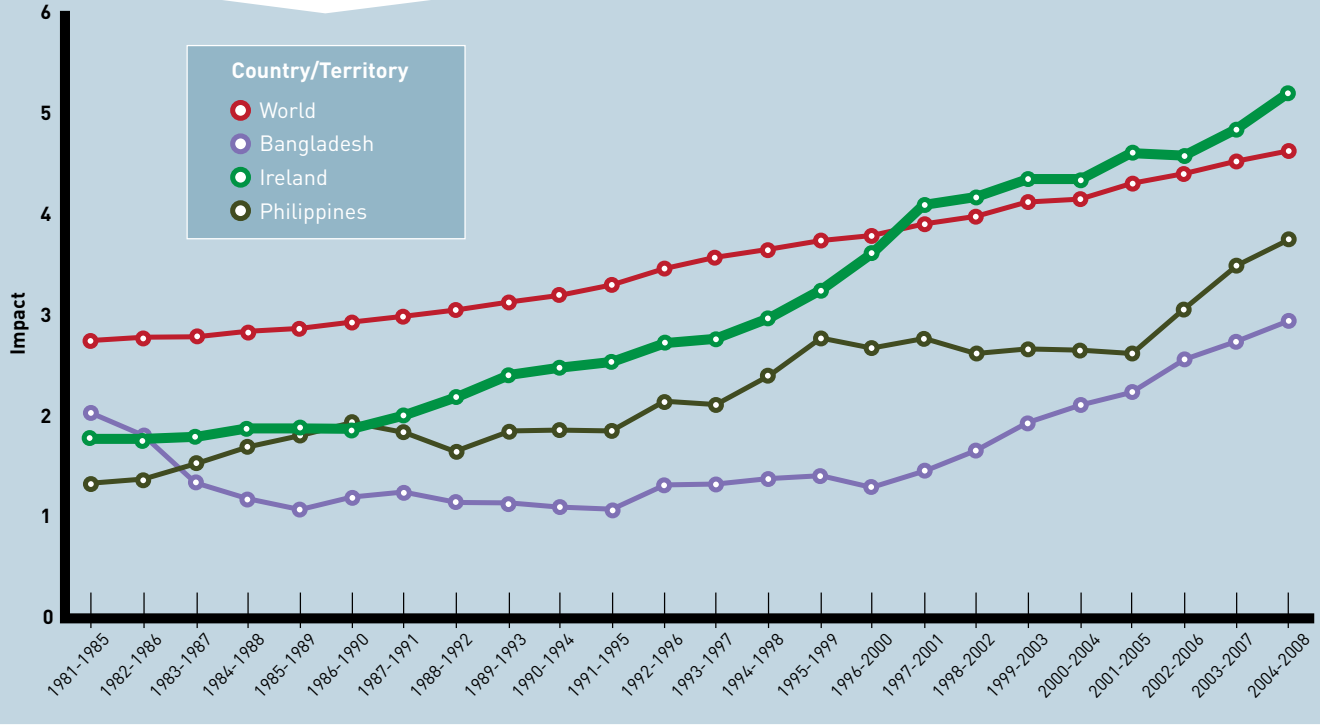
Publications and citations are a key indicator of achievement and excellence in academic research and are a core deliverable of SFI. Ireland's international reputation as a location for excellent science is enhanced considerably through higher placement in international bibliometric rankings, creating a pull factor for high tech investment (venture capital and multinationals seeking high quality locations).

Driven by increased Government investment, Ireland has made a substantial move up the international rankings in terms of the quality and quantity of its scientific publications.

In the mid-1980s, Ireland's research impact was below that of Bangladesh. Following shifts in Government policy from the late 1990s onwards, Irish research impact has soared, moving from the bottom of the table to equal or above the World, EU-27 and OECD averages.

SFI-funded researchers have contributed to this increase in numbers of scientific publications. Specifically, in 2009 SFI-funded researchers produced 4,057 scientific publications. This represents a 26% increase in publication output by SFI researchers from 2008.

*Scientific Publications - Impact 5 Year Trends**



*Source: Thomson Reuters InCites.

Case Study

Applying science to thoroughbred horse industry

Consider this: The Men's 1,500 metres world record fell by some 31 seconds in the 86 years from 1913 to 1999 when the current world record was set by Hicham El Guerrouj of Morocco at 3 minutes 43:13.

That's an improvement of about one second every three years. The English Derby, a horse race run over 2,414 metres, was won in 1908 in 2 minutes 39:80, while in 2008, New Approach won it in a time of 2 minutes 36:50. That's a far less impressive improvement of about one second every 33 years or so.

Why have human world records been falling rapidly compared to horse race times? Dr Emmeline Hill, an equine scientist based at UCD, is starting to change all that. She is helping keep Ireland at the forefront of the thoroughbred horse breeding industry by applying science to horse performance. She wants to understand, at the genetic level, why some thoroughbred horses will develop into champions, while others will not. Such information could be extremely valuable when it is considered that the world record price paid for a yearling thoroughbred foal is $16 million (€11.7 million).

Dr Hill received an SFI President of Ireland Young Researcher Award in 2004. Dr Hill had three research goal's in her SFI-funded project entitled: "The genomics of performance in thoroughbred horses." She wishes to better understand the differences at the single gene level – genes that are important for exercise – between winning thoroughbreds and non-winners. From there, she wishes to identify the genes that have been selected for, and propagated from generation to generation in the 400 year plus breeding programme in thoroughbreds. Finally, she wishes to understand the function of these genes that have been selected for.

Dr Hill's research has resulted in the development of the Equinome Speed Gene test. Following the success of the research programme, Dr Hill and Mr Jim Bolger, the renowned Irish racehorse trainer and breeder, co-founded Equinome in 2009 to commercialise the test. Equinome is a new Irish biotech company that has launched a breakthrough genetic test that can identify the optimum racing distance for individual thoroughbred horses. The identification of 'The Speed Gene' is the first known characterisation of a gene contributing to a specific athletic trait in thoroughbred horses and has the potential to transform decision-making processes in the global bloodstock industry.

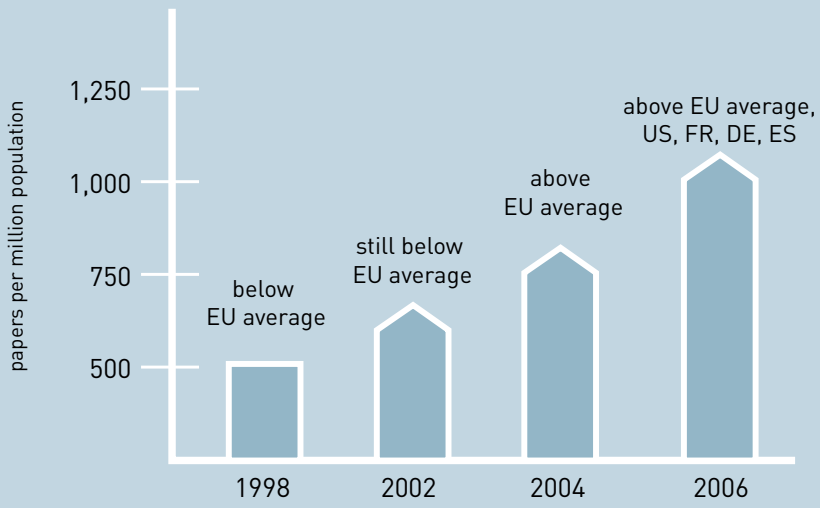
The thoroughbred horse racing and breeding industry is an international, multi-billion euro business, with more than 100,000 foals born each year. Using the Equinome Speed Gene test racehorse owners and trainers around the world will be able to identify if a horse is ideally suited to racing over short, middle or middle-to-long distances. With this information, they can then optimise their purchasing and training decisions and better target suitable races for their horses. Breeders, stallion managers and bloodstock agents will also be able to use the test to make more precise selection and breeding decisions to maximise the genetic potential and commercial value of their horses.

www.equinome.com

UCD DUBLIN

EQUINOME

*Publication Output: Quantity**



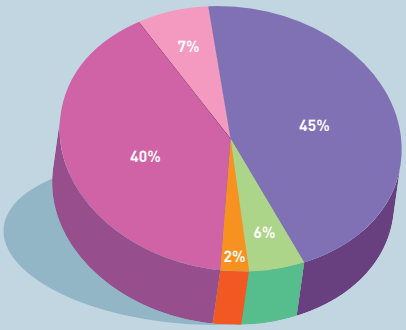
Not only has Ireland increased the number of publications (output by researchers) but at the same time the quality of the research has also increased. SFI's focus on research excellence has supported this drive. According to Thompson Reuters Essential Science Indicators, Ireland's international citations ranking has moved from 36th to 19th. Ireland broke into the Top 20 countries for the first time in 2008. In specific fields Ireland's impact ranks even higher, indicating the particular strength of investment in specific disciplines. For example, in immunology Ireland is ranked third.

*Publication Output: Quality***

1	SWITZERLAND
2	USA
3	DENMARK
4	NETHERLANDS
5	SCOTLAND
6	SWEDEN
7	ENGLAND
8	FINLAND
9	CANADA
10	BELGIUM
11	GERMANY
12	AUSTRIA
13	ISRAEL
14	NORWAY
15	FRANCE
16	WALES
17	AUSTRALIA
18	ITALY
19	**IRELAND**
20	NORTHERN IRELAND

2003 = 36th
2008 = 19th

Publication Output in 2009 by SFI Researchers



- **Refereed/Original Articles** (1,841)
- **Refereed Reviews** (236)
- **Books Peer-reviewed** (72)
- **Conference/Meeting Proceedings/ Papers Edited** (1,605)
- **Conference/Meeting Proceedings** (303)

*Source: European Commission Key Facts and Figures 2008/09.
**Source: Thomson Reuters InCites.

Case Study

System Biology Ireland – SBI – New CSET

In 2009, SFI supported the establishment of Systems Biology Ireland (SBI), a new SFI CSET which is led by University College Dublin and is supported by researchers at NUI Galway and industry partners who include Ark Therapeutics, Hewlett Packard, Servier, Agilent Technologies, Siemens Ireland and Protagen AG.

Systems Biology Ireland will involve up to 69 highly skilled personnel working on its research programme.

Systems Biology is a powerful new way to use the strength of computers and mathematics to understand biology.

Director of the new SFI CSET, Prof Walter Kolch, outlined the potential of the research, *"Systems biology takes a holistic view of the organism. It looks at the processes rather than the single components of a cell or a gene. Our research is unique in that we work with stem cells but the outcomes of our research will feed into a global effort to provide better therapies for cancer patients. Our work will help speed up the experimentation process, thereby reducing by years the time it takes to develop a new drug therapy."*

Dr Laurent Perret, Président du Comité Scientifique du Groupe de Recherches Servier, Institut de Recherches Internationales Servier, said *"Servier Laboratories has had a long and productive association with Ireland, with two manufacturing plants and several research programmes in translational medicine. Systems Biology Ireland (SBI) provides a further opportunity for Servier to engage in leading-edge research in Ireland and for us to work together to address unmet medical needs using an extraordinarily powerful technology."*

AstraZeneca

UCD DUBLIN

Agilent Technologies

SERVIER

hp

SIEMENS

we move ideas PROT@GEN

Ark therapeutics

NUI Galway OÉ Gaillimh

"SFI supports world-class teams who collaborate with 389 companies"

Economic & Societal Benefits – Knowledge Transfer.

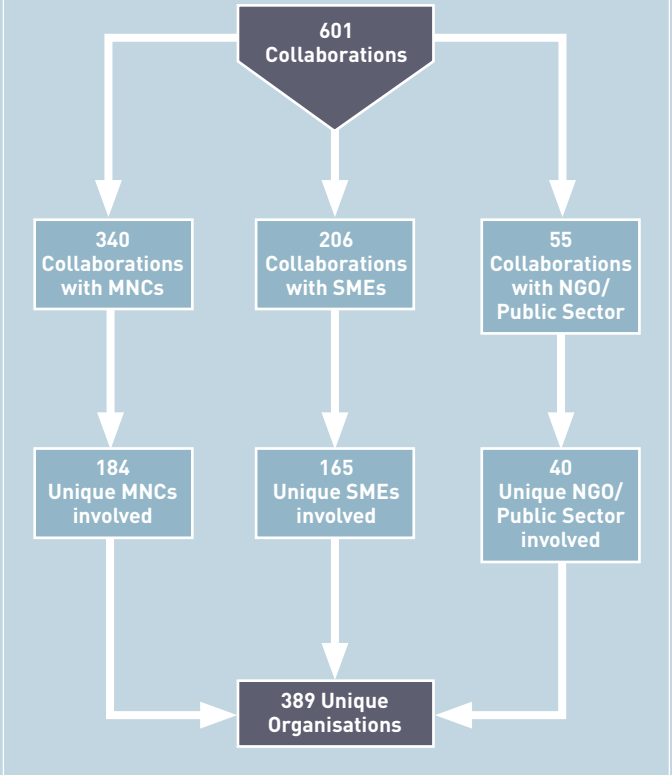
Research is at the heart of Ireland's drive to achieve a "Smart" economy. In building Ireland's research base SFI is supporting economic development, enabling wealth generation and driving advances in areas such as healthcare, the environment and education.

Significant economic benefits are accruing from SFI researchers through the connections its funded research teams have with industry across all SFI programmes. These research groups are an enabling infrastructure for enterprise in Ireland. 2009 saw strong growth in the number of industry-research collaborations. SFI supports world-class teams who collaborate with 389 organisations, including 184 Multi-National Corporations (MNC) and 165 Small-Medium sized Enterprises (SMEs). These collaborations/linkages are extensive and varied and include contract research, access to/provision of material/software/equipment, financial sponsorship of students, training, consulting etc. Many of these companies are involved in multiple collaborations with different SFI research groups. The total number of research collaborations with enterprise is 546.

Specifically, the SFI Centres for Science, Engineering & Technology (CSETs) and Strategic Research Clusters (SRCs) link researchers in partnerships across academia and industry to address crucial research questions. In addition to maintaining existing foreign direct investment (FDI) and attracting new FDI, these centres/clusters foster the development of new and existing Irish based technology companies that make an important economic and societal contribution.

During 2009, SFI announced the establishment of seven new SFI-funded SRCs and a new CSET – Systems Biology Ireland. These new SFI centres/clusters engage with 37 companies. The research in these centres/clusters focuses on strategic areas such as Telecommunications and Financial Mathematics. This new investment brings the number of SFI-funded research CSETs and SRCs to 29, with which 179 companies are engaged.

Enterprise Collaborations 2009



Industry Research Collaborations by Award Type

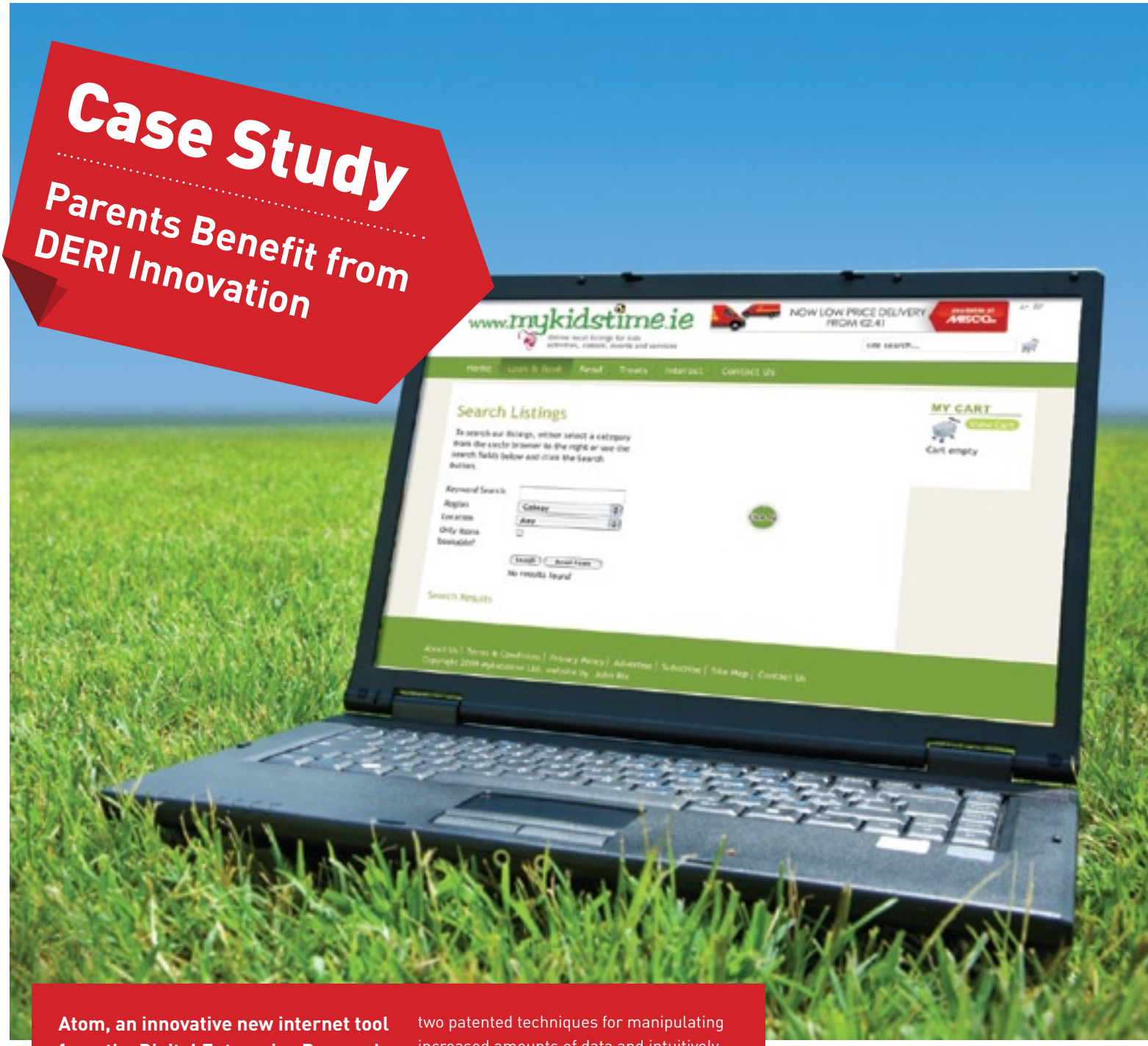
	Multinational Corporation (MNC)	SME	Public Sector	NGOs	Total
PI*	165	87	21	7	280
SRC	66	51	2	1	120
CSET	60	44	2	7	113
RFP	49	24	10	5	88
Total	**340**	**206**	**35**	**20**	**601**

Links between this investment strategy by Government and inward investment activity in Ireland are very clear. The focus is clearly on transforming the industry base. Five years ago less than one tenth of IDA Ireland-supported multinational investments in Ireland were in RD&I. In 2009, this was nearly 50%.

*This category groups together PI like awards, therefore it includes PI, PICA, PIYRA, Res Prof; US-Ire, MI, and SIRG.

Case Study

Parents Benefit from DERI Innovation



Atom, an innovative new internet tool from the Digital Enterprise Research Institute (DERI) SFI CSET in NUIG, is allowing parents easy access to information on activities, classes, camps, events or services for their children.

The technology has been licensed to the family listings website, www.mykidtstime.ie. A circle-based browser, Atom allows the user to quickly and intuitively browse different categories in a way which mirrors the brain's activity.

The Atom browser is available in the 'look and book' service offered by www.mykidstime.ie and facilitates the way that parents interact with the listings data. The Atom Interface has two patented techniques for manipulating increased amounts of data and intuitively supports users through its easy-to-use functions.

Originally created by DERI, the Atom browser was further developed and refined through research and development with Mykidstime, supported by the Enterprise Ireland innovation voucher scheme.

Stefan Decker, Director, DERI

"This is technology transfer in action, from DERI to the market place. It is an example of a smaller entrepreneurial enterprise benefiting from the high calibre of research performed here in DERI".

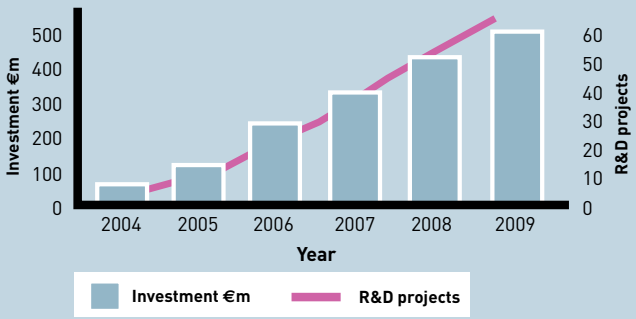
NUI Galway
OÉ Gaillimh

DERI

"In 2009 SFI researchers secured over €21 million in Enterprise Ireland grants to HEI researchers"

In many cases these RD&I projects are providing an anchor for IDA Ireland's existing multinational client base in Ireland. Examples of IDA Ireland client companies engaging with SFI research groups in 2009 include IBM, Boston Scientific and Intel.

*IDA Ireland's R&D investment portfolio**



The engagement by the indigenous sector in R&D is key to long-term sustainable economic development. Irish owned companies have increased R&D expenditure to an estimated €520 million in 2008. This represents a 57% increase in five years, and an increase of one third in three years. The development of Innovative High Potential Start-Ups by Enterprise Ireland is also playing a key role. Between 2000-2006 EI supported 430 HPSUs, with sales of €638 million, exports of €344 million and employment of 5,500 (1,300 in R&D).

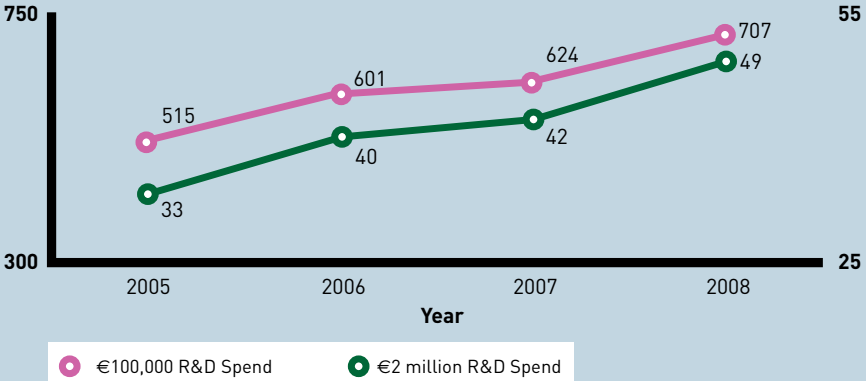
In 2009 SFI researchers secured €21 million*** in Enterprise Ireland grants to HEI researchers, indicating that there is a strong link between SFI's oriented basic research and Enterprise Ireland's applied research programmes.

In 2009, with a focus on accelerating the realisation of economic benefits from the SFI CSETs, Enterprise Ireland, together with SFI, established a joint initiative to fund Commercialisation Development Managers in six SFI CSETs.

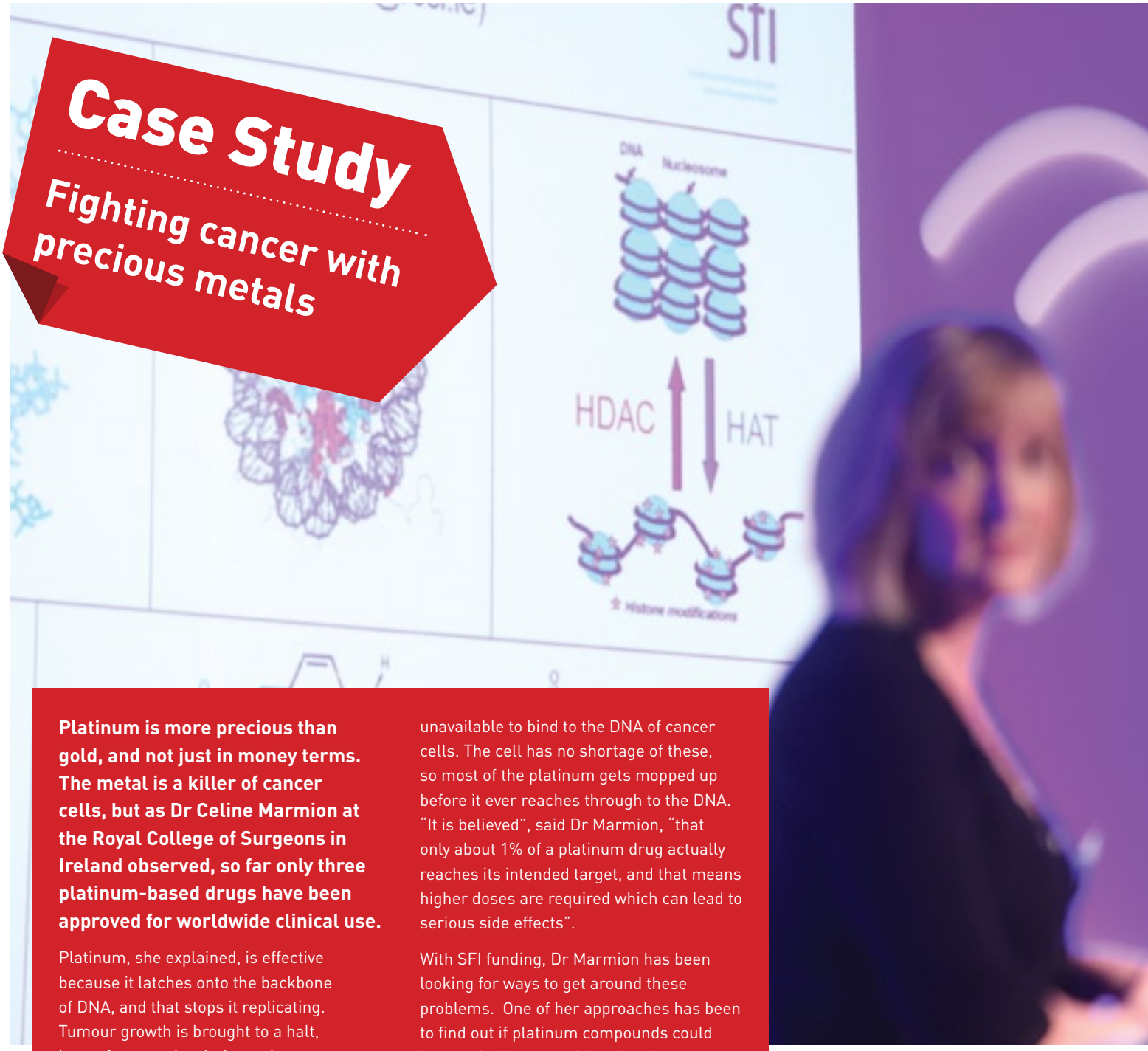
In 2009, SFI designed and launched the Technology and Innovation Development Award (TIDA) to facilitate greater interaction with industrial partners and enhance the generation of new applied technologies. Such interactions can lead to SFI-funded researchers becoming more informed about industrial priorities and research needs, whilst allowing industrial collaborators to become more informed about important new science and engineering research developments in Ireland. SFI also recognises the potential opportunity to further develop technologies from SFI-funded research along a more applied or commercial path. The programme supported eight projects in 2009, bringing together academic researchers in five HEIs (UCC, UCD, TCD, NUIG and UL) with companies such as Boston Scientific, Pfizer Reserved, Almac Sciences, Bianca Med Ltd and ESB Networks.

The focus on commercialisation is demonstrated in the reporting by SFI-funded researchers in 2009 of the following: 136 invention disclosures, 108 patent filings, 10 patents awarded, 20 licenses were generated, groups contributed to 13 industry standards, and six early-stage spinout companies were established.

*Growth in Indigenous (EI-supported) R&D Performance***



*Source: IDA Ireland. **Source: Enterprise Ireland. ***Based on SFI Census 2009 and EI Data.



Case Study

Fighting cancer with precious metals

Platinum is more precious than gold, and not just in money terms. The metal is a killer of cancer cells, but as Dr Celine Marmion at the Royal College of Surgeons in Ireland observed, so far only three platinum-based drugs have been approved for worldwide clinical use.

Platinum, she explained, is effective because it latches onto the backbone of DNA, and that stops it replicating. Tumour growth is brought to a halt, but unfortunately, platinum does not discriminate between cancer and normal cells, so treatment has to be carefully focused on the tumour itself. The trade off, said Dr Marmion, involves killing the cancer while leaving enough normal cells for recovery.

One of Dr Marmion's objectives is to make delivery of platinum drugs more selective. Already, she said, it's known that different platinum compounds are more selective than others, and that cancer cells can develop resistance. "There is some sort of self-defence mechanism at work," she said. There is also another serious barrier in that platinum likes to bind to sulphur-containing biomolecules thus making them unavailable to bind to the DNA of cancer cells. The cell has no shortage of these, so most of the platinum gets mopped up before it ever reaches through to the DNA. "It is believed", said Dr Marmion, "that only about 1% of a platinum drug actually reaches its intended target, and that means higher doses are required which can lead to serious side effects".

With SFI funding, Dr Marmion has been looking for ways to get around these problems. One of her approaches has been to find out if platinum compounds could be attached to something else that targets cancer cells.

"We think we have found that hook," she said. Her group have developed a new class of platinum-based compounds that have been shown to be very effective at killing cancer cells but are much less toxic towards normal cells. These are currently being tested on a whole range of cancer cells".

A research paper has been published in the flagship journal Chemical Communications, EU and US patent applications have been submitted related to the work and Dr Marmion has been awarded a RCSI Innovation Prize for her research.

RCSI

SFI CSETs and SRCs

10 SFI CSETs and 19 SRCs (by lead host institution) bring together academic researchers with 179 companies.

CSETs

Cork

- *Alimentary Pharmabiotic Centre (APC), UCC*

Galway

- *Digital Enterprise Research Institute (DERI), NUI Galway*
- *Regenerative Medicine Institute (REMEDI), NUIG*

Dublin

- *Centre for Research on Adaptive Nanostructure & Nanodevice (CRANN), TCD*
- *Centre for Telecommunications Value-Chain-Driven Research (CTVR), TCD*
- *Biomedical Diagnostic Institute (BDI), DCU*
- *Next Generation Localisation (CNGL), DCU*
- *Systems Biology Ireland, UCD*
- *CLARITY, UCD*

Limerick

- *Lero - Irish Software Engineering Research Centre, UL*

Strategic Research Clusters (SRCs)

Cork

- *Efficient Embedded Digital Signal Processing for Mobile Digital Health (EEDSP), UCC*
- *Information and Communication Technology for Sustainable and Optimised Building Operation (ITOBO), UCC*
- *Photonics – Integration "From Atoms to Systems" (PiFAS), Tyndall NI*
- *FORME - Functional Oxides and Related Materials for Electronics, Tyndall NI*

Limerick

- *Solid State Pharmaceuticals Cluster, UL*

Galway

- *Network of Excellence for Functional Biomaterials (NFB), NUIG*
- *Alimentary Glycoscience Research Cluster (AGRC), NUIG*

Maynooth

- *Strategic Research in Advanced Geotechnologies (StratAG) NUIM*

Waterford

- *Federated, Autonomic Management of End-to-end Communication Services (FAME) WIT*

Dublin

- *Reproductive Biology Research Cluster, UCD*
- *Advanced Biomimetics for Solar Energy Conversion, UCD*
- *BioNanoInteract, UCD*
- *The Irish Drug Delivery Research Network (IDDN), UCD*
- *Clique SRC UCD*
- *Financial Mathematics Computation Cluster (FMC2) UCD*
- *Immunology Research Centre (IRC), TCD*
- *Irish Separation Science Cluster, DCU*
- *Molecular Therapeutics for Cancer Ireland (MTCI), DCU)*
- *Precision, DCU*

SFI Researchers

- are now engaged in **340** collaborations with MNCs

SFI Researchers

- are now engaged in **206** collaborations with SMEs


Companies

Almac Diagnostics

Avanex (OCLARO)

AvantiCell Science Ltd

BIAS - Bremer Institut Fur Angewandte Strahltechnik GMBH

BioCEP

Biospark (Imperative Energy and Sustainable Biopolymers)

Biosurfit SA

Biotrin International Ltd

Boehringer Ingelheim

Brahms

British Biocell International

British Telecom (BT)

Butler Manufacturing Services (BMS)

Carbery Milk Products

Cathx

Cellix

Celtrak

CIP Technologies

Citco

Citi

ClearSight Ltd

CODEX Discovery

CR Entertainment, DLIADT

Cyntelix

DataKraft

De Puy

DEBRA Ireland

Diamond Detectors Ltd

DNP

EADS

Elastin Specialties, Inc.

Emerson Process Managment

Enzolve Technologies Ltd

EPPRA SAS

eSpatial

Eudaemon Consulting Ltd.

European Investment Bank

European Space Agency (Netherlands)

Evergreen Engineering

Fairchild Semiconductors

FairView Analytics Ltd.

FibroGen, Inc.

Fidelity Investments (FISC)

Fintrax

Firecomms

FrieslandCampina

Fugro-BKS

Full Flight Technology

Genzyme Corporation

Glantreo

Glas-seal

Glebe Scientific

G-Media

Gtelemetry

Halcyon Solutions

Hertfordshire Constabulary

HOLOEYE PHOTONICS AG

HSE

HSG Zander GMBH

Huawei Technology Co. Ltd

Huron Consulting Group

Imagine Eyes

iMobile

Infineon

Innocoll

Innolume, Inc.

Integra Life Sciences

Intelligent Data Systems

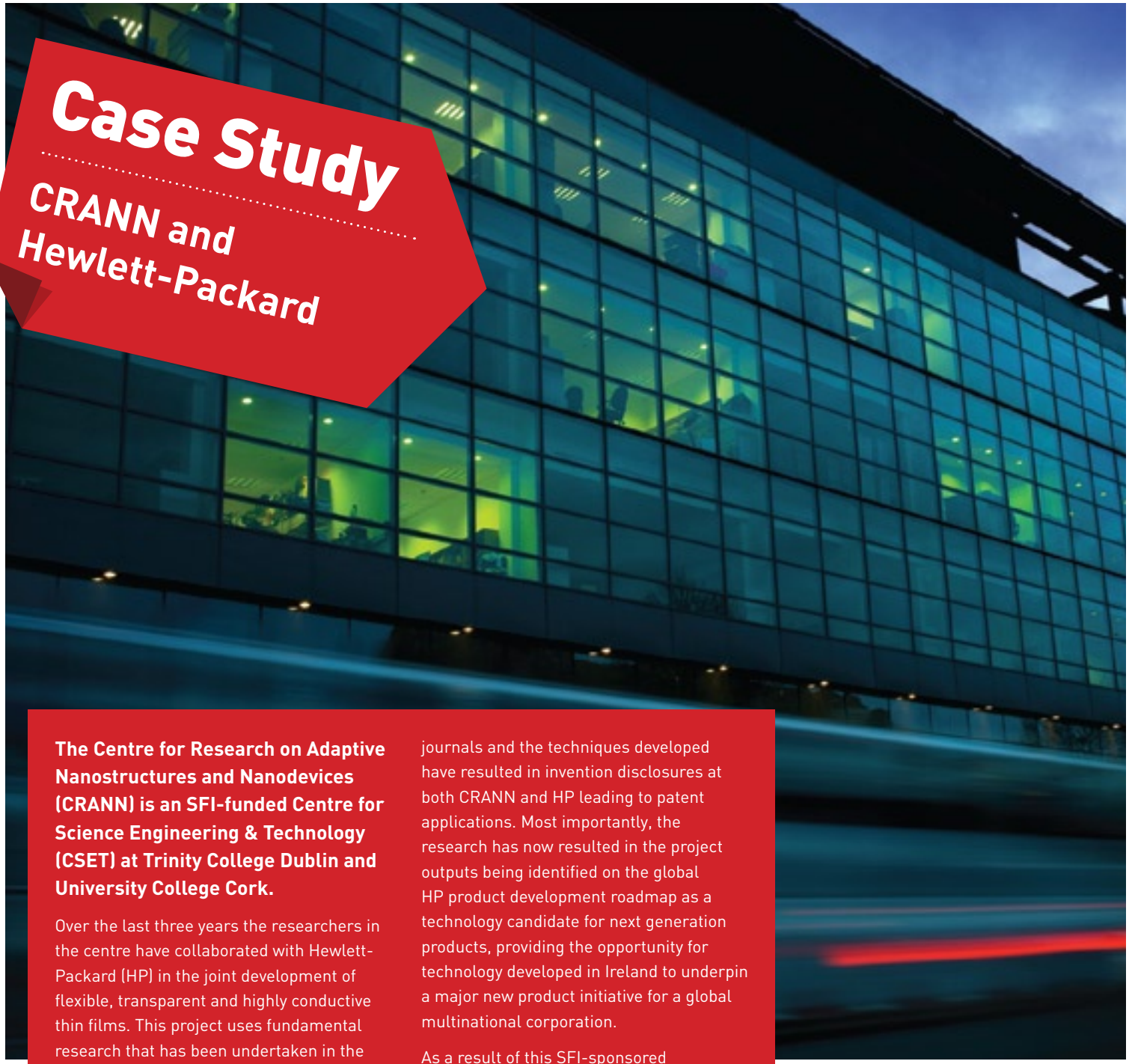
Intercept Pharma

Inverness Medical Innovations, Inc.

JBA

JS Bolger (Racehorse trainer)

KWPN



Case Study

CRANN and Hewlett-Packard

The Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN) is an SFI-funded Centre for Science Engineering & Technology (CSET) at Trinity College Dublin and University College Cork.

Over the last three years the researchers in the centre have collaborated with Hewlett-Packard (HP) in the joint development of flexible, transparent and highly conductive thin films. This project uses fundamental research that has been undertaken in the universities and is directly linked to a major strategic initiative within HP to develop flexible; transparent displays – "electronic paper" – utilising low cost roll-to-roll manufacturing.

The research programme is funded through the SFI CSET programme, with additional IDA Ireland funding supporting associated technology development within HP Ireland. The collaboration has produced outstanding results; the novel technologies developed have been used to manufacture prototypes across the HP organisation including HP Labs in Bristol and Palo Alto, and the Technology Development Operations in Corvallis. A number of scientific papers have been published in high impact factor journals and the techniques developed have resulted in invention disclosures at both CRANN and HP leading to patent applications. Most importantly, the research has now resulted in the project outputs being identified on the global HP product development roadmap as a technology candidate for next generation products, providing the opportunity for technology developed in Ireland to underpin a major new product initiative for a global multinational corporation.

As a result of this SFI-sponsored programme, HP Ireland is now recognised within HP as a provider of important technology solutions for the organisation – enabling the growth of the research mandate locally. CRANN is now well integrated into HP and has developed a new and more extensive research programme to continue into the future. Ireland is now associated with creative research and innovation, a recognition that is critical for Ireland as it demonstrates a capacity to deliver real value to industry, aiding in the attraction of new foreign direct investment and the further embedding of existing industry and their associated jobs.

CRANN

Companies *continued*

Luxcel Biosciences Ltd
Lyncée TEC SA
MagSense Life Sciences
Marigot Ltd
mBio Diagnostics
Mendel Biotechnology, Inc.
MITRE
Movidius
Moving Media
Nerviano Medical Sciences
NIBRT
Nokia Siemens
Noscira
Novo-Nordisk
Novozymes A/S
Nujira
NXP
Ocean Energy Ltd
Oceanlinx
Openlink Software (USA) Ltd.
Ortho Clinical Diagnostics
Parexel International UK
Pavement Management Services Ltd.
Pharmatrin Ltd.
Pilkington Glass (UK)
Piper Systems Ltd
Prospect 23
Proxy Biomedical Ltd
Qiagen GmbH
Rolls-Royce
Rovsing Ireland Ltd.
Saudi Aramco
SDL Enterprise Technology (Ireland)
Sheeran Ltd
Sigma Aldrich Fine Chemicals Hitech
Snap-On
Solaprint Ltd
Somex Limited
SpeechStorm
Spokesoft
SpongeIT
Sports Index
SSE renewables
St Gobain Glass
St Vincent's University Hospital
Storm Technology Ltd
Sygnature
Synopsys International Ltd.
T2M
Tango Telecom
Technology From Ideas Ltd
ThermoFisher Scientific
Thomas Jefferson University
Toray Industries
Toshiba China
Tullow Oil Plc
United Technologies
VI Systems
VistaTEC
Vitesse
Voco GmbH
VTT Finland
Warwick Effect Polymers
Wikki
Wirelite Sensors

Case Study

Ireland Ranks 3rd in the World in Immunology

Ireland's performance in immunology research on the world stage is 'outstanding', according to a recent report from Thomson Reuters.

Their 'Essential Science Indicators' database revealed that Ireland ranks third in the Top 20 countries worldwide in terms of citations of original journal articles during the period January 1999 to October 2009. Articles from Ireland, along with Switzerland and the US, received over 25 citations each, which is an impressive measure of the impact of Irish research in the immunology field.

But who are the faces behind these articles? One of them is SFI-funded Prof Luke O'Neill of Trinity College Dublin (TCD), the only Irish university to be ranked in the top 1% of institutions in the world for immunology research. Prof O'Neill was presented with the prestigious RDS Irish Times Boyle Medal for Scientific Excellence in November last year and in the same month was awarded the SFI Researcher of the Year. Commenting on the popularity of his highly-cited article in Nature Reviews Immunology, Prof O'Neill said 'It's a synthesis of knowledge - probably the biggest one in terms of content published in 2007.'

Other SFI-funded researchers in this space include Prof Kingston Mills, Dr Andrew Bowie, Prof Padraic Fallon and Dr Ed Lavelle, all located in the immunology hub of TCD. Collectively these investigators have published in such well-regarded journals as Nature, Nature Immunology, Immunity, Nature Genetics and PNAS. Continued fostering of their talent and investment in their research will ensure Ireland continues to reside among the top nations in immunology.

THOMSON REUTERS

"During 2009 SFI supported 26 conferences and workshops"

Contributing to Ireland's Global Reputation.

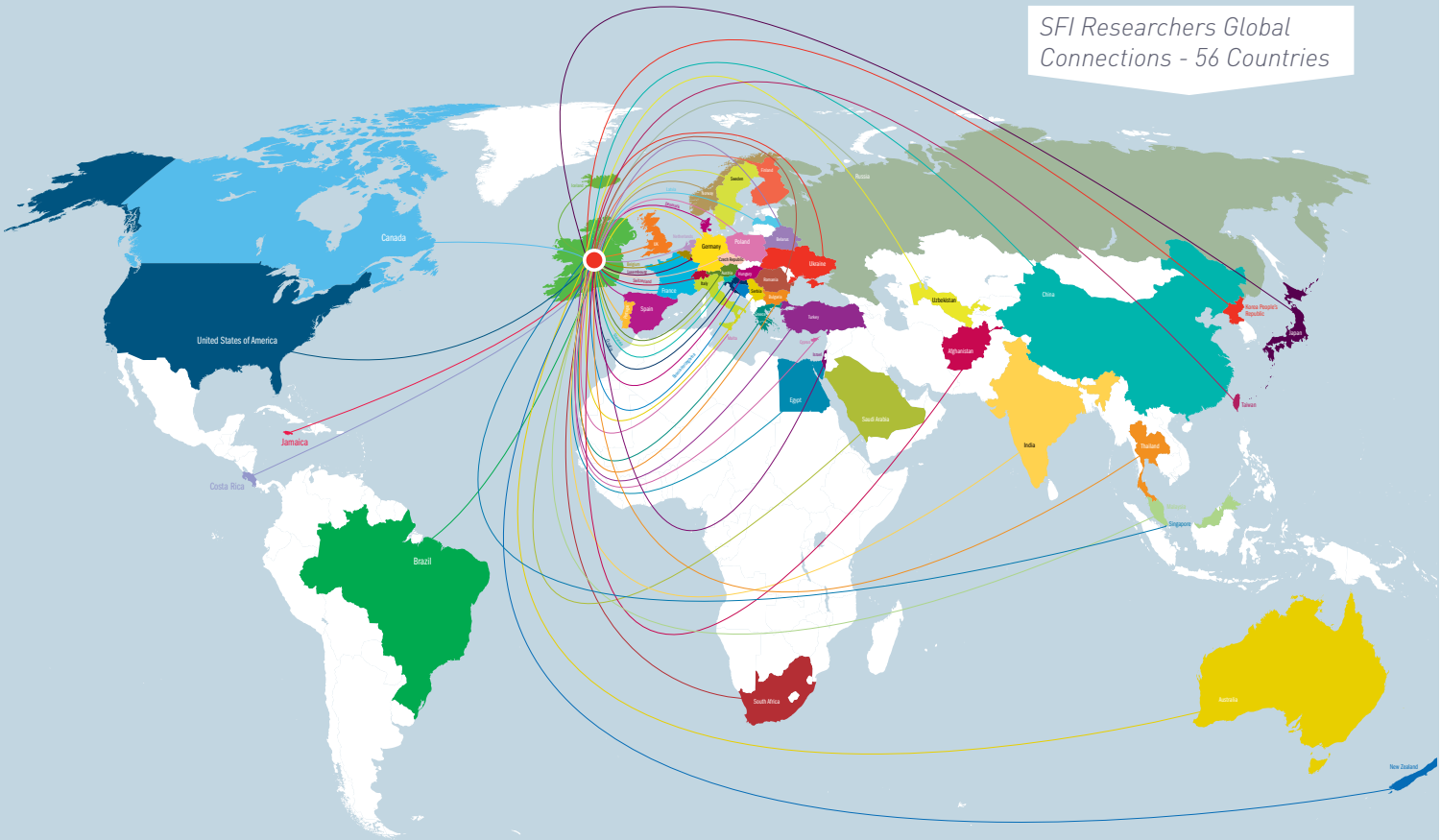
A core focus for SFI is to contribute to building Ireland's reputation as a location of excellent scientific research and as a source of high-quality human capital. The Government investment in SFI allows Ireland to engage at the centre of global science and engineering activities. Technology will be critical in feeding, connecting, healing, fuelling and housing the world's population, and without investment Ireland will not be involved in shaping the technologies of the future.

During 2009, SFI supported 26 conferences and workshops. These included the Symposium on Biostatistics and Statistical Genetics, US/Ireland Functional Foods Conference; Irish Society for Immunology Annual Meeting; 21st International Ion Chromatography Symposium (IICS); UK Nitrides Consortium Winter Conference, 5th Workshop on Coding and Systems and 'W2GIS 2009' - the 9th International Symposium on Web & Wireless Geographical Information Systems. Though direct contribution to the economy is not the primary purpose of the SFI Conference and Workshop programme it is estimated that the value of these events to the Irish economy was almost €5million.

16 researchers participated in the ETS Walton Visitor Programme during 2009, from institutions such as Imperial College London, Université de Pierre et Marie Curie, UCLA, Georgia Institute of Technology and Philips Research, Belgium.

Short Term Travel Fellowship (STTF) supplements are designed to enable team members in an SFI funded group to collaborate on research projects in laboratories outside the Republic of Ireland for a period of up to three calendar months. This supplement enables Irish based researchers to build collaborations and develop their expertise/ capabilities (and in turn those of their home laboratory) in an area relevant to their research but not available in the Republic of Ireland. During 2009, the SFI Short-Term Travel Fellowship provided support for 25 researchers to travel to overseas universities and research bodies in eight countries, the majority travelling to the USA (13).

SFI Researchers Global Connections - 56 Countries



Case Study

CLARITY CSET

Prof Barry Smyth (UCD) holds the Digital Chair of Computer Science within the UCD School of Computer Science and Informatics.

Prof Smyth's research covers a broad set of topics within artificial intelligence including machine learning, user modeling and information retrieval. In 1999 Prof Smyth co-founded CHANGINGWORLDS LTD, as a UCD spin-out to bring personalisation technologies to the mobile sector. CHANGINGWORLDS now employs over 120 people in offices in Ireland, Asia and the US and continues to collaborate closely with Prof Smyth.

In April 2008, it was announced that CLARITY, a joint UCD-DCU-industry research programme in Sensor Web Technologies led by Prof Smyth was to be awarded €11.8 million by SFI to establish a Centre for Science, Engineering and Technology (CSET). With additional funding from the industrial partners, the total funding is €16.5 million.

With additional support from Enterprise Ireland, researchers at the CLARITY CSET have developed two additional spin-out companies. HEYSTAKS TECHNOLOGIES employs patent-pending technology to manage, share and harness internet search experiences. It has been shown to improve the success rate of Google searches by up to 50%, saving users time and effort every day. THERAPEUTIC EXERGAMING develops computer games and body-worn motion sensors to teach therapeutic exercises to patients. Exercise therapy is prescribed by physiotherapists as part of a treatment programme for many injuries and disorders, but poor adherence and bad exercise technique can lead to inadequate outcomes for some patients.

In 2006, in recognition of his commercialisation activities, Prof Smyth received the Enterprise Ireland Informatics Commercialisation Award and was a finalist in the International category of the prestigious Ernst & Young Entrepreneur of the Year award. In 2009 HEYSTAKS TECHNOLOGIES won the inaugural, Europe-wide, UNICA Entrepreneurship Competition for Students and Young Researchers.

Disney Research
amdocs
Tyndall National Institute
QinetiQ
UCD DUBLIN
DCU
IBM
EPISENSOR
critical path

"SFI-funded researchers engaged in 1,967 academic collaborations in 2009"

SFI supports and engages in promoting Ireland as an international location for research and development. SFI works in collaboration with IDA Ireland, Enterprise Ireland and the Department of Foreign Affairs. During 2009, SFI participated in a joint seminar with IDA Ireland in Japan, a trade visit to China and India, and BIO 2009 with IDA Ireland and Enterprise Ireland. In addition, during President McAleese's visit to Boston, SFI hosted a research seminar at the Whitehead Institute MIT.

SFI-funded researchers engaged in 1,967 academic collaborations in 2009, 76% of which were with partners based outside Ireland. These collaborations are important for sharing resources, carrying out joint research and publications and for building networks and relationships, essential for creating clusters of excellence and for accessing/leveraging external sources of funding such as the EU Framework Programme.

SFI researchers engaged in international scientific events overseas and in Ireland. SFI-funded groups hosted or were members of the programme committee for 495 events, were invited to speak at 1,303 conferences/events and either presented papers or posters at 2,712 events. This reflects how SFI Researchers are playing their part in communicating and promoting Irish research on an international stage.

Minister Lenihan announced joint nano research collaboration between HP and CRANN. Pictured Prof Frank Gannon, Director General, Science Foundation Ireland, Dr Diarmuid O'Brien, Executive Director, CRANN, SFI CSET, Mr Pat Harnett, R&D Manager, HP Ireland and Mr Conor Lenihan, T.D., Minister for Science, Technology & Innovation.

Case Study

Solid State Pharmaceuticals Cluster

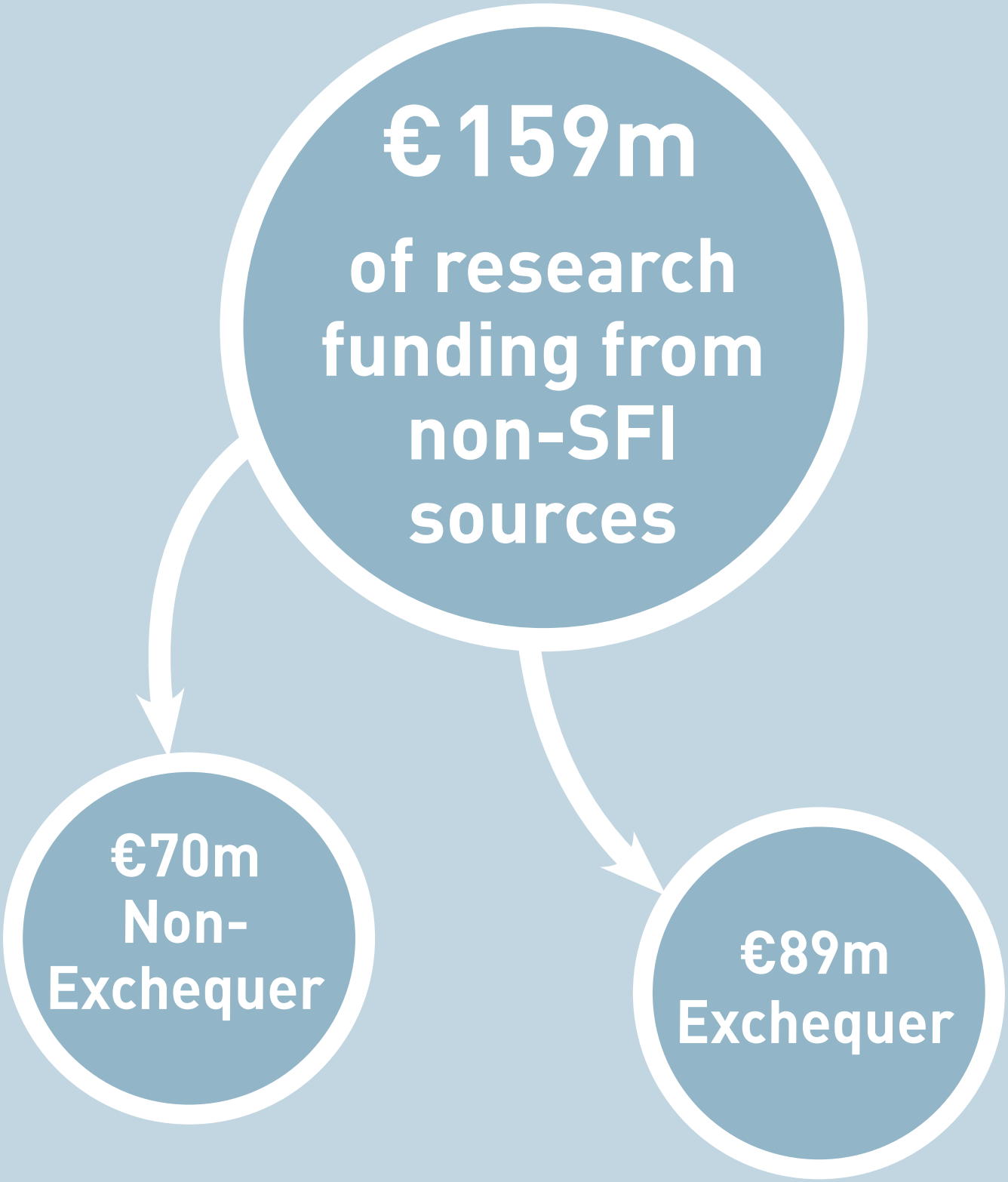
Discovering a new drug can mark the end of a long quest by researchers, but for the pharmaceutical industry, this is just one part of the equation.

Before anything can be produced, the industry has to work out how to produce the drug in bulk and in a form that can go on the market. Crystallisation, phase transformation and mixing are just some of the stages likely to be involved, and if these processes vary, even slightly, materials may have to be reprocessed, or even discarded. Compared to other industries, the level of reprocessing is higher and the main reason for this is that traditionally the emphasis was on monitoring chemical characteristics rather than taking important physical characteristics into account.

The Solid State Pharmaceuticals Cluster is a collaboration led by Prof Kiernan Hodnett, University of Limerick, involving researchers in Trinity College Dublin, University College Cork, University College Dublin and the National University of Ireland, Galway, with the aim of matching the wealth of chemical, engineering and other academic knowledge with practical production know-how from industry to solve the problem of getting drugs into the right form. Most of the drugs we take, usually as pills, are in powder or crystalline form. Crystals can vary, and although this might only be apparent under a microscope, the differences can influence how a drug is taken up by the body. Although drugs may be chemically the same, how they are presented usually determines when, where and how they will be absorbed. It takes more than trial and error to get all of those processes right. Knowing what's involved at the molecular level and understanding the science behind reactions gives industry much more control, and apart from a better end result, there can be a considerable saving of resources.

With more than 80 pharmaceutical companies manufacturing in Ireland the sector is responsible for a quarter of our manufacturing output. One of the main reasons why those companies have done so well in Ireland is because the quality of production is high, and the way to keep this sector healthy is to provide a high level of support from research-based expertise. Manufacturing pharmaceuticals is a highly competitive business, and likely to become more so as patents are starting to run out on some of the most popular drugs. Having a competitive advantage in process control is becoming more important for companies, and there is a related issue in how launch sites for new drugs are chosen. Patent protection only lasts for a limited number of years, so manufacturers cannot afford any delays in the start up of production. Decisions on where to locate initial bulk production are made on the basis of known track record and availability of expertise. Plants with a reputation for getting it right first time are always going to be the first choice for production of new drugs.

UCD DUBLIN · Pfizer · Roche · Lilly Answers That Matter. · University of Limerick · UCC · Janssen Pharmaceutica · COVIDIEN positive results for life · Schering-Plough · HOVIONE · gsk GlaxoSmithKline · MERCK SHARP & DOHME · NUI Galway OÉ Gaillimh · TRINITY COLLEGE DUBLIN COLÁISTE NA TRÍONÓIDE, BAILE ÁTHA CLIATH THE UNIVERSITY OF DUBLIN



Leveraging Additional Funding -
In 2009, SFI researchers reported securing €159 million worth of research funding from non-SFI sources. 44% of these funds came from non-exchequer sources, chief among them the EU (€38 million), demonstrating significant success in leveraging international funding into Ireland. 56% came from exchequer sources, including €21 million under Enterprise Ireland programmes, indicating a strong link between the research community supported by SFI and Enterprise Ireland applied research and commercialisation programmes.

SFI supports a variety of Education & Outreach.

SFI recognises the importance of attracting young people into careers in science and engineering and the role of education and outreach in supporting this. In addition, it is clear that SFI needs to support a greater understanding by the general public of the link between economic development and science and engineering. Approximately 60% of SFI-funded researchers engage in education and outreach activities. In total, SFI-funded researchers conducted 697 public lectures/demonstrations, 757 visits/presentations to schools and 1,077 media interactions. SFI CSETs each have extensive education and outreach activities. These include competitions, computer games, websites with outreach resources for teachers and pupils, public debates, school visit and visits to labs. The SFI Speakers for Schools programme provides free visits to schools where SFI researchers and team members deliver talks and give demonstrations to pupils. During 2009, 63 SFI researchers were registered to give 159 different talks to school pupils.

It is equally important that our young undergraduates experience high quality research environments. The UREKA programme provided 250 Summer work placements for both Irish and overseas undergraduates during 2009 in HEIs throughout the country.

It is through the above actions and activities that SFI researchers engage with a wide audience throughout the country highlighting the excellent research now underway in Irish HEIs and promoting the benefit of investment in R&D.

Pictured at the BT Young Scientist of the Year Competition was Prof Fionn Murtagh, Director, Information, Communications & Emergent Technologies, SFI together with Patrick O'Doherty, Gonzaga College, who was the winner of the SFI Special Award for his project on Energy Saving through Automation.

Pictured on the SFI Stand at the BT Young Scientist Competition on the occasion of the presentation of prizes for the REMEDI Essay Competition were Prof Matt Griffin, REMEDI, NUIG, Mr Batt O'Keeffe, T.D., Minister for Education & Science, essay competition winner Daniel O'Reilly, Castleblayney College, Co. Monaghan, Dr Angela Duffy, Medtronic Vascular Galway and Prof Frank Gannon, Science Foundation Ireland.

Statutory and Other Notices

1 Ethics in Public Office Acts, 1995 and Standards in Public Offices Act, 2001

SFI became subject to the Ethics in Public Office Acts 1995 and 2001 on the 1 January 2005. SFI has complied with the provisions of the Act.

2 Freedom of Information Act, 1997 and Freedom of Information (Amendment) Act, 2003.

SFI became a prescribed body under the Freedom of Information Act, 1997 from 31 May 2006. SFI complies fully with the Act. Requests for information under this Act should be addressed to the FOI Officer, SFI, Wilton Park House, Wilton Place, Dublin 2.

3 Prompt Payment of Accounts Act, 1997

SFI comes under the remit of the Prompt Payment of Accounts Act, 1997, which came into effect on 2 January 1998, and the European Communities (Late Payment in Commercial Transactions) Regulations, 2002, which came into effect on the on 7 August 2002.

The payment practices of SFI, as required by the Act, are reported on below for the year ended 31 December 2008. It is the policy of SFI to ensure that all invoices are paid promptly. Specific procedures are in place that enable it to track all invoices and ensure that payments are made before the due date. Invoices are registered daily and electronic payments are issued as required to ensure timely payments. There were no late payments during 2009.

4 Employment Equality Acts, 1998 and 2004

SFI wholeheartedly supports the principle of equal opportunities in employment. It opposes all forms of discrimination on the grounds of colour, race, nationality, sexual orientation, ethnic or national origin (and/or area of origin), religion, gender, marital status, age or disability. SFI's commitment to implementing equal opportunities is reflected in its policies, practices and procedures, e.g. recruitment, promotion, training, use of nondiscriminatory language in company documents and publications. The objective is to ensure that all staff are selected and treated only on the basis of their abilities, knowledge and qualifications.

5 Safety, Health and Welfare at Work Act 1989

In accordance with the above Act, SFI in consultation with Forfás implements appropriate measures to protect the safety, health and welfare of all employees and visitors within its offices.

6 Clients' Charter

SFI has published a Clients' Charter setting out its commitment to a high quality of service. This Charter includes a procedure for dealing with complaints. In 2009, no complaints were received under the Charter.

7 Code of Practice for the Governance of State Bodies

Following the publication of the Revised Code of Practice for the Governance of State Bodies in 2009, SFI has reviewed its processes to ensure that it is complying with the provisions of the Revised Code. In accordance with the Revised Code of Practice for the Governance of State Bodies SFI Board Members on their appointment to the Board and during their tenure in office, furnish details of interests which could involve a conflict of interest or could materially influence the member in relation to the performance of his/her functions as a member of the Board.

8 Board Meetings/Attendance

The SFI Board consists of 12 members, appointed by the Minister for Enterprise, Trade and Employment, as set out in Section 8 of the Industrial Development (Science Foundation Ireland) Act 2003. The Quorum for the SFI Board is five members. Six SFI Board meetings were held in 2009 as follows:

Date	Number of Attendees
26 January 2009	9
30 March 2009	11
25 May 2009	12
13 July 2009	10
5 October 2009	9*
14 December 2009	12

** Two Board vacancies arising from the retirement process set out under Section 9 of the Industrial Development (Science Foundation Ireland) Act 2003, had not been filled at this time. The positions were subsequently filled for the Board meeting in December.*

Name of Director	Notes	Attendance at Board Meetings (6 meetings)	Fees €
Prof Pat Fottrell (Chairman)		6	22,000
Dr Jim Mountjoy (Deputy Chairperson)		5	13,000
Prof Frank Gannon (Director General)		6	13,000
Mr Sean Aherne (a) (b)	Eligible to attend 5 meetings	4	8,000
Mr Tom Boland		5	0
Dr Rita Colwell*		5	13,000
Ms Bernie Cullinan (b)		1	0
Ms Helen Keelan (a)	Eligible to attend 4 meetings	4	8,000
Mr Peter MacDonagh		6	13,000
Dr Martina Newell McGloughlin		5	13,000
Mr Martin Shanagher		6	0
Dr Don Thornhill		5	13,000
Mr John Travers		5	13,000

**Note: This includes participation by conference call from the US for four Board Meetings.*

a) In accordance with the process set out in the documentation provided to the Board at its meeting on 25 May 2009, and in order to comply with Sections 9(3) and 9(4) of the Industrial Development (Science Foundation Ireland) Act 2003 relating to Board Membership, the following Board Members were chosen for retirement:

- *Ms Helen Keelan (as longest serving member); and*
- *Mr Sean Aherne (as determined by lot).*

b) Mr Sean Aherne was reappointed to the Board on 7 December 2009 and a new appointment, Ms Bernie Cullinan was made on the same date by the Tánaiste and Minister for Enterprise, Trade and Employment, Ms Mary Coughlan T.D.

9 Members of Committees of the Board 2009

9. 1 Board Sub Group on Programme Grants

Dr Martina Newell-McGloughlin (Chairperson), Prof Frank Gannon, Mr Peter MacDonagh, Dr Gary Crawley*, Dr Rita Colwell and Dr Eucharia Meehan**.

9.2. SFI Audit Committee

Dr Jim Mountjoy (Chairman), Dr Don Thornhill, Mr Aidan Hodson***, Mr Sean Aherne, Ms Bernie Cullinan (Dec 2009 meeting), Helen Keelan (up to retirement) and Mr Tom Boland.

9.3 Management Development and Remuneration Committee

Prof Patrick Fottrell (Chairperson), Mr Sean Aherne, Mr Martin Shanagher and Mr John Travers.

Board Sub Committee Meetings

1. The Audit Committee held six meetings.
2. The Board Sub Group on Programme Grants held nine meetings.
3. The Management Development and Remuneration Committee held two meetings.

Board Expenses

The total Board expenses for 2009 were €32,555.

Expenditure Heading	€
Foreign Travel (overseas members attending Board meetings)	€26,785
Domestic Travel	€3,175
Accommodation/ Subsistence/Vouched Expenses	€2,595

Director General's Remuneration

The remuneration package of the Director General for 2009 amounts to a salary of €298,403 per annum, standard public sector pension arrangements and a company car subject to benefit in kind of €14,032. The Director General is entitled to participate in a performance related award scheme; no award was made in respect of 2009, however an award of €36,022 was made for 2008 and paid to the Director General in February 2009.

*Former Head of Frontier Engineering & Scientific Research Directorate, SFI.
**Head of Research Programmes and Capital Programmes, HEA.
*** Principal Officer, DETI.

Organisation Structure

Board Sub-Group on Programme Grants

Management Development and Remuneration Committee

Audit Committee

SFI Board

Office of Director General

Director General
Prof Frank Gannon

Head of Audit & Compliance
Mr Jeremy Twomey

Enterprise & International Affairs

Director
Dr Ruth Freeman

Policy & Communications

Director
Dr Graham Love

Finance and Operations

Chief Operations Officer
Mr Donal Keane

Life Sciences

Director
Dr Stephen Simpson

Information, Communications & Emergent Technologies (IC&ET)

Director
Prof Fionn Murtagh

Note: Mr Mattie McCabe, Director, retired in February 2010

Annual Financial Statements **2009**

31 December 2009

Report of Comptroller & Auditor General

For presentation to the Houses of the Oireachtas

I have audited the financial statements of Science Foundation Ireland for the year ended 31 December 2009 under the Industrial Development (Science Foundation Ireland) Act 2003.

The financial statements, which have been prepared under the accounting policies set out herein, comprise the Accounting Policies, the Income and Expenditure Account, the Balance Sheet, the Cash Flow Statement and the related notes.

Respective Responsibilities of the Board and the Comptroller and Auditor General

Science Foundation Ireland is responsible for preparing the financial statements in accordance with the Industrial Development (Science Foundation Ireland) Act 2003 and for ensuring the regularity of transactions. It prepares the financial statements in accordance with Generally Accepted Accounting Practice in Ireland. The accounting responsibilities of the Members of the Board are set out in the Statement of Board Members' Responsibilities.

My responsibility is to audit the financial statements in accordance with relevant legal and regulatory requirements and International Standards on Auditing (UK and Ireland).

I report my opinion as to whether the financial statements give a true and fair view, in accordance with Generally Accepted Accounting Practice in Ireland. I also report whether in my opinion proper books of account have been kept. In addition, I state whether the financial statements are in agreement with the books of account.

I report any material instance where moneys have not been applied for the purposes intended or where the transactions do not confirm to the authorities governing them.

I also report if I have not obtained all the information and explanations necessary for the purposes of my audit.

I review whether the Statement on Internal Financial Control reflects Science Foundation Ireland's compliance with the Code of Practice for the Governance of State Bodies and report any material instance where it does not do so, or if the statement is misleading or inconsistent with other information of which I am aware from my audit of the financial statements. I am not required to consider whether the Statement on Internal Financial Control covers all financial risks and controls, or to form an opinion on the effectiveness of the risk and control procedures.

I read other information contained in the Annual Report, and consider whether it is consistent with the audited financial statements. I consider the implications for my report if I become aware of any apparent misstatements or material inconsistencies with the financial statements.

Basis of Audit Opinion

In the exercise of my function as Comptroller and Auditor General, I conducted my audit of the financial statements in accordance with International Standards on Auditing (UK and Ireland) issued by the auditing Practices Board and by reference to the special considerations which attach to State bodies in relation to their management and operation. An audit includes examination, on a test basis, of evidence relevant to the amounts and disclosures and regularity of the financial transactions included in the financial statements. It also includes an assessment of the significant estimates and judgements made in the preparation of the financial statements and of whether the accounting policies are appropriate to Science Foundation Ireland's circumstances, consistently applied and adequately disclosed.

I planned and performed my audit so as to obtain all the information and explanations that I considered necessary in order to provide me with sufficient evidence to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or other irregularity or error. In forming my opinion I also evaluated the overall adequacy of the presentation of information in the financial statements.

Opinion

In my opinion, the financial statements give a true and fair view, in accordance with Generally Accepted Accounting Practice in Ireland, of the state of Science Foundation Ireland's affairs at 31 December 2009 and of its income and expenditure for the year then ended.

In my opinion, proper books of account have been kept by Science Foundation Ireland. The financial statements are in agreement with the books of account.

John Buckley
Comptroller and Auditor General
14 June 2010

Statement of Board Members' Responsibilities

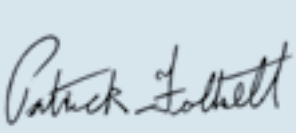
For 2009 Annual Financial Statements

Section 24 (2) of the Industrial Development (Science Foundation Ireland) Act, 2003 requires Science Foundation Ireland to keep, in such form as may be approved by the Minister for Enterprise, Trade and Employment with the consent of the Minister for Finance, all proper and usual accounts of money received and expended by it and, in particular, to keep in such form as aforesaid all special accounts as the Minister may from time to time direct. In preparing those financial statements, Science Foundation Ireland is required to:

- select suitable accounting policies and apply them consistently;
- make judgements and estimates that are reasonable and prudent;
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that Science Foundation Ireland will continue in operation;
- disclose and explain any material departures from applicable Accounting Standards.

The Board is responsible for keeping proper books of account which disclose with reasonable accuracy at any time its financial position and which enable it to ensure that the financial statements comply with the overall requirements of Section 24 of the Industrial Development (Science Foundation Ireland) Act, 2003. These books of account are located at the Foundation's headquarters, Wilton Park House, Wilton Place, Dublin 2. The Board is also responsible for safeguarding its assets and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

On behalf of the Board:



Patrick Fottrell
Chairman

Date: 1 June 2010

Frank Gannon
Director General

Date: 1 June 2010

Statement on Internal Financial Control

On behalf of the Board of Science Foundation Ireland I acknowledge our responsibility for ensuring that an effective system of internal financial control is maintained and operated.

The system can only provide reasonable and not absolute assurance that assets are safeguarded, transactions authorised and properly recorded, and that material errors or irregularities are either prevented or detected in a timely period.

The Board has taken steps to ensure an appropriate control environment is in place by:

- Clearly defining and documenting management responsibilities and powers
- Establishing formal procedures for monitoring the activities and safeguarding the assets of the organisation
- Developing a culture of accountability across all levels of the organisation

The Board has also established processes to identify and evaluate business risks by:

- Working closely with Government and various Agencies to ensure that there is a clear understanding of Science Foundation Ireland goals and support for the Agencies' strategies to achieve those goals
- Requiring senior management to put in place risk assessment and risk management processes for the Audit Committee
- Carrying out regular reviews of strategic plans both short and long term and evaluating the risks to bringing those plans to fruition
- Setting annual targets for each area of our business followed by regular reporting on the results achieved

The system of internal financial control is based on a framework of regular management information, administration procedures including segregation of duties, and a system of delegation and accountability. In particular it includes:

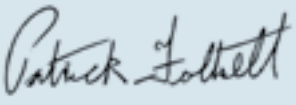
- A comprehensive budgeting system with an annual budget which is reviewed and agreed by the Board
- Regular reviews by the Board of periodic and annual financial reports which indicate financial performance against forecasts
- Setting targets to measure financial and other performance
- Formal project management disciplines
- Clearly defined capital investment control guidelines

Science Foundation Ireland has established an Internal Audit function, in accordance with the Framework set out in the Code of Practice on the Governance of State Bodies, which reports directly to the Audit Committee. An annual Internal Audit work plan is agreed by the Audit Committee. The work of internal audit is informed by analysis of the risks to which the body is exposed. The Audit Committee meets six times a year and reviews the outcome of the specific internal audits and the ongoing adequacy and effectiveness of the system of internal financial control. These reports highlight deficiencies or weaknesses, if any, in the system of internal financial control and the recommended corrective measures to be taken where necessary.

The Board's monitoring and review of the effectiveness of the system of internal financial control is informed by the work of the Internal Auditor and the Audit Committee which oversees the work of the Internal Auditor, the control exercised by the Executive managers within SFI who have responsibility for the development and maintenance of the financial framework, and comments by the Comptroller and Auditor General in his management letter.

I confirm that the Board conducted a review of the effectiveness of the system of internal financial controls for 2009.

Signed on behalf of the Board



Patrick Fottrell
Chairman

Accounting Policies

(1) Basis of Accounting

The Financial Statements have been prepared under the historical cost convention in the form approved by the Minister for Enterprise, Trade and Employment with the consent of the Minister for Finance under the Industrial Development (Science Foundation Ireland) Act 2003. The Financial Statements are prepared on an accruals basis, except where stated below and are in accordance with generally accepted accounting practice. Financial Reporting Standards, recommended by the Accounting Standards Board, are adopted as they become effective.

(2) Income Recognition

Income from Oireachtas Grant represents actual cash receipts in the year.

(3) Fixed Assets

Fixed Assets are stated at cost less accumulated depreciation. Depreciation is calculated in order to write off the cost of fixed assets over their estimated useful lives (see Note 5).

(4) Capital Account

The Capital Account represents funds utilised for the acquisition of Fixed Assets and is written down in line with the depreciation policy for these assets.

(5) Foreign Currencies

Monetary assets and liabilities denominated in foreign currencies are translated at the exchange rates ruling at the Balance Sheet date. Revenues and costs are translated at the exchange rates ruling at the dates of the underlying transactions.

(6) Superannuation

Science Foundation Ireland is established as an agency of Forfás in accordance with Section 6 (1) of the Industrial Development (Science Foundation Ireland) Act, 2003. Staff employed at the Foundation are legally employees of Forfás and are seconded to the Foundation, consequently, under Sections 2 and 3 of the Second Schedule of the Industrial Development Act, 1993, Forfás is responsible for all employee pension entitlements. Forfás prepares and administers pension schemes for the granting of pension entitlements to its staff including staff seconded to Science Foundation Ireland. Forfás is also responsible for pension reporting requirements, including those set out under FRS 17.

(7) Operating Leases

The rentals under operating leases are accounted for as they fall due.

(8) Research Grant Payment

Amounts paid to Research Institutions on foot of research grants are charged to the Income and Expenditure account in the year of issue.

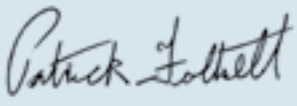
Income and Expenditure Account

For the year ended 31 December 2009

	Notes	**2009 €'000**	2008 €'000
Income			
Oireachtas Grant	1	**180,398**	170,418
Other Income	2	**125**	234
Profit on Disposal of Fixed Assets		**-**	5
		180,523	170,657
Expenditure			
Pay	3	**4,545**	3,833
Administration Expenses	4	**4,401**	5,844
Depreciation	5	**115**	128
Grants	6	**171,301**	160,138
		180,362	169,943
Net Surplus for the Year		**161**	714
Balance at beginning of Year		**115**	(603)
Transfer (to)/from Capital Account	7	**(150)**	4
Accumulated Surplus at end of Year		**126**	115

There are no recognised gains or losses, other than those dealt with in the Income and Expenditure Account.
The Accounting Policies, Cash Flow Statement and Notes 1 to 14 form part of these Financial Statements.

On behalf of the Board:



Patrick Fottrell
Chairman

Date: 1 June 2010

Frank Gannon
Director General

Date: 1 June 2010

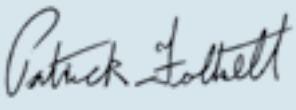
Balance Sheet

As at 31 December 2009

	Notes	**2009 €'000**	2008 €'000
Fixed Assets			
Tangible Fixed Assets	5	**283**	133
Current Assets			
Cash at Bank		**266**	259
Accounts Receivable	8	**64**	155
		330	414
Accounts Payable	9	**204**	299
Net Current Assets		**126**	115
Net Assets		**409**	248
Represented By:			
Capital Account	7	**283**	133
Income and Expenditure Account		**126**	115
		409	248

The Accounting Policies, Cash Flow Statement and Notes 1 to 14 form part of these Financial Statements.

On behalf of the Board:



Patrick Fottrell
Chairman

Date: 1 June 2010

Frank Gannon
Director General

Date: 1 June 2010

Cash Flow Statement

For the year ended 31 December 2009

	Notes	**2009 €'000**	2008 €'000
Reconciliation of Surplus/(Deficit) for Year to Net Cash Flow from Operations			
Surplus for Year		**161**	714
Bank Interest	2	**(16)**	(234)
(Profit)/Loss on Disposal of Fixed Assets		**0**	(5)
Depreciation Charge	5	**115**	128
Decrease/(Increase) in Accounts Receivable	8	**91**	(93)
(Decrease) in Accounts Payable	9	**(95)**	(805)
Net Cash Flow from Operations		**256**	(295)
Cash Flow Statement			
Net Cash Flow from Operations		**256**	(295)
Returns on Investment and Servicing of Finance			
- Bank Interest	2	**16**	234
Cash Flow before Capital Expenditure		**272**	(61)
Capital Funding			
- Receipts from Sale of Tangible Fixed Assets		**-**	17
- Purchase of Tangible Fixed Assets	5	**(265)**	(136)
Increase/(Decrease) in Cash		**7**	(180)
Reconciliation of Increase in Cash to Cash at Bank			
Movement in Cash for the Year		**7**	(180)
Cash at Bank at 01 January		**259**	439
Cash at Bank at 31 December		**266**	259

Notes to the Accounts

For the year ended 31 December 2009

		2009	2008
		€'000	€'000
1	**Oireachtas Grant**		
	Pay	**4,677**	4,369
	Administration Expenses	**4,540**	5,010
	Research Grants	**171,181**	161,039
		180,398	170,418

Under Section 11 of the Industrial Development Act, 1993, as amended by Section 4 of the Industrial Development Act 2009, the aggregate amount of grants made by the Minister to Forfás and its Agencies, to enable them to discharge their obligations and liabilities shall not exceed €7,000,000,000. At 31 December, 2009 the aggregate amount so approved was €3,676,428,030.

2	**Other Income**		
	Bank Interest	**16**	234
	EU Nano Science Fund	**109**	0
	Total	**125**	234

3	**Pay**		
	Pay Costs comprise:		
	Wages and Salaries	**4,184**	3,532
	Social Welfare Costs	**351**	291
	Superannuation Costs	**10**	10
	Total	**4,545**	3,833

Sanctioned Positions	**54**	54
Full Time Employed (at year end)	**54**	50
Temporary Staff Employed (at year end)	**-**	1
Total	**54**	51

Notes to the Accounts

For the year ended 31 December 2009

	2009	2008
	€'000	€'000
4(a) Administration Expenses		
Board Members' Remuneration and Expenses - (see below)	**162**	235
Programme Management	**1,245**	1,236
Facilities	**834**	805
Professional Fees	**419**	900
Marketing Promotion & PR	**917**	1,420
IT Support & Infrastructure	**325**	560
Travel & Subsistence Costs	**121**	91
HR Management	**157**	284
Office Furniture & Equipment	**6**	16
General Office Expenses	**194**	281
Audit Fee	**21**	16
Total	**4,401**	5,844

4(b) Board Remuneration and Expenses

	2009 Emoluments €'000
Board Members	
Sean Ahearne	**8**
Tom Boland	**0**
Rita Colwell	**13**
Bernie Cullinan*	**0**
Patrick Fottrell (Chairman)	**22**
Frank Gannon	**13**
Helen Keelan	**8**
Pater MacDonagh	**13**
Martina Newell McGloughlin	**13**
James Mountjoy	**13**
Martin Shanagher	**0**
Don Thornhill	**13**
John Travers	**13**
Total	**129**

Board Members' expenses in 2009 amounted to €32,555, broken down as €26,785 in respect of foreign travel, primarily in relation to three overseas Board Members, two of whom are based in the United States and €3,175 in relation to domestic travel and mileage. The balance of €2,595 relates to accommodation, subsistence and incidental expenses.

The remuneration package of the Director General as at 31 December 2009 amounted to a salary of €298,403 per annum, standard public sector pension arrangements and a company car subject to benefit in kind of €14,032. The Director General is entitled to participate in a performance related award scheme; no award was made in respect of 2009, however an award of €36,022 was made for 2008 and paid to the Director General in February 2009.

* Appointed on the 7th December 2009.

Notes to the Accounts

For the year ended 31 December 2009

5 Tangible Fixed Assets

	Computer Equipment €'000	Computer Software €'000	Computer Software Development €'000	Motor Vehicles €'000	Fixtures & Fittings €'000	**Total €'000**
Cost						
At 1 January 2009	508	383	-	47	197	**1,135**
Additions	142	-	119	-	4	**265**
Disposals	-	-	-	-	-	**-**
At 31 December 2009	650	383	119	47	201	**1,400**
Depreciation						
At 1 January 2009	437	383	-	12	170	**1,002**
Charge for Year	92	-	-	12	11	**115**
Disposals	-	-		-	-	**-**
At 31 December 2009	529	383	-	24	181	**1,117**
Net Book Amount						
At 1 January 2009	71	-	-	35	27	**133**
Net Movement for Year	50	-	119	(12)	(7)	**150**
At 31 December 2009	121	-	119	23	20	**283**

The cost of Tangible Fixed Assets is written off in equal instalments over their expected useful lives as follows:

(i)	Computer Equipment & Computer Software	3 years
(ii)	Motor Vehicles	4 years
(iii)	Fixtures & Fittings	5 years

Note - Computer Software in Development is only depreciated when ultimately commissioned.

Notes to the Accounts

For the year ended 31 December 2009

		2009	2008
		€'000	€'000
6	**Grants**		
	(a) Analysis of Grants Paid		
	Biotechnology Grants	**76,494**	69,673
	Information and Communications Technology Grants	**66,485**	67,821
	Research Frontiers Grants	**22,710**	22,644
	Charles Parsons - see Note 6 (c) below (Republic of Ireland only)	**5,612**	-
	Total	**171,301**	160,138

Grants are payable to Irish third level institutions to carry out world class basic research projects.

	(b) Grant Commitments (including Charles Parsons)		
	Outstanding Grant Commitments as at 01 January	**477,623**	411,317
	Grants Approved during the year	**96,016**	243,548
	Charles Parsons Energy Awards (see 6 (c) below)	**11,809**	-
	Decommitments during the year	**(12,201)**	(17,104)
	Grant Payments made in the year	**(165,688)**	(160,138)
	Charles Parsons Energy Award Payments (see 6 (c) below)	**(7,873)**	-
	Outstanding Commitments as at 31 December	**399,686**	477,623

	(c) Charles Parsons Energy Awards		
	Original Award Commitments - 2006	**19,682**	-
	Award Payments (Prior to SFI assuming responsibility)	**(7,873)**	-
	Value of Charles Parsons' Awards taken over by SFI	**11,809**	**-**
	Award Payments (December 2009 - Rep of Ireland) - Paid by SFI	**(5,612)**	-
	Award Payments (December 2009 - Northern Ireland) - Paid by DETE	**(2,261)**	-
	Award Payments following acquisition by SFI	**(7,873)**	**-**
	Outstanding Parsons Grant Commitments 31 Dec 2009*	**3,936**	**-**

*€1,130,112 of this is payable to research bodies in Northern Ireland

The Charles Parsons Energy Awards were made in 2006 by the Department of Communications, Energy and Natural Resources (DCENR) to seven researchers in six research institutions. Two of the research institutions, University of Ulster and Queen's University Belfast, are located in Northern Ireland.

All awards were made in Euros.

In December 2009 responsibility for the Charles Parsons awards was assigned from DCENR to the Department of Enterprise, Trade and Employment (DETE). DETE requested that Science Foundation Ireland formally manage and administer the Charles Parsons awards for the remainder of their respective terms.

The second tranche of payments for the Charles Parsons awards were due in December 2009. DETE paid the Northern Ireland research institutions and SFI paid the Republic of Ireland institutions.

Notes to the Accounts

For the year ended 31 December 2009

		2009 €'000	2008 €'000
7	**Capital Account**		
	At 1 January	**133**	137
	Transfer from /(to) Income & Expenditure Account		
	- To fund Fixed Asset acquisitions	**265**	136
	- Cost of Disposals	**-**	(128)
	- Amortised in line with asset depreciation	**(115)**	(128)
	- Depreciation on Disposals	**-**	116
	Net Movement	**150**	(4)
	At 31 December	**283**	133
8	**Accounts Receivable**		
	General Debtors	**5**	33
	Prepayments	**59**	122
	Total	**64**	155
9	**Accounts Payable**		
	General Creditors	**1**	202
	Accruals	**185**	64
	Interagency Balance	**18**	33
	Total	**204**	299

Interagency Balance relates to the balance owed by Science Foundation Ireland to Forfás at 31 December 2009, being the difference between the amount of money paid to Forfás by Science Foundation Ireland and the actual money spent by Forfás on behalf of Science Foundation Ireland.

10 Commitments under Operating Leases

Science Foundation Ireland currently has no commitments under operating leases on the building, but pays rent to Forfás as a contribution to the lease costs incurred by Forfás.

11 Taxation

Section 227 of the Taxes Consolidation Act, 1997, exempts SFI from further taxation on Case IV and Case V rental income in excess of that deducted at source.

12 Board Members - Disclosure of Transactions

In the normal course of business, Science Foundation Ireland may enter into contractual arrangements with undertakings in which Science Foundation Ireland Board Members are employed or otherwise interested. Science Foundation Ireland has adopted procedures in accordance with the guidelines issued by the Department of Finance in relation to the disclosure of interests by Board Members and these procedures have been adhered to by Science Foundation Ireland during the year.

13 Contingencies and Legal Actions

There are no contingencies or legal actions which require specific provision in the Financial Statements.

14 Approval of Financial Statements

The Financial Statements were approved by the Board of Science Foundation Ireland on 1 June 2010.

Grant Commitments and Payments Analysis 2009

2009 Payments by Institution

	€'000
University College Dublin	39,762
Trinity College Dublin	37,807
University College Cork	20,791
NUI Galway*	18,934
Dublin City University	16,796
Tyndall National Institute	12,220
University of Limerick	8,406
NUI Maynooth	8,115
RCSI	3,631
Dublin Institute of Technology	1,785
Waterford Institute of Technology	1,062
Dublin Institute for Advanced Studies	768
Dundalk Institute of Technology	287
Teagasc	235
Cork Institute of Technology	196
Athlone Institute of Technology	129
Institute of Technology Tallaght	122
Institute of Technology Sligo	117
Georgia Tech Ireland	62
Tralee Institute of Technology	56
Fighting Blindness	20
Grand Total	**171,301**

EUROPEAN REGIONAL DEVELOPMENT FUND

**Note certain awards made to NUIG are co-funded by the European Regional Development Fund and the Productive Sector Operational Programme*

2009 Payments by Programme

	€'000
Investigators	51,663
CSET	29,264
Research Frontiers Programme	27,418
SRC	27,301
STOKES	6,391
Research Professorship	4,638
PIYRA	4,231
Maths Initiative	4,072
Walton	1,736
UREKA	1,687
SIRG	1,581
Centres	1,360
Supplements	996
Engineering Professorship & Lectureship Programme	873
US-Ireland R&D Partnership	725
TIDA	585
Conference & Workshop	341
NanoSci-E+ Transnational Call	254
North-South supplement	236
Short Term Travel Fellowship	158
International Research Partnership Supplement	90
WISER	89
Total	**165,689**
Charles Parsons**	5,612
Grand Total	**171,301**

***Republic of Ireland only*

2009 Grant Commitment by Programme

Programme	€'000
Investigators	26,519
CSET	24,221
Research Frontiers Programme	14,576
SRC	12,693
SIRG	8,456
US-Ireland R&D Partnership	2,416
UREKA	1,612
Walton	1,171
PIYRA	1,060
NanoSci-E+ Transnational Call	793
Centres	657
TIDA	651
Conference & Workshop	300
North-South supplement	226
Short Term Travel Fellowship	189
International Research Partnerships Supplement	183
Maternity Supplement	164
WISER	130
Total	**96,017**
Charles Parsons Energy Awards	11,809
Grand Total	**107,826**

All amounts are inclusive of overhead where applicable

2009 Number of Awards by Institution

	No. of Grants
Trinity College Dublin	55
University College Dublin	57
NUI Galway	30
University College Cork	27
Dublin City University	19
Tyndall National Institute	15
NUI Maynooth	13
RCSI	10
University of Limerick	8
Dublin Institute of Technology	4
Waterford Institute of Technology	3
Cork Institute of Technology	2
Dublin Institute for Advanced Studies	2
Dundalk Institute of Technology	1
Fighting Blindness	1
Georgia Tech Ireland	1
Teagasc	1
Queen's University Belfast	1
University of Ulster	1
Total	**251**

2009 Grant Commitments Number of Awards by Programme

Programme	No. of Grants
Research Frontier Programme	68
Conference & Workshop	30
Short Term Travel Fellowship	25
Investigators	22
SIRG	16
Walton	16
Maternity Supplement	11
WISER	10
TIDA	8
WISER - Summer Placement	8
Charles Parsons Energy Awards	7
UREKA Site	6
North-South supplement	4
US-Ireland R&D Partnership	4
NanoSci-E+ Transnational Call	3
CSET Supplement	2
SRC	2
UREKA Supplement	2
Centres	1
CSET	1
CSET Industry Supplement	1
International Research Partnership Supplement	1
International Research Partnerships Supplement	1
PIYRA	1
US-Ireland Planning	1
Total	**251**

Research for Ireland's Future

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Science Foundation Ireland

EUROPEAN REGIONAL DEVELOPMENT FUND

NDP National Development Plan
Transforming Ireland