

Science Foundation Ireland  
The National Foundation for Excellence in Scientific Research

# Annual Report and Accounts 2005



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## Vision

Through strategic investments in the people, ideas and partnerships essential to outstanding research in strategic areas, Science Foundation Ireland will help build in Ireland research of globally recognised excellence and nationally significant economic importance.

## 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 Board



**Dr Patrick Fottrell,**  
**Chairperson, former**  
**President, National**  
**University of Ireland**  
**(NUI), Galway.**

A former Professor of Biochemistry at NUI Galway, Dr Fottrell also served as Chairman of the Dublin Institute of Technology, the Irish Council of Bioethics and the Ireland-USA Fulbright Commission. Dr Fottrell is currently Chairman of Westgate Biological. He is a member and former Vice-President of the Royal Irish Academy. Dr Fottrell obtained his B.Sc. and M.Sc. from University College Cork, his Ph.D. from the University of Glasgow, and his D.Sc. from the National University of Ireland. He has been a visiting Professor at Harvard, Munich, and Asahikawa universities.



**Dr Frank McCabe,**  
**Deputy Chairperson,**  
**SFI.**

Dr Frank McCabe is a former Vice President of INTEL Corporation with responsibility for Technology and Manufacturing in Europe and East Coast of USA. Previously, he served as Executive Vice President of Digital Equipment Corporation in various roles including Research and Development, and overall responsibility for the mid to high end business of the company. Prior to that he served as Managing Director of GE's Semiconductor and Consumer Electronics Business in Europe. He received Honorary Doctorates from National University of Ireland (NUI) and Dublin Institute of Technology (DIT) and is a Fellow of the Institute of Engineers and Academy of Engineering.



**Dr William C. Harris,**  
**Director General, SFI.**

Dr Harris's career includes service as the Director for the Mathematical and Physical Sciences Directorate of the National Science Foundation (NSF), and as founding President and Executive Director of Columbia University's Biosphere 2 Centre (B2C) in Arizona, and as Vice President for Research and Professor of Chemistry at the University of South Carolina (USC). Dr Harris is also an elected fellow of the American Association for the Advancement of Science. In 2005, he was elected as a member of the Royal Irish Academy.



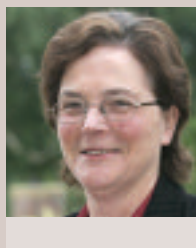
**Mr Erich Bloch, Principal,**  
**Washington Advisory Group.**

Mr Bloch is a former Director of the U.S. National Science Foundation (NSF). Previously, he served at IBM in roles including head of the Solid Logic Technology Programme, which produced the microelectronic technology for IBM's System/360 computer. An elected member of the US National Academy of Engineering, Mr Bloch has also received the USA's most prestigious science award, the Presidential Medal for Science and Technology.



**Mr Ned Costello, Assistant**  
**Secretary General, Science,**  
**Technology and Intellectual**  
**Property Division, Department of**  
**Enterprise, Trade and**  
**Employment.**

Ned Costello is responsible for the development, promotion and co-ordination of Ireland's Science, Technology and Innovation Policy and Ireland's policy in international research activities. He is Chair of the Interdepartmental Committee on Science, Technology and Innovation.



**Dr Jane Grimson, Head of the Department of Computer Science, Trinity College Dublin.**

Before her current role Dr Grimson was Vice Provost of Trinity College from 2001-2005, Dean of the Faculty of Engineering and Systems Sciences from 1996-1999, and Pro Dean of Research from January to August 2001. Dr Grimson was also the first female President of the Institution of Engineers of Ireland (1999-2000) and is a Fellow of the Royal Academy of Engineering.



**Dr Jackie Hunter, Senior Vice President and Head of Neurology & GI Centre of Excellence for Drug Discovery, GlaxoSmithKline.**

Dr Hunter has an excellent record of achievement as a researcher in both academia and industry. Before taking her current role at GlaxoSmithKline (GSK), she was Vice-President and Head of Biology, Neurology & GI Centre of Excellence for Drug Discovery. Prior to this she was Group Director for Neurobehavioural Research at SmithKline Beecham and Director of Neurology Research for the same organisation. Dr Hunter is also a visiting professor at the Institute of Psychiatry.



**Dr Kristina Johnson, Dean of the Pratt School of Engineering, Duke University, North Carolina.**

Dr Johnson is an internationally known expert in optics, signal processing and computing and Director Emeritus of the Optoelectronics Computing Systems Centre at the University of Colorado. Dr Johnson holds approximately 43 patents, and has helped start five companies. She is a Board Director of Guidant, AES Corporation, and Minerals Technologies.



**Peter MacDonagh, Research Consultant**

Peter MacDonagh was educated at UCD and Cambridge University. In 1997, he became the special advisor to the Minister for Education & Science, where he was centrally involved in the development and implementation of policy in relation to research initiatives including the establishment of the Programme for Research in Third Level Institutions (PRTLII) and the Irish Research Council for the Humanities and Social Sciences (IRCHSS). During 2000-2002 he was a special advisor to the Taoiseach, where amongst various other areas, he had responsibility for education and research policy.



**Dr Jim Mountjoy, Former CEO Euristix Ltd.**

Dr Mountjoy founded Euristix, an innovative supplier of advanced network management software solutions for the telecommunications industry. Euristix became a market leader and was acquired by Fore Systems in February 1999, which in turn was subsequently acquired by Marconi. Dr Mountjoy is currently involved in a non-executive capacity with a number of software companies and is an advisory board member of a number of Venture Capital companies.



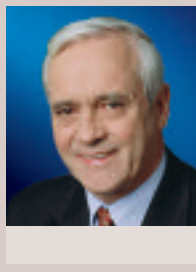
**Dr Martina Newell-McGloughlin,  
Director of the Biotechnology  
Research and Education Program at  
the University of California (UCBREP).**

Dr Newell-McGloughlin, an internationally recognised authority on biotechnology, directs the UCBREP, which covers all ten campuses of the University of California and the three national Laboratories, Lawrence Berkeley, Lawrence Livermore and Los Alamos. She is also Co-Director of a (US) National Institutes of Health Training Program in Biomolecular Technology, one of only three in California, the others being at UC Berkeley and Stanford University. In addition she is an adjunct Professor of Plant Pathology. In 2003, the US Council for Biotechnology named her one of the DNA Anniversary Year Faces of Innovation and in 2005 she received the BIOLINK USA-Ireland Irish America Life Science Award.



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

Dr Thornhill is a former Executive Chairman of the Higher Education Authority and a former Secretary General of the Department of Education and Science. He has been a leading figure in the development of education and research policy in Ireland – particularly in the development and operation of the Programme for Research in Third Level Institutions (PRTLII). He is a board member of a number of organisations in the Irish public and private sectors and is involved in a consultancy capacity with a number of organisations



**Mr John Travers, Business and  
Economic Consultant and former CEO  
of Forfás and SFI.**

As CEO of Forfás, Mr Travers led the State's policy and advisory board for industrial development, science, and technology, and the body in which the main legal powers for State industrial promotion and technology development are vested. In 2000-2001, he also acted as CEO of SFI during its start up phase.

# Members of Committees of the Board 2005

## 1. BOARD SUB GROUP ON PROGRAMME GRANTS

Martina Newell-McGloughlin (Chair); Jane Grimson; Kristina Johnson; Don Thornhill; William Harris and Jackie Hunter.

## 2. SFI AUDIT COMMITTEE

Frank McCabe (Chair); Gillian Dennehy (Department of Enterprise, Trade & Employment); Don Thornhill and Jim Mountjoy.

## 3. MANAGEMENT DEVELOPMENT AND REMUNERATION COMMITTEE

Pat Fottrell (Chair); John Travers; Erich Bloch; and Ned Costello

### **Note:**

In line with the normal process of rotational retirement in accordance with the Industrial Development (Science Foundation Ireland) Act 2003 Jim Mountjoy was chosen for retirement and was subsequently re-appointed.

Erich Bloch resigned from the Board of SFI in July 2005.

Peter McDonagh was appointed to the Board in September 2005.

# Chairperson's Statement



**I am pleased to introduce the Annual Report and Financial Statements for SFI for 2005. Over the past number of years Irish scientific research has undergone considerable change and as this report demonstrates, SFI has assumed a significant leadership role in this transformation. SFI has therefore helped to internationalise the Irish research system both by attracting scientists to work in Ireland and by facilitating and encouraging international association. Science and engineering affects the way we live, work and communicate, from medicine to financial services and telecommunications, therefore the role of scientific research and discovery has been crucial to the development of successful modern economies.**

The Irish Government has clearly recognised that significant and sustained investment in scientific research will help underpin future economic prosperity. Overall investment in research and development (R&D) in Ireland has increased substantially in recent years. This increase is as a direct result of the substantial SFI investment together with other investments such as the Programme for Research in Third Level Institutions (PRTL) operated by the Higher Education Authority (HEA).

The recently published new Government Strategy for Science, Technology & Innovation demonstrates the ongoing Government commitment to accelerating Ireland's progress towards developing a knowledge based economy. The Government is therefore, committed to sustaining research funding, based on scientific excellence and this will lead to positive economic development.

I would therefore like to acknowledge and thank the Taoiseach, Bertie Ahern, TD and the Minister for Enterprise, Trade and Employment, Micheál Martin TD, the Tánaiste and Minister for Health and Children, Mary Harney TD, other Government Ministers and Departments for their support and ongoing commitment to SFI during the last year.

Since its establishment SFI has awarded funding commitments amounting to more than €550 million across 830 research projects, and now indirectly engages over 1,400 researchers. In 2005, SFI funded 394 awards involving a financial commitment of over €122 million to 18 higher education institutions throughout the country.

Against this overall background it is imperative that research institutions and funding agencies cooperate with each other and have a clear commitment to collaborative initiatives to ensure the widest economic and societal benefits for Ireland. I acknowledge and appreciate the support of the third-level education sector, other state agencies and bodies, and in particular, Forfás, IDA Ireland, Enterprise Ireland (EI) and the HEA.

The partnership that has emerged between SFI and the other industrial development agencies particularly IDA Ireland and EI, has contributed to the establishment of substantial collaborative research projects between SFI researchers and industry. Interaction with industry partners is crucial for the exploitation and potential commercialisation of research results.



William Harris, Director General SFI, Micheál Martin, T.D., Minister for Enterprise, Trade & Employment, and Pat Fottrell, Chairperson, SFI, pictured together with teachers following the presentation of Certificates to teachers who participated in the SFI Secondary Teacher Assistant Researchers (STARs) programme in UCC during Summer 2005.



SFI researchers are therefore becoming more informed about industrial priorities and research challenges and companies benefit from this collaboration by sharing the latest academic research results.

As Chairman, I believe that the Board has performed to a high standard and guided the organisation successfully over the period. I would like to express my thanks and appreciation to my fellow Board Members, in particular Mr Erich Bloch, former Director of the US National Science Foundation (NSF), who retired from the Board in July 2005. Erich has made an enormous contribution to the establishment of SFI and a lasting contribution to the development of science and engineering research in Ireland

I would like to thank Dr William Harris, Director General, and the staff of SFI for their outstanding commitment to the organisation during 2005. Dr Harris informed the Board in 2005 that he would not be seeking a renewal of his contract with SFI and he is now returning to the US.

Dr Harris has made an enormous contribution to Irish research and to acknowledge his role and contribution, I will quote from the recent report of the International Evaluation Panel on the operation of SFI: **–“Science Foundation Ireland the First Years 2001-2005”**. The report highlights the significant leadership role played by the Director General in the early success of SFI. *“It was universally acknowledged in all the Review Panel’s interviews that Dr Harris brought exceptional qualities of energy, enthusiasm and commitment to SFI. His dynamism has been a crucial element in shaping the character of the organization over the first few years and in enabling it to achieve so much.”*

On behalf of the SFI Board I wish Dr Harris every success in his new role.

The Report of the International Evaluation Panel, referred to above acknowledges that SFI has been a most positive driving force for change in the Irish Research System in recent years. The Report points out that impressive progress towards developing a strong research capability in biotechnology and ICT has been achieved in a very short time. SFI will now take on board the recommendations set out in the Report and has mechanisms in place for their implementation.

SFI, as it moves forward to the next phase of its development will continue to focus on its goal of fostering a world class research culture by investing in superb individual researchers and their teams. This is fully in line with the recommendations set out in the above report which states that “It is of paramount importance that SFI awards continue to be decided on the criterion of research excellence above all else.”

I am confident that SFI will play an individual and indeed collective part with the other Government funding agencies and departments in order to make a substantial contribution towards the goal of making Ireland a knowledge based economy.

**Patrick Fottrell**  
Chairperson  
SFI

# Director General's Statement



**The year 2005 represents my final full calendar year as Director General of Science Foundation Ireland as my five-year tenure draws to a close. Since joining in September 2001, the over-riding goal for SFI has been the creation of a robust and sustainable research community in Ireland, capable of competing with the best in the world and establishing Ireland as an international location to carry out research.**

SFI focuses on making it possible for Ireland to attract and retain the best research talent it can and to provide them with the appropriate environment in which to undertake research and contribute to economic prosperity.

An evaluation of the first years of the operation of SFI "Science Foundation Ireland the First Years 2001-2005" was published in December 2005. This Evaluation Report, which was commissioned by Forfás, was the culmination of a substantial evaluation process carried out by an International Panel led by Professor Richard Brook, Director of the Leverhulme Trust in London. The Evaluation Panel endorsed the establishment and strategic direction of SFI and I would like to highlight some of the key findings of the Panel:

- SFI has been a positive driving force for change in the Irish research system in recent years and impressive progress towards developing a world-class capability in Biotechnology and ICT has been achieved in a short time;

- International peer review, which is central to SFI's objective of supporting research excellence, is being operated by SFI to the highest international standards; and
- SFI has played a major role in helping to internationalise the Irish research system, both by attracting people to work in Ireland and by facilitating and encouraging international associations.

The report concludes that this is a long-term plan and that the results of SFI investments in scientific and engineering research will typically take between five to ten years to materialise.

Up to the end of 2005, SFI had invested in excess of €550 million across a wide range of research projects. SFI supports 90 Biotechnology (BioT) senior research investigators and 81 Information and Communications Technology (ICT) senior research investigators, and through these investments it indirectly engages over 1,400 researchers across these two broad sectors.

The launch of the SFI/DELL Women in Engineering Scholarship. William C Harris, Director General, SFI, Fiona Larkin, student at Colaiste Chiarain Limerick; Niamh Lehane, DELL engineer; and Michael Dell, chairman of Dell.



I am confident that these investments will produce a new generation of discoveries and inventors that will bring significant societal benefits to Ireland. SFI anticipates significant economic returns to Ireland from this investment over the next five to ten years. The knowledge economy requires people with much higher skill levels and SFI's investment in research is focused on upgrading the skills and knowledge of people working in the Irish economy. The teaching and training of students and equipping them with the expertise for high-skilled jobs will be a significant long term benefit to Ireland.

In consultation with the research community and with the approval of the SFI Board, the SFI portfolio of funding programmes has expanded over the past five years.

It now includes the SFI Principal Investigator Programme; ETS Walton Visitor Awards; President of Ireland Young Researcher Awards; Women in Science & Engineering Research; the Research Frontiers Programme; SFI Research Professorships; the Centres for Science, Engineering and Technology (CSET) Programme and Secondary Teacher Assistant Researchers (STARs) and Undergraduate Research Experience & Knowledge Award (UREKA).

The SFI CSET programme funds centres that can exploit opportunities for discovery and innovation by linking researchers in academia and industry.

SFI's current CSETs have brought together outstanding researchers from around the world and include partnerships with companies such as Bell Labs, Hewlett Packard, Intel, Medtronic and Procter & Gamble.

In 2005, SFI announced the establishment of two new CSETs. In September, the Biomedical Diagnostics Institute (BDI) at Dublin City University was launched with an award of €16.5m. This ground-breaking research centre, under Director Prof Brian MacCraith, will carry out cutting-edge research to develop a range of next-generation biomedical diagnostic devices that will directly affect the quality of people's lives worldwide over the coming decades.

In November 2005, Lero, the Irish Software Engineering Research Centre, was launched with an award of €11.7m. Lero, under the direction of Prof Kevin Ryan, is located primarily at the University of Limerick and provides the focal point for a community of software engineering researchers to build, maintain and evaluate software that will deliver a sustained competitive advantage for the entire Irish software sector.



Pupils of Ovens National School Cork, who took part in the Science Foundation Ireland, schools outreach programme at the Alimentary Pharmabiotic Centre (APC) in UCC. Pupils pictured with William Harris, Director General, SFI, teachers Sarah O'Rourke and Declan Murray with Sally Cudemore of the APC.

There were other significant milestones in 2005, two of which deserve particular mention for SFI.

- Approval was given for 128 research proposals from academic scientists and engineers under the Research Frontiers Programme 2005. This programme aims to support the very best research in a broad range of disciplines in Science, Mathematics and Engineering.
- Fifty second-level teachers from around the country participated in the Secondary Teacher Assistant Researchers (STARs) Programme, 2005. The STARs programme is an initiative through which teachers can receive support to conduct research within an SFI-funded research team during school holiday periods for a period of between six to eight weeks.

Industry collaboration remains central to SFI's goals. Such high level collaborations are underway with major international companies such as Wyeth, IBM, Sun Microsystems and Siemens and include a range of indigenous Irish companies such as Alimentary Health and Sigmoid Biotechnologies. SFI will continue to work closely with industry and the other industrial development agencies to encourage this collaborative process which is a vital part of bringing innovation to the market place.

SFI has continued to operate in close partnership with the Universities and Institutes of Technology, as well as IDA Ireland, Enterprise Ireland, Forfás, HEA and the Health Research Board. I would like to thank all of the bodies and organisations that have assisted SFI during the past year for their cooperation and support.

I would also like to thank the Board and the staff of SFI. Their contributions were essential to the development and success of the organisation throughout the years.

Finally, by investing in the best people with the best ideas, SFI will build the reservoir of intellectual capital required to establish Ireland as an international location for research. SFI will therefore continue to develop and deliver on the challenging task assigned to it by the Irish Government of creating a world-class research community in Ireland.

**William Harris**  
Director General  
SFI

# Overview of SFI Activity 2005

Investment by SFI in Irish academic research is establishing the Irish research community as global leaders in Biotechnology (BioT) and Information & Communications Technology (ICT) sectors. In 2005, SFI invested a record €122 million in funding world-class scientific and engineering research in third level academic institutions in Ireland. Funding has increased steadily since the establishment of SFI in 2000, with funding of over €550 million now committed. This investment in creating knowledge will secure the discoveries that will underpin future economic growth and prosperity in Ireland.

## Highlights for 2005 include:

- ❑ The launch of two new Centres for Science Engineering & Technology (CSETs), ie. the Biomedical Diagnostics Institute (BDI) at Dublin City University and Lero, the Irish Software Engineering Research, based at University of Limerick.
- ❑ Investment of over €4 million in five leading young ICT and Biotechnology researchers under the **President of Ireland Young Researcher Award (PIYRA)** programme.
- ❑ Support for 128 researchers in 11 research institutions under the **Research Frontiers Programme**, which supports high quality, novel exploratory research in the third-level sector in fields embracing the Bio Sciences, Chemistry, Earth Sciences, Mathematics and Computer Science, Physics and Engineering.
- ❑ The launch of a new **SFI Mathematics Initiative** aimed at supporting excellent mathematics research that has a potential impact on enterprise, industry, science, engineering as well as improving mathematics education.
- ❑ The launch of the **Women in Science & Engineering Research programme**, which aims to increase the number of women in scientific and engineering research.
- ❑ The announcement of a four-year **research collaboration** agreement between Dublin City University (DCU) and Wyeth valued €4million, into the production of biopharmaceuticals.
- ❑ Fifty secondary teachers participated in the **Secondary Teacher Assistant Researchers (STARs) Programme**, spending the summer working with SFI researchers and research teams in third level institutions.
- ❑ Over 200 undergraduate students participated in the **Undergraduate Research Experience & Knowledge Award (UREKA)**.
- ❑ Overall SFI funded 394 awards to 18 institutions throughout the country.
- ❑ SFI attracted nine overseas based researchers to Irish research bodies. This included Prof Luke Lee who relocated from Berkeley to DCU and Dr William Harrison who moved from IBM (US) to TCD.

# SFI Programmes

## (a) SFI Centres for Science, Engineering and Technology (CSETs)

The CSET Programme is designed to build a critical mass of excellence for Ireland in areas of BioT and ICT that will shape the future of science and engineering. The objective of this programme is to fund scientists who will collaborate with industry in developing internationally competitive research clusters allied to industry.

In 2005, the SFI Board approved two new CSET awards to the Biomedical Diagnostics Institute and Lero – the Irish Software Engineering Research Centre.

### 1. Biomedical Diagnostics Institute (BDI)

SFI awarded €16.5 million to the Biomedical Diagnostics Institute, under the direction of Prof Brian MacCratih, at Dublin City University, which carries out cutting-edge research to develop a range of next-generation biomedical diagnostic devices.

The initial six core industry partners are Becton Dickinson and Co, Analog Devices Inc, Hospira Inc, Inverness Medical Innovations Inc; Enfer Technologies Ltd and Amic AB.

The following Irish academic institutions are also participating in BDI: The National Centre for Sensor Research (NCSR) at Dublin City University; The National Centre for Biomedical Engineering Science (NCBES) at the National

University of Ireland Galway, Royal College of Surgeons in Ireland (including the Clinical Research Centre (CRC) at Beaumont Hospital, Dublin) and the Tyndall National Institute (TNI) at University College Cork.

### 2. Lero – the Irish Software Engineering Research Centre

SFI awarded €11.7 million to Lero - the Irish Software Engineering Research Centre, under the direction of Prof Kevin Ryan, based at University of Limerick. Lero is a national centre for software engineering research, which will deliver a sustained competitive advantage for the entire Irish software sector.

The Industrial partnership includes Analog Devices, Ashling Microsystems, Beaumont Hospital, Robert Bosch, Brightworks, IBM Ireland, Intel Ireland, Iona Technologies, KUGLER MAAG CIE, Motorola, Piercom Ltd, QAD Ireland Ltd, and Silicon & Software Systems.

Academic partners involved in Lero include University of Limerick (Consortium Leader), Dublin City University, Trinity College Dublin and University College Dublin.

**On the occasion of the announcement of SFI support to Lero - Irish Software Engineering Research Centre, Pictured left to right Micheál Martin, TD, Minister for Enterprise, Trade and Employment, Prof Mark Keane, ICT Director, SFI and Prof Kevin Ryan, Centre Director, Lero.**





On the occasion of the announcement of SFI funding to the Biomedical Diagnostics Institute (BDI) at Dublin City University (DCU). Pictured left to right William Harris, Director General, SFI; Prof Brian MacCraith, Director BDI; Micheál Martin, TD, Minister for Enterprise, Trade & Employment and Pat Fottrell, Chairperson, SFI.

3. The CSET Programme is the most significant commitment to research made by SFI. SFI current CSETs have brought together researchers from Ireland and around the world to establish highly sophisticated, multi-faceted teams in partnership with leading local and multinational companies. These centres are now undertaking cutting-edge research of a world-class standard

### Existing SFI CSETs

- **Centre for Telecommunications Value-Chain-Driven Research (CTVR)** at Trinity College Dublin which involves industrial collaboration with Bell Labs & Lucent Technologies. The research undertaken in CTVR focuses on advancements in product engineering, manufacturing and value/supply chain techniques, tools and technologies. The expertise and know-how developed in the centre will facilitate, stimulate and encourage design and innovation and allow for new products to be brought to the market more quickly and more efficiently. In 2005, the centre had 50 researchers and support staff and 22 PhD students.
- **Digital Enterprise Research Institute (DERI)** at NUI Galway collaborates with Hewlett Packard. DERI focuses its research and innovation around new methods for eWork and eCommerce. The objective is to bring current web technology to its full potential via the Semantic Web, Web Services, and Semantic Web Services. In 2005, DERI had 50 researchers and support staff and 17 PhD students.

- **Regenerative Medicine Institute (REMEDI)** at NUI Galway collaborates with Medtronic in Galway. Researchers at REMEDI work together to combine the technologies of gene therapy and adult stem cell therapy with the aim of regeneration and repair of tissues. In 2005, REMEDI had 76 researchers and support staff and 20 PhD students.
- **Alimentary Pharmabiotic Centre (APC)**, based at University College Cork. APC is conducting research into the causes and potential cures for inflammatory bowel disease, Crohn's disease and ulcerative colitis from an immunological perspective, and using foods (neutraceuticals) as a potential form of treatment. APC's industrial collaboration involves Proctor & Gamble, Alimentary Health, and Teagasc. In 2005, APC had 118 researchers and support staff and 23 PhD students.
- **Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN)** TCD collaborates with Intel Ireland. CRANN is developing tools and techniques to build new structures and devices atom by atom with endless possibilities for BioT and ICT. Examples of the impact of this technology include next generation microelectronics technologies and new drug delivery systems. In 2005, CRANN had 50 researchers and support staff and 18 PhD students.

**Dr Cormac Taylor**, Conway Institute, UCD whose research focuses on the cellular response to oxygen deprivation (hypoxia), was awarded an SFI funded Industry Supplement to support his joint research project with Sigmoid Biotechnologies Ltd (Sigmoid), an Irish Biotech company. Sigmoid Biotechnologies is developing a novel drug-delivery technology, LEDDS, which will improve the effectiveness, safety and convenience of existing drugs and enhance next-generation drug development. Taylor's group has developed an innovative intestinal model of drug uptake. "The proposed collaboration is synergistic, providing my lab with a powerful research tool and Sigmoid Biotechnologies with a method to screen its propriety formulations. In combination, this will allow the development of new ways to enhance drug delivery in a variety of disease states resulting in increased therapeutic efficacy."

(Pictured l- r) Ivan Coulter, co-founder Sigmoid Biotechnologies; Dr Maurice Treacy, Director Bioscience & BioEngineering, SFI and Dr Cormac Taylor, UCD.



## (b) President of Ireland Young Researcher Award (PIYRA) 2005

SFI awarded a total of €4 million to five leading young ICT and BioT researchers under the President of Ireland Young Researcher Award (PIYRA) scheme over five years. PIYRA was launched in 2004 by SFI with the support of the President of Ireland, Mary McAleese to highlight the critical roles played by innovative young researchers in developing contemporary research and education programmes for Ireland.

The 2005 awardees were selected following international peer review from a group of 41 high-calibre applicants. Three are based at Irish Universities and two have relocated to Ireland from the USA. The award recipients were selected on the basis of exceptional accomplishments early in their careers in engineering and science disciplines that underpin BioT and ICT and creative research plans that are built on work that has already attracted international attention.

### PIYRA Award Recipients 2005

**Dr David P Finn,**

NUI Galway

**Research Title:**

Control of endogenous analgesia by the brain endocannabinoid system: sites and mechanisms of action.

**Dr Aoife McLysaght,**

Trinity College Dublin

**Research Title:**

Gene gains, losses and relocations during vertebrate evolution.

**Dr Jarlath E Nally,**

From UCLA to University College Dublin

**Research Title:**

Characterization of the proteome and transcriptome of *Leptospira* during acute and chronic infection.

**Dr Scott Rickard,**

University College Dublin

**Research Title:**

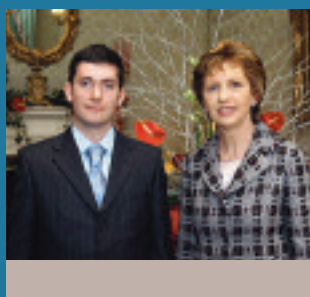
Time-frequency/time-scale analysis, sparse signal representation theory, and finite field theory for signal processing applications.

**Dr Jiri Vala,**

from UC Berkeley to NUI Maynooth

**Research Title:**

Topological Phases and Topological Quantum Computation.



**Dr David Finn**, SFI President of Ireland Young Researcher Award, NUI Galway. Dr Finn's research aims to increase our understanding of the neurobiological mechanisms through which stress impacts on pain, inflammation, mood disorders and cognition. "My research group will be an authoritative source of expertise on pain and anxiety and will generate a wealth of new knowledge which will contribute significantly to the development of new drugs, supporting ongoing research by the pharmaceutical industry in this area."

Dr David Finn with Mary McAleese, President of Ireland.





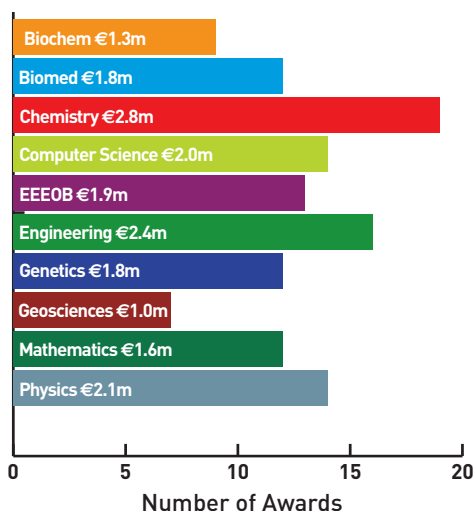
On the occasion of the announcement of a four year research collaboration project in the production of biopharmaceuticals between DCU and Wyeth. The research project is receiving €4million from SFI. L-R: Dr Maurice Treacy, Director, Bioscience & Bioengineering, SFI; Prof Martin Clynes, Director of NICB at DCU and Dr Brendan Hughes, Development Director, Wyeth.

### (c) Research Frontiers Programme (RFP)

The Research Frontiers Programme supports excellent research in a broad range of scientific and engineering disciplines including those that underpin Biotechnology and ICT.

There were 249 full proposals submitted in January 2005 under RFP2005 and following review by ten panels of international reviewers, 128 awards were made. The average award size was €147,000 in direct costs over three years and the overall success rate was 18.3%.

#### Research Frontier Programme – Breakdown of Awards By Discipline



A new call for proposals for RFP2006 was made in May 2005 with a September 2005 deadline for submission of pre-proposals. There was a significant increase in the number of pre-proposals submitted from 698 in RFP2005 to 746 for RFP2006. The review panels met in October and November 2005 and following the panel recommendations, 265 applicants were invited to submit full proposals.

### (d) SFI Mathematics Initiative

Given the importance of Mathematics in a broad range of science and engineering disciplines, a new initiative was developed by the Frontiers Engineering & Science Directorate in 2005. With significant input from the Irish Mathematics community, a new programme, the SFI Mathematics Initiative, was created to encourage mathematical research that will have a significant impact on enterprise, other science disciplines and on mathematical education. The SFI Board approved a budget for this Mathematics Initiative of €10m over the next 5 years. The results of this call for proposals and the assessment procedure will be addressed in the 2006 Annual Report of SFI.



**Dr Dane Flannery**, Department of Mathematics, NUI, Galway, funded under the Research Frontiers programme 2005. "The funding has significantly supported my research in computational group theory, leading to new results in current fields of interest, and additionally opening up new areas of investigation. Most importantly the funding has given me the opportunity to hire a specialist post doctoral researcher for collaborative work, and has supported scientific contacts at other institutions. Results obtained so far include algorithms for computing with matrix groups over arbitrary commutative domains (previously an unstudied area), and new classification results for linear groups. Two publications have arisen from the project to date, and several more papers are in preparation."



**Dr Derek Sullivan, Dublin Dental School & Hospital in TCD.** Dr Sullivan's research focuses on the molecular analysis of virulence in the yeast pathogens *Candida albicans* and *Candida dubliniensis*. As the name suggests *C. dubliniensis* was identified as a new species by Dr Sullivan and his collaborators at TCD. Although very closely related the two species differ in the spectrum of diseases they cause. While both species are a common cause of oral thrush in HIV-infected individuals, in contrast to *C. albicans*, *C. dubliniensis* is only very rarely associated with life-threatening systemic candidal infections. "We are working to further understand the pathogenicity of these two yeast pathogens through the use of comparative genomics and microarray technology".

## (e) Secondary Teachers Assistant Researchers (STARS)

In 2005, fifty second level teachers participated in the Secondary Teacher Assistant Researchers (STARS) programme, which provides support for second-level teachers to conduct research alongside an SFI-funded researcher or research team during school holiday periods for up to eight weeks. The goal is to help teachers renew their interest in science as researchers, connect them with the science faculty in universities and institutes of technology, and enhance the teaching of science across the educational system.

## (f) Undergraduate Research Experience & Knowledge Award (UREKA)

The Undergraduate Research Experience & Knowledge Award (UREKA) Programme offers undergraduate students from Ireland and abroad the opportunity to work in research and to acquire a range of scientific skills during a ten to twelve week period during the summer. Students get the chance to conduct an independent research project within a cutting edge research group.

Under the 2005 UREKA call, a total of 22 applications were received for UREKA Sites. Following review by an international panel, 5 Sites were selected for funding, for a three year period, at a total cost of €1.7million. This will enable a total of 203 undergraduate students to participate in research during the summer period in 2005-2007.

In addition to the UREKA Sites, in 2005 SFI also funded UREKA Supplements which enabled 85 undergraduate students to participate in research for the summer of 2005.

## (g) Programme to Address the Under-Representation of Women in Irish Science and Engineering Research

In April 2005, Mr Micheál Martin TD, Minister for Enterprise, Trade & Employment, announced three SFI funded programmes aimed at addressing the under-representation of women in Irish science and engineering research and management. They are:

- **The SFI Principal Investigator Career Advancement Award** – The aim of this award is to provide assistance to academics in getting their research career back on track following maternity, adoptive, carers or parental leave.

### Women to be Encouraged to Return to Research

Pictured at the launch of the Women in Science & Engineering Programme are Prof Jane Grimson, SFI Board Member, Micheál Martin, Minister for Enterprise, Trade & Employment and a group of SFI funded women researchers.



■ **The SFI Planning Grant and Institute Development Award** – This will provide each research body with the opportunity to conduct an assessment of women’s participation in science and engineering research activities and research management.

■ **The SFI Young Women into Engineering Scholarship**, in partnership with Dell, this scheme aims to identify and encourage more high achieving girls into third level four year engineering degree courses and to support them during their undergraduate career.

SFI awarded eleven Institute Planning Grants in June 2005. Further awards under the programme will be made in 2006.

## (h) International Collaboration

### ■ **China Ireland Agreement on Research Collaboration**

During the Trade Mission to China by the Taoiseach in January 2005, Dr William Harris, Director General signed a new research cooperation agreement between SFI and the Chinese National Science Foundation (NSFC). The agreement aims to maintain and develop co-operative research activities in the fields of science and engineering within the framework of the joint research collaboration agreement on Science and Technology between the Government of the People’s Republic of China and the Government of Ireland, signed in 2002. Initially, collaborative activities will be undertaken in the fields of BioT, ICT and New Materials.

As part of this process, eight SFI-funded research scientists together with 12 Chinese scientists attended a two day workshop in Beijing, China on May 10th and 11th, 2005. The key objectives of the workshop were to foster closer collaboration between Irish and Chinese scientists/institutions and to expose Irish

researchers to the vast and rapid economic and societal change that are occurring in China. A Chinese delegation visited Ireland in November, 2005.

### ■ **SFI Participation on International Bodies**

The European Molecular Biology Laboratory (EMBL) is a non-profit, basic research institute funded by 19 member states. EMBL’s mission is to perform basic research in molecular biology, to train scientists, students and visitors at all levels, to offer vital services to scientists in the member states, and to develop new instruments and methods in the life sciences, and technology transfer. EMBL has 80 independent research groups covering the spectrum of molecular biology. The Laboratory has five locations, with headquarters in Heidelberg, Germany, and ‘outstations’ in Hinxton, UK [the European Bioinformatics Institute], Grenoble France, Hamburg Germany and Monterotondo near Rome. Ireland Joined EMBL in 2003 and SFI is Ireland’s scientific representative.

SFI is also the Irish representative on the ‘European Strategy Forum on Research Infrastructures (ESFRI)’ steering Group for Biological and Medical Sciences (BMS).

ESFRI’s remit is to prepare a European Roadmap for research infrastructure and to facilitate a strategic approach to decisions about research infrastructures by member/associated states and by the European Commission.

# Attracting Researchers to Ireland

SFI's programmes have been designed to assist Irish Research bodies attract outstanding researchers to their institutions from outside of Ireland. During 2005, nine researchers were attracted to Irish research bodies. SFI specifically focuses on recruiting to Ireland researchers or research teams whose accomplishments, potential and recognition by international peers place them amongst the top tier in their disciplines.

SFI Research Scientist	Programmes	From Research Body/Industry	To Research Body
<b>ICT Researchers</b>			
Dr Gregory Provan	Investigator	Rockwell Inc. USA	UCC
Prof Klaus Pohl	Investigator	University of Essen Germany	UL
Dr William Harrison	Research Professor	IBM (US)	TCD
Dr Jiri Vala	PIYRA	UC Berkeley	NUI Maynooth
<b>Biotechnology Researchers</b>			
Dr Noel Caplice	Investigator	Mayo Clinic	UCC
Dr Laurence Egan	Investigator	Mayo Clinic	NUI Galway
Dr Jarleth Nally	PIYRA	UCLA	UCD
Prof Luke Lee	Research Professor	Berkley	DCU
Dr Michael Scott	Investigator	University of California, San Francisco	UCD



Dr Jiri Vala, a President of Ireland Young Researcher Award recipient, has recently moved from the University of California, Berkeley, to National University of Ireland, Maynooth. His research is in topological quantum computing, the development of a naturally fault-tolerant computer system based on quantum mechanics. "One of the things that convinced me to move was the possibility of working for five years on my own research project and building my own research group."

Dr Jiri Vala pictured with Mary McAleese, President of Ireland.

# SFI Investments

## (a) Biotechnology Investment

Biotechnology involves all disciplines that underpin the study of gene expression, protein synthesis and characterisation, protein signalling, DNA, RNA, genomics, biosensors, drug delivery and bioremediation. Research in biotechnology disciplines will affect healthcare, diagnostics, pharmaceuticals, environmental management, agriculture, marine science, medical devices, consumer goods and food and drinks businesses.

The SFI Bioscience & Bioengineering Directorate funds approximately 90 research investigators, including three CSETs (REMEDI, APC and BDI); has commitments of over €210m and indirectly engages 700+ life-science researchers within Ireland in areas as diverse as agri-food, neuroscience, immunology, sensors/devices, cell biology/cell cycle/apoptosis, microbiology, nanotechnology, pharmachem and bioinformatics/systems biology.

- Agri-food production and consumption covers activities ranging from agriculture to food consumption. SFI's most significant such single investment is the Alimentary Pharmabiotic Centre (APC) at UCC, under the direction of Prof Fergus Shanahan. In 2005, Dr Douwe van Sinderen, UCC, whose research focuses on bacteriophages, was awarded an industrial supplement to work with Alimentary Health Ltd.
- Immunology focuses on the immune system, immunity and allergy. Through Prof Luke O'Neill Ireland possesses one of the recognized global leaders in immunological research, especially in the areas of Toll Receptors. Prof O'Neill and Prof Kingston Mills, both of TCD, have developed research synergies that have led to the creation

of a start-up company (Opsona) to commercialise their research outputs in immunological research. They successfully secured €6.5M in seed venture funding.

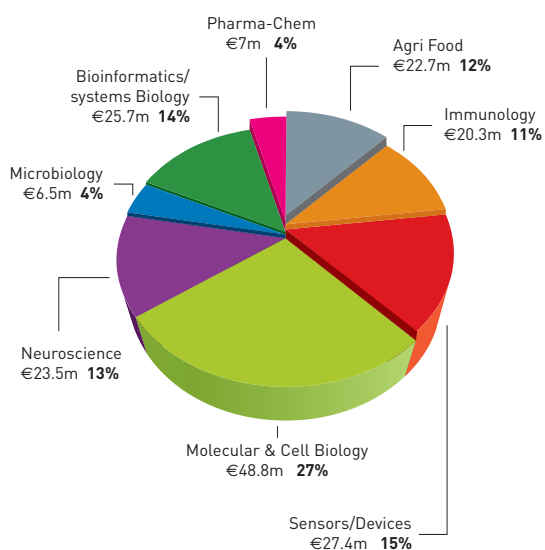
- Sensors/Devices research in this area is focused on the science and technology underpinning the next generation of biomedical diagnostic devices. Major investments include the Biomedical Diagnostics Institute (BDI) at DCU. The recruitment of Prof Luke Lee from UC Berkeley to DCU, as an SFI funded Research Professor adds significant expertise in microfluidics, which will underpin many aspects of the research at the BDI.
- Molecular & Cell Biology-significant investment is in the REMEDI CSET, under the joint leadership of Professors Tim O'Brien and Frank Barry. REMEDI brings together world class scientists and clinicians who are working together to combine the technologies of gene therapy and adult stem cell research to repair and replace damaged tissue.
- Neuroscience deals with the anatomy and physiology and pathology of the nervous system. Dr Michael Scott, a former SFI funded E.T.S. Walton Fellow from University of California, USA, is now an SFI funded Principal Investigator at UCD. Dr Scott is an expert in prions, the causative agent of BSE or mad cow disease. His recruitment to UCD adds significant strength to the research field of neurodegenerative diseases. In this area, Dr David Finn, National University of Ireland, Galway was funded under the President of Ireland Young Researcher Award (PIYRA).



Dr Rosemary O'Connor, University College Cork. Dr Rosemary O'Connor has been doing cutting-edge cancer research for 22 years. The SFI-funded research is focused on the detailed molecular characterization of a group of new proteins whose expression and function in cancer cells is controlled by the hormone Insulin-like Growth Factor I. These proteins either enhance the ability of cancer cells to survive and grow or enhance migration and invasion of cancer cells in tissues. "Our aim is to determine how these new proteins facilitate cancer progression and how they might be used as therapeutic targets for new anti-cancer drugs. They may also have potential to be used as diagnostic markers for cancers".

- Microbiology covers microorganisms including viruses, prokaryotes and simple eukaryotes using methods from biochemistry and genetics. It is also related to pathology, immunology, and epidemiology. Dr Derek Sullivan, Dental School, TCD research group focuses on a pathogenic yeast known as *Candida dublinensis*.
- Bioinformatics/Systems Biology where biology, computer science, and information technology merge into a single discipline. Dr Aoife McLysaght a 2005 PIYRA awardee is based in the Smurfit Institute of Genetics at TCD.
- Pharma-Chem describes the interface between fundamental chemistry and the development of new drugs. This includes researchers such as Dr Daniela Zisterer in the School of Biochemistry and Immunology at TCD and Dr Paul Murphy who received an Astellas USA Foundation Award for his research.

The following graph illustrates the SFI financial commitment of €182m\* to date in Biotechnology in these areas:



\* €182m is the figure for the CSET, PIYRA, PI and Research Professor Awards, there is approx. €121m of funding for ETS Walton, supplements, UREKA and STARS, bringing the total investment to approx. €210m.

## (b) Information & Communications Technology (ICT) Investment

By the end of 2005, the SFI Information & Communications Technology (ICT) Directorate funded 81 research investigators, had commitments of over €260 million and indirectly engaged 760 researchers in a variety of hardware and software research areas in Ireland. These research areas are fundamentally important to a range of industries in Ireland.

**In software, there are six major areas of funding:**

- Networking & Communication Systems** covering investment in research in wired and wireless networks. Major clusters in this area are the National Communications Network Research Centre at National University of Ireland (NUI) Maynooth and Dublin Institute of Technology and the Autonomic Networking Cluster, Waterford Institute of Technology.
- Information Systems** covering investment in the integration and optimization of software and hardware systems; for example, in sensor networks and middleware for sentient computing. Major groups are the Hamilton Institute (NUIM) and the Adaptive Information Cluster at Dublin City University (DCU) and University College Dublin (UCD).
- Software Engineering & Artificial Intelligence** covering investment in robust methods for software engineering and advanced artificial intelligence techniques. Major investments are LERO, the Irish Software Engineering Research Centre at the University of Limerick and Cork Centre for Constraint Computation at University College Cork (UCC).



**Dr Daniela Zisterer**, School of Biochemistry and Immunology, TCD. Dr Zisterer heads an international research collaboration including researchers from the University of Siena and the University of Rochester in addition to working with other TCD-based investigators. PBOX compounds, identified by the Zisterer group, can potentially cause the death of cancer cells without excessively harming non-cancer cells. "These compounds show strong potential as anti-cancer agents and are currently being further characterised and developed by my research group."

- ❑ **Knowledge & Web-based Systems** covering investment in advanced, knowledge-based systems for information handling on the World Wide Web and Internet. The two main investments are the Digital Enterprise Research Institute (DERI) CSET at NUI Galway and the Adaptive Information Cluster at DCU and UCD.
- ❑ **Language Technologies** covering techniques for natural language processing for automated machine translation of textual and spoken language. Dr Julie Berndsen, UCD, won an IBM Innovation Award recognising the importance of her work to industry.
- ❑ **Computer Modelling & Visualisation** tools for computational science in several different areas; astrophysics, bioinformatics, climatology and the marine (e.g. National Geoinformatics Centre in NUI Maynooth). Major investments are in the Irish Centre for High-End Computing (NUIG, UCD, UCC, TCD, NUIM) and in Grid Technology (WebCom-G at NUIG, TCD and UCC).

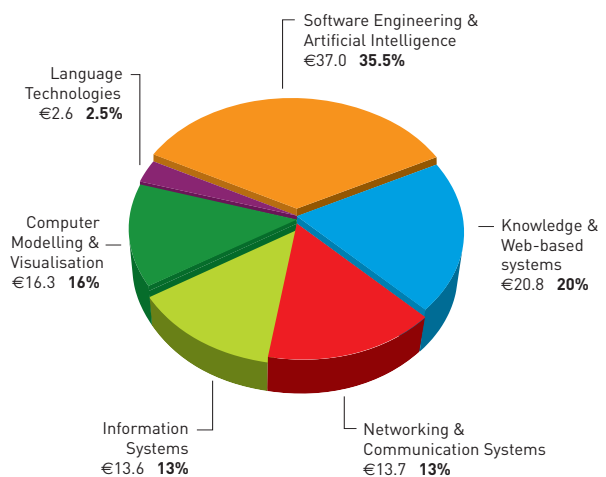
**In hardware, there are six major areas of funding:**

- ❑ **Nanotechnology** covering physics, properties of materials, and devices at the nanoscale. The major investment is the CRANN Nanotechnology CSET (TCD, UCD, UCC).
- ❑ **IC Research** covering innovations in processes, materials, and the design of IC chips. The major investment is the PlasMAC group (DCU, NUIM).
- ❑ **Photonics** covering theory, design, and fabrication of photonic devices. The major investments are the O'Reilly group and researchers in the Tyndall National Institute (UCC) and Prof Chris Dainty (NUIG).

- ❑ **Transmission Systems** covering design and testing of new network architectures and systems. One major investment is Prof David Cotter's group at the Tyndall National Institute.
- ❑ **Storage** covering advanced materials, characterization, and devices for information storage (e.g. in magnetic materials). The major investments here are in the Prof Coey and Prof Shvet's groups in TCD which are part of the CRANN CSET.
- ❑ **Advanced Manufacturing technology** for the telecommunications industry largely funded under the CTVR (Bell Labs) CSET.

The following graphs illustrate the SFI financial commitment of €250m\* to date in Information & Communications Technology (ICT) in the above areas:

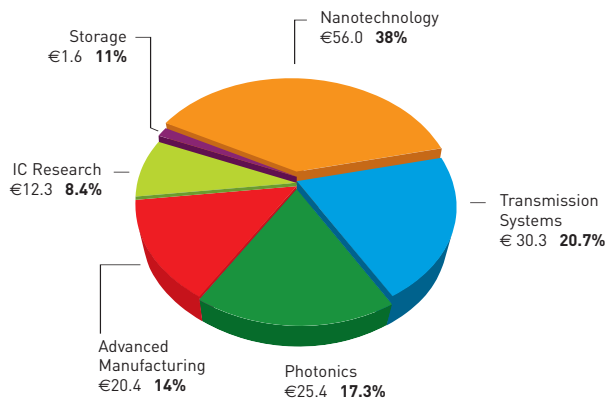
Software - €104m



**Professor Klaus Pohl, Scientific Director, Lero – Irish Software Engineering Research Centre, University of Limerick (UL)** Prof Pohl is internationally known for his work in Requirements Engineering and Software Product Line Engineering.

“Lero’s research agenda is domain-oriented, because we believe this will yield the most effective results. Our basic research takes account of the peculiarities of a given domain from the very beginning while our research results will be applied in industry and, based on that experience, be refined and packaged for wider dissemination.”

## Hardware - €146



\* €250m is the figure for the CSET, PIYRA, PI and Research Professor Awards, there is approx. €10m of funding for ETS Walton, supplements, UREKA and STARs, bringing the total investment to approx. €260m.

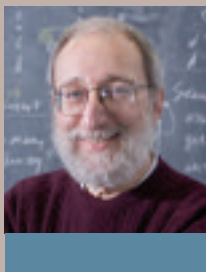
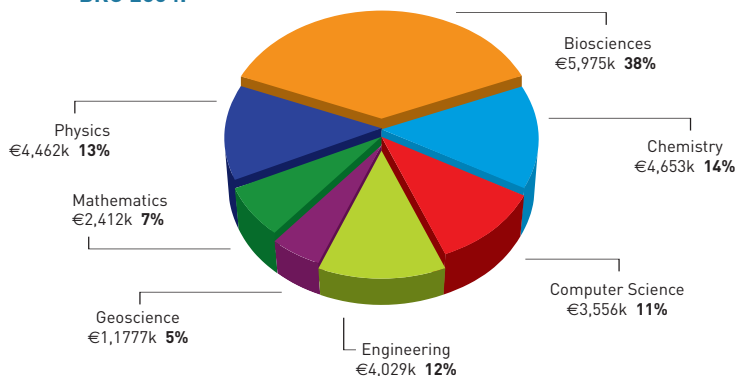
## (c) Frontiers in Engineering and Science Directorate (FES)

The goal of the FES Directorate is to support excellent research in a broad range of scientific and engineering disciplines including those that underpin Biotechnology and ICT. The FES Directorate has committed funding of €33.7 million and supports 235 researchers. During the calendar year 2005, the FES Directorate completed the evaluation of full proposals submitted under Research Frontiers Programme (RFP) 2005, conducted site visits to almost all grantees supported under Basic Research Grants (BRG) 2004, completed the evaluation of pre-proposals for RFP2006 and completed the initial review of proposals submitted under the new Mathematics Initiative.

## The Research Frontiers Programme (RFP) is important for a number of reasons:

- The RFP provides support for post-doctoral fellows and especially post-graduate students, who are crucial to the future of science and engineering both in universities and industry in Ireland. Irish universities must continue to produce well trained, creative young investigators to ensure the future of research in Ireland and the future of Irish high tech industries which depend on scientific innovation.
- The RFP provides the broad underpinning to the strategic areas in SFI by supporting a wide range of research in fields like mathematics, physics and chemistry. The new industries and start-up companies in both BioT and ICT are based on fundamental research carried out sometimes many years earlier. Research in these areas will continue to provide the ideas and tools upon which the industries of the futures will be based.
- The RFP represents an investment in the longer term future when we are less certain which scientific areas are likely to be most important both economically and in terms of quality of life for the people of Ireland. Currently BioT and ICT areas are providing an important economic impetus in Ireland. However, in the future, areas such as energy resources, environmental protection and materials could also have very significant economic and social importance.

## The following graph illustrates the total commitments made by the FES Directorate under the RFP 2005 and BRG 2004:



**Prof Eugene Freuder, Director, Cork Constraint Computation Centre (4C) University College Cork.** Difficult problems can offer too many choices, many of which are incompatible, few of which are optimal. 4C seeks to make it easier for computers to help us make these choices, and works with industry to put science into practice. Prof Freuder was recently elected a Fellow of the American Association for the Advancement of Science. "We now have a successful team of international scientists here in Cork and are working with multinationals and local Irish companies to apply our technology to specific industry needs."



## SFI Award Management System (AMS) - New Technology and eGovernment:

The SFI Awards Management System (AMS) was formally implemented on 1 September 2005. It automates and integrates the receipt, processing, review, and disposition of proposals for support of research through identified SFI programmes. The system standardises procedures and ensures consistency of data input and content. In addition, it increases the transparency and accountability of the process through on-line tracking and reports generation.

The AMS consists of an "off-line assistant" which allows Principal Investigators to develop their proposals at any location and to share with collaborators, as well as the centralised database on a server at SFI. Data is protected through secure access and backed up daily. The actual submission is controlled through the research institution with electronic notifications to all parties at key points. The application is built on an Open Source architecture and uses Extensible Markup Language (XML), a simple, very flexible text format which is in conformance with the standards proposed by the European Public Administration Network e-Government Working Group.

## Science Foundation Ireland - Expenditure By Award Programme 2005

Award Programmes	Total million € euro
Principal Investigator	43.86
Overhead Investment Plan	30.10
Research Frontiers Programme	11.90
CSET	19.00
Other Centres (TNI, ICHEC)	7.20
E-Journals	2.50
Supplements: General & Industrial	3.30
President of Ireland Young Researcher Awards (PIYRA)	1.00
STAR Supplements	0.60
UREKA	0.90
Walton Visitor Awards	1.08
Women In Science & Engineering Research	0.88
Conference & Workshops Grants	0.52
<b>Total</b>	<b>122.00</b>



**Dr Aoife McLysaght**, Smurfit Institute of Genetics at TCD. As a recipient of the President of Ireland Young Researcher Award (PIYRA), Dr McLysaght has increased the size of her molecular evolution/bioinformatics research group. Dr McLysaght successfully hosted the RECOMB 2005 International Satellite Workshop in Comparative Genomics in September 2005. The workshop in Dublin, which received SFI-funding, attracted international speakers and participants and was the first time the conference has been held in Ireland or the UK.

Dr Aoife McLysaght, pictured with Mary McAleese, President of Ireland.

# Statutory and Other Notices

## 1. Board Members – Register of Interests

The Board operates to the best practice corporate governance principles and in accordance with the guidelines set out in the Code of Practice for the Governance of State Bodies, as issued by the Department of Finance, both in its activities and in its use of committees. In accordance with these guidelines, SFI Board members register their interests in other undertakings with the Secretary.

## 2. 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 1st January 2005. SFI has complied with the provision of the Act.

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

During 2005, SFI was not prescribed under the Freedom of Information Act, 1997 and the Freedom of Information (Amendment) Act, 2003. However, SFI provides information when requested, in compliance with the provisions of these Acts.

## 4. Prompt Payments of Accounts Act, 1997

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

The payment practices of SFI, as required by the Act, are reported on below for the year ended 31 December 2005. 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 cheques are issued as required to ensure timely payments.

There were three late payments during 2005, interest paid on these amounted to €175. The payments exceeded the due payment dates by a total of 79 days. The value of these payments was €11,823

## 5. 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 non-discriminatory 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.

## 6. Safety, Health and Welfare at Work Act 1989

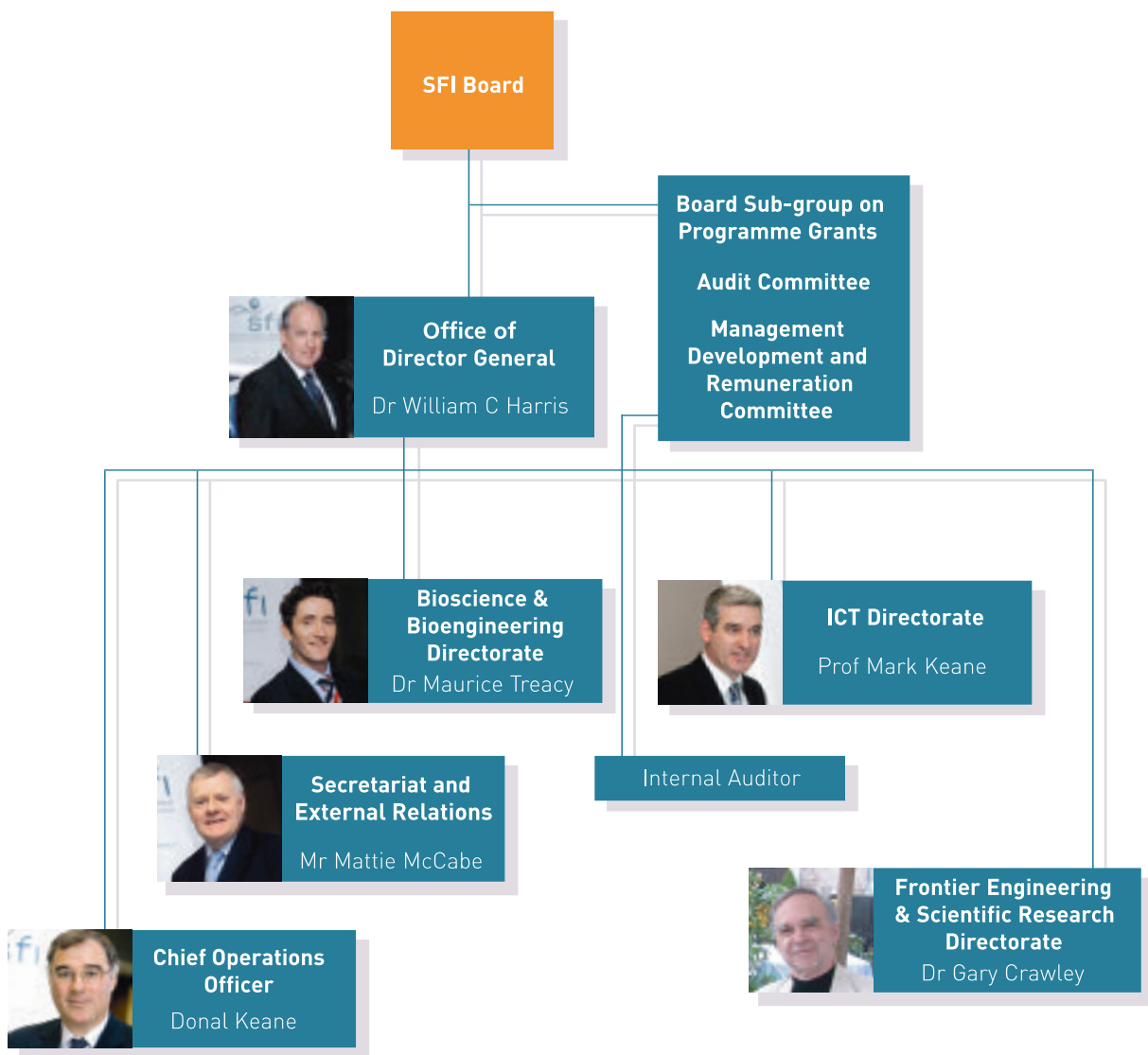
In accordance with the above Act, SFI in consultation with Forfás implements appropriate measures to protect the safety, health and welfare of all employees and visitors within its offices.

## 7. 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 2005, no complaints were received under the Charter.

# SFI Organisational Structure 2005

(In 2005, SFT had sanction for 44 posts)





# 2005 ANNUAL FINANCIAL STATEMENTS

31 December 2005

# Science Foundation Ireland

## Report of the Comptroller and 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 2005 under the Industrial Development (Science Foundation Ireland) Act, 2003.

The financial statements, which have been prepared under the accounting policies set out therein, 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 for the Member 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 conform 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.

## 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 amount and disclosures and regularity of the financial transactions included in the financial statements. It also includes an assessment of the significant estimate and judgments 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 2005 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 Purcell**  
Comptroller and Auditor General

11 May 2006

# Statement of Board Members' Responsibilities

## For 2005 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, shall 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 enables 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: 4 May 2006



**William C. Harris**  
Director General

Date: 4 May 2006

# 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 would be detected in a timely period.

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

- Clearly defining 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 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.

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.

During 2005 Science Foundation Ireland appointed an internal auditor, in accordance with the Framework Code of Best Practice set out in the Code of Practice on the Governance of State Bodies, who reports directly to the Audit Committee. The work of internal audit is informed by analysis of the risk to which the body is exposed and, in 2005, the internal audit plan was based on this analysis. The analysis of risk and the internal audit plans are endorsed by the Audit Committee. The Audit Committee meets quarterly and reviews the outcome of the specific internal audits and confirms the ongoing adequacy and effectiveness of the system of internal financial control. 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 and the control exercised by the executive managers within SFI who have responsibility for the development and maintenance of the financial control framework.

I confirm that the Board conducted a review of the effectiveness of the system of internal financial controls for 2005.

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 comprise tangible fixed assets that are owned by Science Foundation Ireland and includes assets that were acquired prior to the establishment of SFI as an independent agency of Forfás on 25 July 2003. 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 depreciation and revaluation policies 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

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.

## (7) Operating Leases

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

## (8) Research Grant Payment

Amounts paid to Research Bodies 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 2005

	Notes	2005 €'000	2004 €'000
<b>Income</b>			
Oireachtas Grant	1	129,561	113,730
Other	2	51	51
Profit on Disposal of Fixed Asset		23	-
		129,635	113,781
<b>Expenditure</b>			
Administration and General Expenses	3	6,776	4,961
Depreciation	5	245	104
Grants	4	122,155	108,556
		129,176	113,621
Surplus for Year		459	160
Balance at beginning of Year		(2)	(17)
Transfer to Capital Account	6	(19)	(145)
Accumulated Surplus/(Deficit) at end of Year		438	(2)

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 13 form part of these Financial Statements.

On behalf of the Board:



Patrick Fottrell  
Chairman

Date: 4 May 2006



William C. Harris  
Director General

Date: 4 May 2006

# Balance Sheet

For the year ended 31 December 2005

	Notes	2005 €'000	2004 €'000
<b>Fixed Assets</b>			
Tangible Fixed Assets	5	407	388
<b>Current Assets</b>			
Cash at Bank		878	82
Accounts Receivable	7	48	19
		926	101
<b>Accounts Payable</b>	8	488	103
<b>Net Current Assets</b>		438	(2)
<b>Net Assets</b>		845	386
<b>Represented By:</b>			
Capital Account	6	407	388
Income and Expenditure Account		438	(2)
		845	386

The Accounting Policies, Cash Flow Statement and Notes 1 to 13 form part of these Financial Statements.

On behalf of the Board:

On behalf of the Board:



Patrick Fottrell  
Chairman

Date: 4 May 2006



William C. Harris  
Director General

Date: 4 May 2006

# Cash Flow Statement

For the year ended 31 December 2005

	Notes	2005 €'000	2004 €'000
<b>Reconciliation of Surplus/(Deficit) for Year to Net Cash Flow from Operations</b>			
<b>Surplus for Year</b>		459	160
Bank Interest		(51)	(51)
(Profit)/Loss on Disposal of Assets		(23)	-
Depreciation Charge:			
Tangible Fixed Assets	5	245	104
(Increase)/Decrease in Accounts Receivable	7	(29)	(4)
Increase/(Decrease) in Accounts Payable	8	385	71
<b>Net Cash Flow from Operations</b>		<b>986</b>	<b>280</b>
<b>Cash Flow Statement</b>			
Net Cash Flow from Operations		986	280
Returns on Investment and Servicing of Finance			
- Bank Interest		51	51
Cash Flow before Capital Expenditure		1,037	331
Capital Funding			
- Receipts from Sale of Tangible Fixed Assets		23	-
- Purchase of Tangible Fixed Assets	5	(264)	(249)
Increase in Cash		796	82
Reconciliation of Increase in Cash to Cash at Bank			
Movement in Cash for the Year		796	82
Cash at Bank at 01 January 2005		82	-
Cash at Bank at 31 December 2005		878	82

# Notes to the Accounts

For the year ended 31 December 2005

	2005 €'000	2004 €'000
<b>(1) Oireachtas Grant</b>		
Administration and General Expenses	7,361	5,160
Research Grants	122,200	108,570
	129,561	113,730

Under Section 35 of the Industrial Development (Science Foundation Ireland) Act, 2003, 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 €3,400,000,000. At 31 December, 2005 the aggregate amount so provided was €2,467,326,030.

## (2) Other Income

Bank Interest	51	51
Total	51	51

## (3) Administration and General Expenses

<b>(3a) Board Members' Remuneration and Expenses</b>	189	180
Pay Costs	2,563	1,328
Other Personnel Costs	355	110
Travelling Expenses	217	232
Specialised and Professional Services	1,004	1,135
Consultancy and Studies	991	1,000
Rents, Rates, Repairs and Maintenance	578	380
Other Operating Expenses	866	585
Audit Fee	13	11
Total	6,776	4,961
<b>Pay Costs comprise:</b>		
Wages and Salaries	2,384	1,246
Social Welfare Costs	148	79
Superannuation Costs	31	3
Total	2,563	1,328

SFI continued the process of filling sanctioned positions during the year.

Sanctioned Positions	44	30
Full Time Employed	33	19
Temporary Staff Employed	5	7
Total	38	26

# Notes to the Accounts (cont'd)

For the year ended 31 December 2005

	2005 €'000	2004 €'000
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**(3b)** Up to 31 August 2005 the services of the Director General (DG) of SFI were provided by a United States based corporation under a 5 year consultancy contract. The contract provides for payment for his services together with a potential bonus. The payment is designed to cover a basic fee, retirement contributions and relocation costs. The potential bonus is equivalent to that approved by the Review Body on Higher Remuneration in the Public Sector for the Chief Executive Officers of the State Industrial Development Agencies.

The cost of the remuneration package to 31 August 2005 is charged to consultancy in the financial statements and amounted to €281,995 plus VAT which brings the total to €341,214

With effect from 1 September 2005 the DG became a salaried employee under the PAYE tax system.

#### 4) Grants

Biotechnology Grants	46,205	44,887
Information and Communications Technology Grants	60,234	54,587
Research Frontiers Grants	15,716	9,082
<b>Total</b>	<b>122,155</b>	<b>108,556</b>

Grants are payable to Irish third level institutions to carry out world class basic research projects. Included in the above analysis by directorate are amounts of €28m (2004 - €26m) in respect of funding of the Annual Overhead Investment Plan.

The Annual Overhead Investment Plan represents funding of the institutional research infrastructure associated with SFI funded researchers. Funds are dispersed on the basis of annual submissions by the institutions which are evaluated by SFI.

Research Frontiers Grants arose from a re-evaluation of the Basic Research Grants programme to enhance and build a broad base of support for science and engineering in addition to areas supported by BioT and ICT. Basic Research Grants were formerly administered by Enterprise Ireland. SFI assumed responsibility for the administration of these Grants in 2003.

At 31 December 2005, SFI had €218m in future grant commitments.

# Notes to the Accounts (cont'd)

For the year ended 31 December 2005

	Computer Equipment €'000	Motor Vehicles €'000	Fixtures & Fittings €'000	System Development €'000	Total €'000
<b>(5) Tangible Fixed Assets</b>					
<b>COST</b>					
At 1 January 2005	208	50	145	261	664
Additions	78	50	14	122	264
Disposals	-	(50)	-	-	(50)
At 31 December 2005	286	50	159	383	878
<b>DEPRECIATION</b>					
At 1 January 2005	140	50	86	-	276
Charge for Year	73	12	32	128	245
Disposals	-	(50)	-	-	(50)
At 31 December 2005	213	12	118	128	471
<b>NET BOOK AMOUNT</b>					
At 1 January 2005	68	-	59	261	388
Net Movement for Year	5	38	(18)	(6)	19
At 31 December 2005	73	38	41	255	407

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

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

Assets in course of construction are depreciated when commissioned.

# Notes to the Accounts (cont'd)

For the year ended 31 December 2005

	2005 €'000	2004 €'000
<b>6) Capital Account</b>		
At 1 January 2005	388	243
Transfer from Income & Expenditure Account		
- Cost Additions	264	249
- Cost Disposals	(50)	-
- Depreciation Additions	(245)	(104)
- Depreciation Disposals	50	-
Net Movement	19	145
At 31 December 2005	407	388
<b>(7) Accounts Receivable</b>		
General Debtors and Prepayments	48	19
Interagency Balance	-	-
Total	48	19
<b>(8) Accounts Payable</b>		
General Creditors	256	71
Accruals	128	21
Interagency Balance	104	11
Total	488	103

Interagency Balance relates to the balance owed by Science Foundation Ireland to Forfás at 31 December 2005, 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.

## (9) 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.

## 10) 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.



# Notes to the Accounts (cont'd)

## For the year ended 31 December 2005

### (11) 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.

### (12) Contingencies and Legal Actions

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

### (13) Approval of Financial Statements

The Financial Statements were approved by the Board of Science Foundation Ireland on 3rd April 2006

# Appendix A

## Analysis of Grant Payments By Institution

For the year ended 31 December 2005

	2005 €'000	2004 €'000
Dublin City University	7,213	6,137
NUI Galway	14,592	7,901
NUI Maynooth	6,613	6,749
Royal College of Surgeons	4,063	5,557
Trinity College Dublin	30,280	32,055
University College Cork	31,268	19,582
University College Cork/NMRC	1,724	1,515
University College Dublin	17,332	21,860
University of Limerick	8,095	4,407
Carlow Institute of Technology	61	59
Conference & Workshop	194	585
Cork Institute of Technology	257	193
Dublin Institute for Advanced Studies	167	66
Dublin Institute of Technology	216	672
Dundalk Institute of Technology	7	-
Enterprise Ireland	-	8
Institute of Electrical Engineers	5	-
Tallaght Institute of Technology	9	-
Limerick Institute of Technology	2	-
National College of Ireland	-	50
Royal Irish Academy	-	267
Waterford Institute of Technology	57	895
<b>Total</b>	<b>122,155</b>	<b>108,556</b>





Learn more about SFI and our programmes at [www.sfi.ie](http://www.sfi.ie)

Science Foundation Ireland  
Wilton Park House  
Wilton Place  
Dublin 2  
Ireland  
Tel: 353 1 607 3200  
Fax: 353 1 607 3201  
E-mail: [info@sfi.ie](mailto:info@sfi.ie)

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